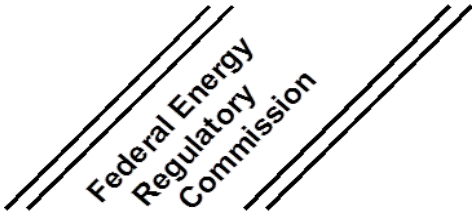

Office of
Energy Projects

September 2017

Texas Eastern Transmission, LP
Pomelo Connector Pipeline, LLC

Docket Nos. CP15-499-000,
CP15-499-001; and
CP17-26-000

South Texas Expansion Project

And

Pomelo Connector Pipeline Project

Environmental

Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply, Refer To:
OEP/DG2E/Gas 3
Pomelo Connector, LLC
Texas Eastern Transmission, LP
Docket No. CP17-26-000
Docket No. CP15-499-000
Docket No. CP15-499-001

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the proposed South Texas Expansion Project (STEP), proposed by Texas Eastern Transmission, LP (Texas Eastern) and the Pomelo Connector Pipeline Project (Pomelo Project), proposed by Pomelo Connector, LLC (Pomelo) in the above referenced dockets. Collectively, the STEP and Pomelo Project, are referred to as the Projects. The Pomelo Project would provide up to 400,000 dekatherms per day (Dth/d) of firm transportation service from an interconnection with Texas Eastern at the proposed Pomelo Petronila Compressor Station in Nueces County, Texas, to the Nueces Header pipeline system. STEP would provide approximately 400,000 Dth/d of firm natural gas transportation service to an interconnection with the Nueces Header.

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

The proposed Pomelo Project would consist of construction and operation of approximately 14 miles of 30-inch-diameter pipeline, a new 5,000 horsepower (hp) compressor station, approximately 0.2 mile of new 30-inch-diameter pipeline, and associated aboveground facilities in Nueces County, Texas. Pomelo would engage in certain construction, operation, maintenance, and abandonment activities under blanket construction certificate authorization, and abandon all of the capacity of the Pomelo Connector Pipeline upon the in-service date by lease to Texas Eastern. The proposed STEP consists of construction and operation of a new 8,400 hp gas turbine

unit in Nueces County, Texas; piping modifications at its existing Angleton Station property in Brazoria County, Texas; a new 8,400 hp gas turbine unit at its existing Blessing Compressor Station in Matagorda County, Texas; clean burn emission work and piping modifications at its existing Mont Belvieu Compressor Station in Chambers County, Texas; and piping modifications at its existing Vidor Compressor Station in Orange County, Texas.

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 and 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 these projects, it is important that we receive your comments in Washington, DC on or before October 18, 2017.

For your convenience, there are three methods you can use to file your comments to the Commission. In all instances, please reference the project docket number (CP17-26-000 and CP15-499) with your submission. The Commission encourages electronic filing of comments and has expert staff available to assist you at (202) 502-8258 or FercOnlineSupport@ferc.gov.

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

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your

submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

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

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

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214).[1] Only intervenors have the right to seek rehearing of the Commission's decision. The Commission grants affected landowners and others with environmental concerns intervenor status upon showing good cause by stating that they have a clear and direct interest in this proceeding which no other party can adequately represent. Simply filing environmental comments will not give you intervenor status, but **you do not need intervenor status to have your comments considered.**

Additional information about the project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using the eLibrary link. Click on the eLibrary link, click on "General Search," and enter the docket number excluding the last three digits in the Docket Number field (i.e., CP17-16 and CP15-499). 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.

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

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.

Secretary

SOUTH TEXAS EXPANSION PROJECT AND POMELO CONNECTOR PIPELINE PROJECT ENVIRONMENTAL ASSESSMENT TABLE OF CONTENTS

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TECHNICAL ABBREVIATIONS AND ACRONYMS

AC	alternating current
ACHP	Advisory Council on Historic Preservation
AERMOD	American Meteorological Society/Environmental Protection Model
APE	Area of Potential Effect
AQCR	Air Quality Control Region
ATWS	additional temporary workspace
Bcf/d	billion cubic feet
BLM	Bureau of Land Management
CAA	Clean Air Act
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFE	Comisión Federal de Electricidad
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
dB	decibels
dBA	A-weighted decibels
DOT	United States Department of Transportation
Dth/d	dekatherms per day
E&SCP	Erosion and Sedimentation Control Plan
EA	environmental assessment
EFH	Essential Fish Habitat
EI	environmental inspector
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
Est'd	Estimated
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FR	Federal Register
FWS	United States Fish and Wildlife Service
GHG	greenhouse gases
GLO	Texas General Land Office
GRM	gas release measurement
HAPs	hazardous air pollutants
Horizon	Horizon Environmental Services, Inc.
HDD	horizontal directional drill
hp	horsepower
km	kilometer
KTTT	Kickapoo-Traditional Tribe of Texas
L_{dn}	day-night sound level
L_{eq}	24-hour equivalent sound level
M&R	metering and regulating

MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MP	milepost
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act of 1969 (as amended)
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NO_2	nitrous dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conversation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NSR	New Source Review
O_3	ozone
OEP	Office of Energy Projects
PCC	pre-combustion chamber
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	FERC's Upland Erosion Control, Revegetation, and Maintenance Plan
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
Pomelo	Pomelo Connector, LLC
Procedures	FERC's Wetland and Waterbody Construction and Mitigation Procedures
Projects	South Texas Expansion and Pomelo Connector Pipeline Project
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RCT	Railroad Commission of Texas
SCADA	Supervisory Control and Data Acquisition
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office
SIL	Significant Impact Level
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
STEP	South Texas Expansion Project
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
Texas Eastern	Texas Eastern Transmission, LP
THC	Texas Historical Commission
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
tpy	tons per year
TWDB	Texas Water Development Board
TWS	temporary workspace

TXDOT	Texas Department of Transportation
UPRR	Union Pacific Railroad
U.S.C.	United States Code
USDA	United States Department of Agriculture
USGS	United States Geological Survey
Valley Crossing	Valley Crossing Pipeline, LLC
VOC	volatile organic compound

SECTION A – PROPOSED ACTION

A.1. Introduction

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) to assess the impacts of construction and operation of certain natural gas pipeline and associated facilities proposed by Texas Eastern Transmission, LP (Texas Eastern) and Pomelo Connector, LLC (Pomelo). These project proposals/proceedings are contained in Docket No. CP15-499-000/CP15-499-001 and Docket No. CP17-26-000, respectively. Texas Eastern and Pomelo filed applications and supplements/amendments to their applications on May 22, 2015 and December 30, 2016 for Texas Eastern, and in December 22, 2016 and March 10, 2017 for Pomelo. The filings were made pursuant to Section 7(b) and Section 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations to obtain a Certificate of Public Convenience and Necessity (Certificate) from the Commission and to abandon, construct, modify, and operate natural gas pipeline facilities in Texas.

Texas Eastern proposes to install, construct, own, and operate: a new 8,400 horsepower (hp) gas turbine unit (Petronila Compressor Station) in Nueces County, Texas; a new 8,400 hp gas turbine unit at its existing Blessing Compressor Station in Matagorda County, Texas; piping modifications at its existing Angleton Station property in Brazoria County, Texas; clean burn emission work and piping modifications at its existing Mont Belvieu Compressor Station in Chambers County, Texas; and piping modifications at its existing Vidor Compressor Station in Orange County, Texas. These facilities are collectively referred to as the South Texas Expansion Project (STEP). Texas Eastern amended their application to also install, construct, own, operate, and maintain: a new tie-in to the Pomelo Connector Pipeline at Texas Eastern's proposed Petronila Compressor Station; new gas release measurement (GRM) equipment and associated enclosures at its new Petronila, existing Mont Belvieu, and existing Vidor Compressor Stations; new gas coolers at its existing Blessing Compressor Station; and acquire (by lease) capacity on Pomelo's proposed approximately 14-mile-long pipeline (which would interconnect with Texas Eastern's proposed Petronila Compressor Station). The amendment changes the Project's targeted in-service date from May 1, 2017 to October 1, 2018. It also removes the metering and regulating (M&R) station initially proposed for the Petronila Compressor Station site from STEP's scope.

Pomelo proposes to construct, own, and operate approximately 14 miles of 30-inch-dimeter pipeline, a new 5,000 hp compressor station (Pomelo Compressor Station), and approximately 0.2 mile of new 30-inch-diameter pipeline, and associated aboveground facilities in Nueces County. Pomelo has requested to engage in certain construction, operation, maintenance, and abandonment activities under blanket construction certificate authorization, and has requested abandonment authorization enabling Pomelo to lease all of the capacity of the Pomelo Connector Pipeline to Texas

Eastern upon the in-service date.[1] Together, these facilities are referred to as the Pomelo Connector Pipeline Project (Pomelo Project). Together, these projects would provide capacity to transport up to 400,000 dekatherms per day (Dth/d) or 400 million cubic feet per day (MMcf/d) of natural gas, as described in more detail under Purpose and Need (section A.2).

Collectively, the STEP and Pomelo Project are referred to as the Projects.

We[2] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality's (CEQ) regulations for implementing the NEPA (Title 40 Code of Federal Regulations [CFR], Parts 1500-1508); and the Commission's regulations at 18 CFR 380. The EA is an integral part of the Commission's decision-making process whether to issue Texas Eastern and Pomelo Certificates 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 impacts; and
- facilitate public involvement in the environmental review process.

A.2. Purpose and Need

Under section 7(b) and Section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them; and similarly (in this case), also grant authorization to abandon all of the capacity of the Pomelo Pipeline by lease to Texas Eastern upon the in-serve date. 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.

Texas Eastern and Pomelo have indicated that the Projects (together) would provide the capacity necessary to transport up to 400,000 Dth/d or 400 million cubic feet per day (MMcf/d) of natural gas on a firm basis from Texas Eastern's interconnection with AGL Resources, Inc.'s Golden Triangle Storage and the Centana Intrastate Pipeline facilities (located east of Texas Eastern's existing Vidor Compressor Station) to an interconnection with an intrastate header system (the Nueces Header), to be constructed by Valley Crossing Pipeline, LLC (Valley Crossing) in Nueces County. The Projects' anchor customer is the Comisión Federal de Electricidad's (CFE) in the Republic of

[1] This abandonment is an administrative action that has no environmental impact.

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

Mexico. CFE has subscribed incremental service on a transportation path extending from points near the Texas-Louisiana border to an interconnection on Texas Eastern's system with a proposed new pipeline system.

A.3. Proposed Facilities

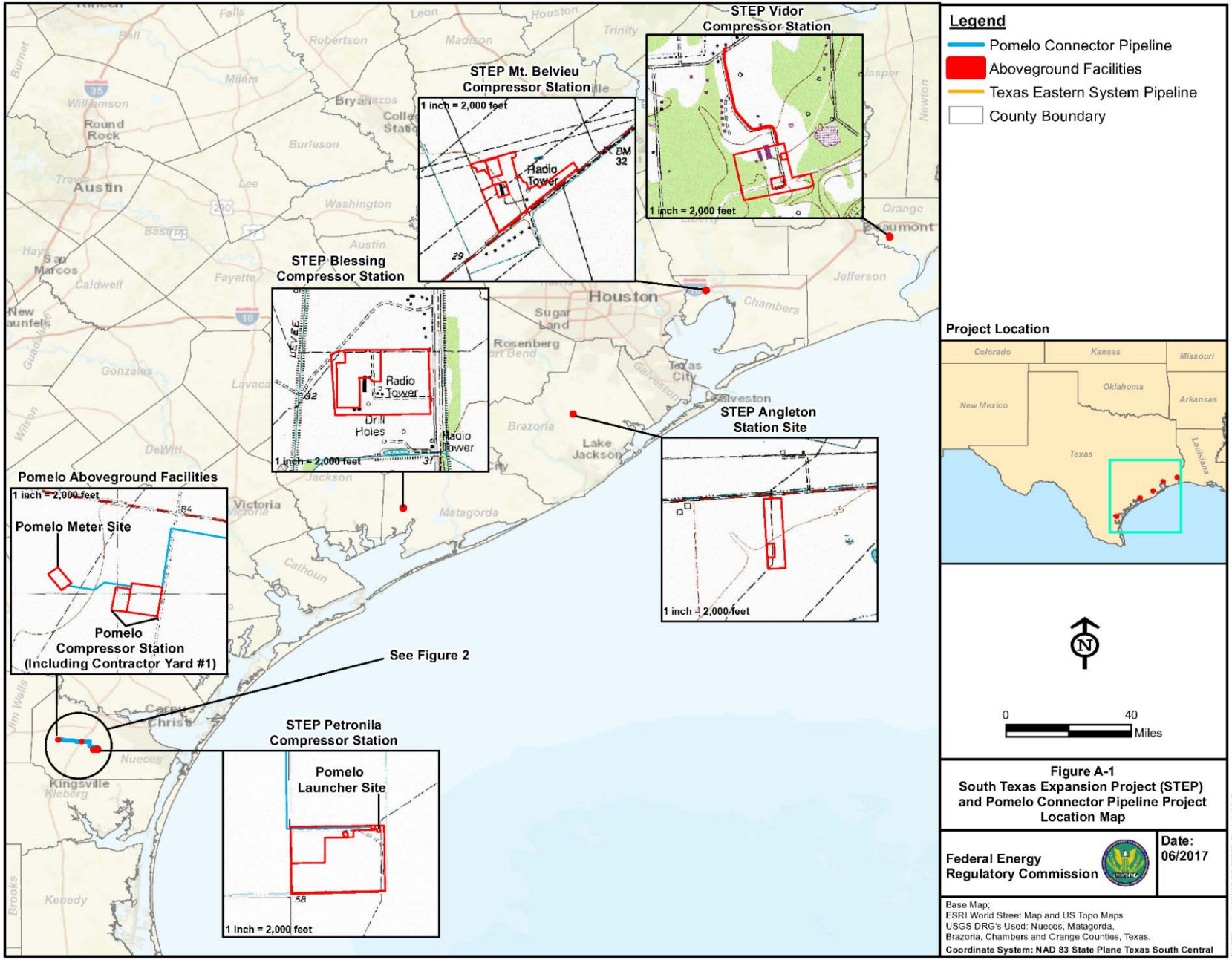
Texas Eastern proposes to install, construct, and operate the following facilities in Texas as part of the STEP, to provide firm natural gas transportation to an interconnection with the Nueces Header:

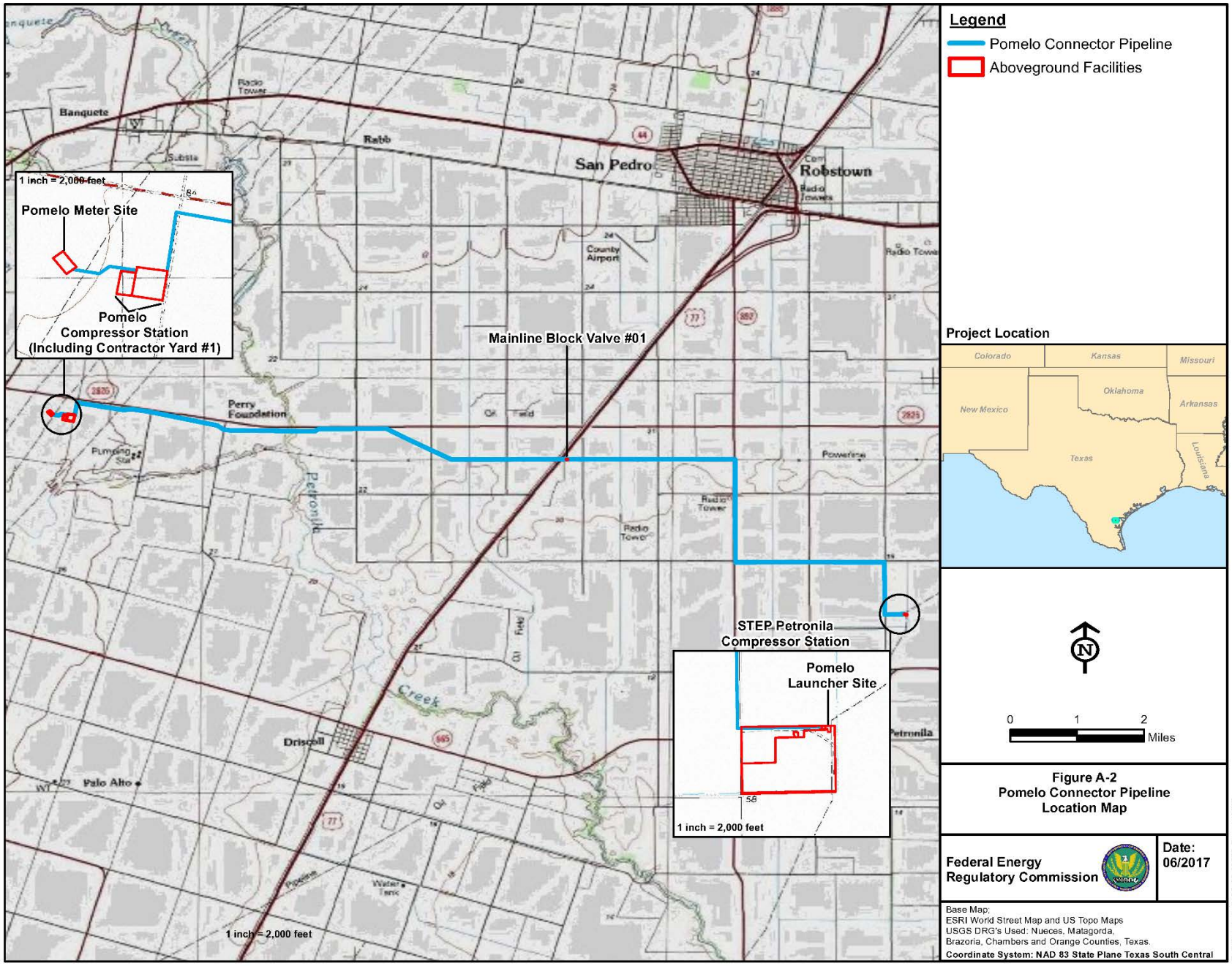
- a new 8,400 hp compressor station, appurtenant facilities, a new interconnection with Pomelo Connector Pipeline, and construction of a gas measurement enclosure at Texas Eastern's existing Petronila property/facility in Nueces County (Petronila Compressor Station);
- a new 8,400 hp compressor unit, a new control building, new gas coolers and station piping modifications to reverse compression at the existing Blessing Compressor Station in Matagorda County;
- piping modifications to the existing launcher/receiver on Line 16 at the existing Angleton Station property in Brazoria County;
- upgrades to existing compression facilities to reduce emissions, new gas measurement enclosure, and piping modifications to the existing launcher/receiver on Line 16 at the existing Mont Belvieu Compressor Station in Chambers County; and
- piping modifications to the existing launcher/receiver on Line 16, and a new gas measurement enclosure within the existing Vidor Compressor Station in Orange County.

The Pomelo Project would provide firm transportation service from the interconnection with Texas Eastern at the proposed Petronila Compressor Station. Pomelo proposes to construct and operate the following facilities:

- approximately 13.6 miles of new 30-inch-diameter natural gas pipeline (Pomelo Connector Pipeline, or mainline pipeline);
- a new 5,000 hp compressor station (Pomelo Compressor Station);
- approximately 0.2 mile of new 30-inch-diameter discharge pipeline; and
- associated aboveground facilities.

The general location of the facilities of the Projects are shown in Figures A-1 and A-2.


STEP Vidor Compressor Station
STEP Mt. Belvieu Compressor Station
STEP Blessing Compressor Station
STEP Angleton Station Site
Pomelo Aboveground Facilities
Pomelo Meter Site
Pomelo Compressor Station (Including Contractor Yard #1)
See Figure 2
STEP Petronila Compressor Station
Pomelo Launcher Site
1 inch = 2,000 feet
Radio Tower
Drill Holes
Legend
Pomelo Connector Pipeline
Aboveground Facilities
Texas Eastern System Pipeline
County Boundary
Project Location
Colorado
Kansas
Missouri
Oklahoma
Arkansas
New Mexico
Texas
Louisiana
0
40
Miles
Figure A-1
South Texas Expansion Project (STEP) and Pomelo Connector Pipeline Project Location Map
Federal Energy Regulatory Commission
Date: 06/2017
Base Map:
ESRI World Street Map and US Topo Maps
USGS DRG's Used: Nueces, Matagorda, Brazoria, Chambers and Orange Counties, Texas.
Coordinate System: NAD 83 State Plane Texas South Central


Legend
Pomelo Connector Pipeline
Aboveground Facilities
Project Location
Colorado
Kansas
Missouri
Oklahoma
New Mexico
Arkansas
Texas
Louisiana
Banquete
Rabb
San Pedro
Robstown
Mainline Block Valve #01
Perry Foundation
Petronila
Creek
Driscoll
Palo Alto
1 inch = 2,000 feet
Pomelo Meter Site
Pomelo Compressor Station (Including Contractor Yard #1)
1 inch = 2,000 feet
STEP Petronila Compressor Station
Pomelo Launcher Site
1 inch = 2,000 feet
N
0
1
2
Miles
Figure A-2
Pomelo Connector Pipeline
Location Map
Federal Energy Regulatory Commission
Date: 06/2017
Base Map:
ESRI World Street Map and US Topo Maps
USGS DRG's Used: Nueces, Matagorda, Brazoria, Chambers and Orange Counties, Texas.
Coordinate System: NAD 83 State Plane Texas South Central

A.4. Public Review and Comment

FERC initially issued a *Notice of Intent to Prepare an Environmental Assessment for the STEP Project* (NOI) on July 1, 2015. Following issuance of the NOI, Texas Eastern notified the Commission that it was amending its application and would file the modified project at a later date. After receipt of Texas Eastern's amendments to the STEP Project, and after the filing of the Pomelo Project application, we issued a second NOI for both projects on April 6, 2017, titled *Notice of Intent to Prepare an Environmental Assessment for the Proposed Pomelo Connector Pipeline and South Texas Expansion Project; Request for Comments on Environmental Issues*. The NOI was published in the Federal Register[3] and was mailed to interested parties including affected landowners; federal, state, and local governmental representatives and agencies; elected officials; environmental and public interest groups; potentially interested Indian tribes; and local libraries and newspapers. Written comments were requested from the public on specific concerns about the Projects or issues that should be considered during the preparation of the EA. The public comment period was held from April 6 to May 8, 2017.

In response to the NOI, we received a total of five comment letters from the following commenters: the TPWD, Union Pacific Railroad, Gary Pyron—an adjacent landowner to the proposed Petronila Compressor Station site, John Young—an individual, and the Teamsters National Pipeline Labor Management Cooperation Trust. The comments addressed related and non-jurisdictional facilities, air quality/greenhouse gas emissions, alternatives, biological resources, migratory birds, habitat and wildlife, water resources, hazards/safety concerns, stormwater, and general support for the Projects. All substantive comments received upon re-issuance of the NOI have been addressed in this EA. An index identifying where each comment topic is addressed within the EA is provided in Table 1.

Table 1. Issues Identified in Comment Letters for the Proposed Projects

Comment / Concern	EA Section Addressing Comment
Related & Non-Jurisdictional Facilities	A.9
Air Quality/Greenhouse Gas Emissions	B.8.1
Alternatives Analysis	C.1
Biological Resources, Habitat and Wildlife	B.4.1, B.4.4

[3] 82 FR 17654 (April 12, 2017)

Table 1. Issues Identified in Comment Letters for the Proposed Projects	
Migratory Birds	B.4.4
Reliability & Safety (including Hazards & Public Safety)	B.9
Water Resources (including Stormwater)	B.3.2, B.3.4

The NOI also invited agencies with jurisdiction by law or with special expertise to participate in the preparation of the EA as a cooperating agency. No agency expressed an interest in cooperating agency status.

A.5. Construction and Operational Procedures

The proposed facilities would be designed, constructed, tested, operated, and maintained to conform with or exceed federal, state, and local requirements, including the United States Department of Transportation's (DOT's) Minimum Safety Standards in 49 CFR 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards".

Texas Eastern and Pomelo would implement erosion and sediment controls. Specifically, Texas Eastern would implement its own adopted Erosion and Sedimentation Control Plan (E&SCP), which incorporates guidelines from the following:

- FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures)[4];
- Spill Prevention Control and Countermeasure (SPCC) Plan;
- United States Fish and Wildlife Service (FWS);
- United States Department of Agriculture (USDA);
- Natural Resources Conservation Service (NRCS); and
- various state agencies as well as from the company's experience and practical knowledge of construction and environmental protection measures.

[4] The FERC Plan and Procedures are a set of construction and mitigation measures that were developed in collaboration with other federal and state agencies and the natural gas pipeline industry to minimize the potential environmental impacts of the construction of pipeline projects in general. The FERC Plan can be viewed on the FERC Internet website at http://www.ferc.gov/industries/gas/enviro/plan.pdf. The FERC Procedures can be viewed on the FERC Internet website at http://www.ferc.gov/industries/gas/enviro/procedures.pdf. Note: No variances were requested to the FERC Plan and Procedures.

Pomelo has not developed its own E&SCP but would adhere to FERC's Plan and Procedures, standard construction practices and policies, and any additional Project-specific requirements that may be imposed by federal, state, and local agencies, or landowners for the Project. This also includes compliance with the "Call Before You Dig" or "One Call" system prior to construction to identify all utilities along the Project workspace areas.

Construction Procedures

Before the start of construction work, the area would be surveyed and staked. Sensitive resources would be located and marked to prevent accidental damage during construction. Minimal clearing would be required for construction of the compressor at the proposed Petronila Compressor Station and for facility modifications at the existing Blessing Compressor Station, Mont Belvieu Compressor Station, Angleton Station, and Vidor Compressor Station. Similarly, minor clearing would be required for construction at the proposed Pomelo Compressor Station because the location consists of agricultural land (active cropland). Initial clearing operations would include the removal of vegetation within the temporary construction workspace by mechanical equipment or by hand cutting. The limits of clearing would be identified and flagged in the field prior to any clearing operations. Closely following clearing and before grading activities, Texas Eastern and Pomelo would install erosion control devices (such as sediment barriers) where necessary to minimize soil erosion and sedimentation resulting from storm water runoff from disturbed areas. Texas Eastern and Pomelo would implement these measures in accordance with their erosion and sediment control plans and/or FERC's Plan and Procedures. The State of Texas follows the EPA's requirements that exempts stormwater discharges of sediment from construction activities at oil and gas sites from obtaining a Texas Pollutant Discharge Elimination System (TPDES) Permit. However, Texas Eastern and Pomelo would implement best management practices to ensure compliance with the Clean Water Act and to minimize the potential for sedimentation of wetlands and waterbodies. Texas Eastern and Pomelo have also prepared and would adhere to an SPCC Plan for managing hazardous materials, implementing preventative measures to avoid spills, and implementing response and mitigation measures in the event of a spill.

General Pipeline Construction Procedures

The Pomelo Connector Pipeline would be constructed via a combination of conventional and specialized construction procedures. Conventional open-cut pipeline construction techniques would be used for the majority of the pipeline, except where a horizontal directional drill (HDD) is proposed. Typical pipeline construction proceeds as a moving assembly line. The entire process would be coordinated in such a manner as to minimize the total time a tract of land is disturbed and, therefore, exposed to erosion and/or temporarily precluded from its normal use.

Prior to initiating construction-related activities, Pomelo would secure right-of-way easements, or other required authorizations, from landowners whose properties would be crossed by the proposed pipeline. Owners, tenants, and lessees of private land along the right-of-way would be notified in advance of construction activities that could affect their property, business, or operations.

Affected landowners would be notified prior to pre-construction staking, unless the landowner has previously requested otherwise. Following notification, a crew would stake the outside limits of the proposed construction right-of-way and additional temporary workspace (ATWS), the centerline of the pipeline and drainages, highway crossing, and access roads. Existing utility lines and other sensitive resources, such as streams, wetlands, and other sensitive biological or cultural resources areas, would be clearly staked or flagged in the field to prevent accidental disturbance or damage during pipeline construction. Where the Pomelo pipeline crosses high voltage lines, Pomelo would also evaluate the need for alternating current (AC) measures. Piping installed below grade may be coated for corrosion protection prior to lowering-in, and a cathodic protection system would be installed to protect underground piping.

Following the establishment of workspace boundaries, the construction right-of-way would be cleared of vegetation and debris. Land clearing would include removal of vegetation by mechanical means or by hand cutting within the right-of-way and temporary workspace (TWS) and would be kept to the minimum to allow for spoil storage, equipment operation, staging, assembly of materials, and all other activities required to safely construct the pipeline. For upland areas (not classified for agricultural production), rootstock would be left in TWS and ATWS to encourage natural revegetation. No trees would be affected during construction activities for the Pomelo Connector Pipeline.

The typical construction workspace would be limited to 100 feet in width, with 50 feet of permanent workspace and 25 feet of temporary workspace on either side of the permanent right-of-way on both the mainline and discharge pipeline. ATWS would be limited to the extent practicable to provide adequate workspace for road crossings, HDD, or conventional bore locations, access roads, turnarounds, utility crossings, and general maneuverability along the right-of-way.

The trench would be excavated by a backhoe or ditching machine to the proper depth to allow for burial of the pipe supports and pipeline. The area excavated for the pipeline trench would be deep enough to provide for approximately four feet of cover over the pipeline, deeper than required by the DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) minimum pipeline burial requirements (three feet minimum). Additional cover may be required in agricultural areas, waterbodies, canals, road crossings, or other areas as necessary to maintain the integrity of the pipeline. The pipe would be strung along the trench to allow the subsequent lineup and welding

operations of the pipeline to proceed efficiently. Should dewatering of the trench be required, water would be pumped to an off-right-of-way vegetated upland area (where practicable) and/or filtered through a filter bag or siltation barrier. Prior to lowering the pipe, the trench would be inspected for rocks and other debris to minimize debris damage to the pipe or its coating. The pipe would be lowered using side boom tractors by lifting complete pipeline sections off temporary supports and lowering into the trench.

Following lowering of the pipeline, the trench would be backfilled using bladed equipment or excavators and using screened fill materials for padding as necessary; suitable excavated subsoil material would be spread across the graded construction right-of-way, where applicable. The soil would be inspected for compaction and scarified as necessary. Revegetation would be completed in accordance with NRCS recommended seed mixes, rates, and dates. Any soil disturbance outside of the permanent seeding season would be mulched in accordance with the FERC Plan. The majority of the permanent right-of-way would be returned to pre-construction land uses.

Hydrostatic testing would test to confirm the pipeline and facilities' integrity before placing them into service. For the Pomelo Connector Pipeline, Pomelo intends to divide the pipeline testing into three sections, with each hydrostatic test section requiring approximately 1 million gallons of water. Source water for the Pomelo Project would be acquired from either a private well or municipal sources (no surface water) and pumped into the facilities. Water pressure within the pipeline would be increased with a high-pressure pump, and monitoring for the specified amount of time. At the completion of the hydrostatic test, the pressure would be removed from the section and the water released using forced air.

One wetland (along Petronila Creek) and three waterbodies would be crossed via HDD or bore within the Projects areas. The wetland would be crossed via HDD and would not be affected; therefore wetland-specific construction measures are not required. The three waterbodies are drainage ditches and would be crossed using bore techniques. To minimize the risk and impact of a release of drilling fluid should one occur, Pomelo would also implement an HDD Contingency Plan which, in the event a reduction or loss of drilling fluid circulation is detected, would include provisions for reducing fluid volumes and pressures or ceasing pumping immediately, containment and clean-up of drilling fluid that may have surfaced, appropriate notifications, and evaluation and sealing of the fracture.

Road crossings would generally be bored depending upon site-specific conditions. Should the open-cut method be utilized to cross a roadway, at least one lane of traffic would typically be kept-open in residential areas, and/or detours utilized in some areas as necessary. Steel plates would be available on-site to cover any open areas and to allow the passage of traffic, and traffic controls would be implemented as needed.

General Compressor Station Construction Procedures

The entire Petronila Compressor Station and Pomelo Compressor Station construction workspace would be rough graded if necessary to allow for safe passage of equipment and to prepare a work surface for installation activities. However, rootstock in upland areas would be left in temporary workspaces where possible to encourage natural revegetation. Some grading may be necessary at the existing Blessing Compressor Station. No grading is expected to be needed at the existing Mont Belvieu and Vidor compressor stations or Angleton Station.

Once the location of the Projects' facilities have been cleared and graded, excavation would begin for installation of foundations. Excavation required for the foundations would be performed as needed, and all backfill would be compacted in place. Excess soil would generally either be used on site or disposed of in an approved area off-site. The foundation area would be excavated and forms and reinforcing bars installed as necessary with high strength concrete poured to the appropriate levels. Rigid controls on concrete quality and installation procedures would ensure a suitable foundation is obtained. The reinforced concrete foundations for the major equipment would be properly cured to ensure design strength, and concrete pours would be randomly sampled to verify compliance with specifications.

Installation of the various piping systems would begin at about the same time as the foundation work. Trenches would be dug for the underground portions of the piping; the pipe would be welded, x-rayed, coated, placed in the trench; and the trench would be backfilled. Some portions of the station piping would be installed aboveground. Any aboveground piping would be installed on concrete or metal pipe supports and painted. Some of the piping, valves, and fittings are typically fabricated off-site and then transported to the site. New facility piping would be hydrostatically tested to ensure its integrity for the intended service and operating pressures.

Once the foundations have been completed and cured sufficiently, installation of the machinery for the compressor and control/auxiliary buildings would typically begin. This is a highly coordinated activity as the machinery and piping are all installed during the same time period. Various piping and electrical conduit systems would be connected once the machinery is set. Electrical wiring would be installed for power and instrumentation.

For the Petronila facility, Texas Eastern intends to utilize 45,000 gallons of municipal source water to hydrostatically test the new compressor station. About 24,000 gallons of on-site well water would be used to hydrostatically test the piping modifications at the existing Blessing Compressor Station; 12,000 gallons to hydrostatically test the additional piping modifications at the existing Mont Belvieu Compressor Station; and 1,000 gallons for the piping modifications at each of the existing

Angleton Station and Vidor Compressor Station. Hydrostatic test water would be discharged to well-vegetated and stabilized areas as practical, and Texas Eastern would maintain (at least) a 50-foot vegetated buffer from adjacent wetland and waterbody areas. Discharge would be regulated using energy dissipation devices, and sediment barriers, as necessary. The water discharged would also be sampled to document water quality at the time of discharge.

As the various systems and subsystems are completed, they would be tested and calibrated for proper operation. Use of new computerized systems for Texas Eastern's facilities would allow much of the testing to proceed before gas is received at new facilities. Actual start-up of the compressor unit would commence once the new facilities are tested and tied into the pipeline. Gas pressure piping at the compressor station would involve welded construction, except where connected to flanged or screwed components.

Controls and safety devices such as the emergency shutdown system, relief valves, and other protection and safety devices would be checked and tested. The new Projects' facilities would be operated on a trial basis after completion of piping and mechanical work to verify the operation of the safety and protective devices. The initial trial operation of the Projects' facilities would typically consist of several runs of short duration, over a several-day period.

Clean up, restoration, and stabilization of the Projects' site would be an ongoing process throughout construction and would be performed in accordance with Texas Eastern's E&SCP and FERC's Plan and Procedures. It is anticipated that most final stabilization would be complete prior to final testing and start-up of the compressor stations.

Environmental Compliance Inspection and Monitoring

To ensure that erosion and sediment controls are properly implemented, at least one Environmental Inspector (EI) would be designated for each of the Projects during active construction or restoration activities. The EIs' duties would comply with those contained in paragraph III.B (Responsibilities of the EI) of the FERC's Plan to ensure that Projects' construction is in compliance with all environmental conditions contained within the FERC Order and all other authorizations and permits. A Chief Inspector would also be employed by Pomelo for quality assurance and to ensure the Pomelo Project complies with mitigation measures. FERC staff would also conduct routine inspections during construction to determine compliance with any conditions of the Projects' facilities.

A.6. Land Requirements

The total Projects' land requirement including both temporary and permanent impacts associated with pipeline right-of-way, ATWS, aboveground facilities, and access

roads would be approximately 313.2 acres. Permanent impact areas (136.8 acres) would include the new maintained pipeline right-of-way, the new compressor stations and associated ancillary facilities, and new permanent access roads. Temporarily affected areas (176.3 acres) primarily consist of those areas necessary to facilitate construction, including the construction right-of-way, ATWS, and temporary access roads. Following the completion of construction activities, areas temporarily affected would be restored to pre-construction conditions. Table 2 provides a general summary of land requirements for the Projects' facilities.

Table 2. Land Requirements for Projects' Facilities

Facility	Land Affected During Construction (acres)[1]	Land Affected During Operation (acres)[2]
STEP		
Petronila Compressor Station	38.7	29.0
Blessing Compressor Station	39.4	11.6
Angleton Station	7.9	0.6
Mont Belvieu Compressor Station	19.1	2.4
Vidor Compressor Station	17.1	1.1
Subtotal	**122.2**	**44.7**
Pomelo Project		
Pomelo Connector Pipeline	171.4	82.3
Pomelo Compressor Station[3]	8.0	5.7
Discharge Pipeline	2.7	1.3
Aboveground Facilities (excludes compressor station)	2.7	1.9
Access Roads	6.2	0.9
Subtotal	**191.0**	**92.1**
Projects Total	**313.2[4]**	**136.8**

Notes:
[1] Land affected during construction is inclusive of operation impacts (permanent).
[2] Land affected during operation consists only of new permanent impacts.
[3] The Pomelo Compressor Station includes acreage for the contractor yard/contractor wareyard.
[4] Land affected includes approximately 2.86 acres of shared workspace between the STEP and the Pomelo Projects at the Texas Eastern Petronila Compressor Station.

Texas Eastern and Pomelo would use existing roadways to access the Petronila facility (County Road 26 and County Road 67), Blessing Compressor Station (Graff Road and an existing station driveway), Angleton Station (County Road 45), Mont Belvieu Compressor Station (Farm-to-Market Road 565 and an existing station driveway), and the Vidor Compressor Station (South Mansfield Ferry Road). Improvements to these roadways are not anticipated.

Altogether, Texas Eastern and Pomelo have identified a total of 10 non-public access roads that would require minor improvements to allow for construction equipment to safely access the Projects' sites. This includes one existing non-public access road for STEP that would require minor improvements and nine new non-public access roads for the Pomelo Connector Pipeline that require minor modifications. Pomelo also identified an additional six existing non-public access roads which may be improved in the future. Table 3 provides detailed information regarding the access roads.

Table 3. Non-Public Access Roads Proposed for Use for the Projects

Access Roads	Road Type	Proposed Use
STEP		
Access Road 1	Existing Dirt Road	TAR - Improvements during construction include use of timber mats to facilitate safe turning radii for construction equipment; no grading or fill material proposed. Design and construction considerations will be taken to minimize stormwater impacts to adjacent landowner's field.
Pomelo		
Access Road 1	New Dirt Road	PAR - Minor modifications include adding gravel entry/exit pads at road confluences; will be maintained for operations and maintenance.
Access Road 2	Existing Dirt Road	TAR - No improvements or modifications currently proposed, but may be improved in the future.
Access Road 2a	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.
Access Road 2b	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.
Access Road 2c	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.
Access Road 2d	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.
Access Road 3	Existing Dirt Road	TAR - No improvements or modifications currently proposed, but may be improved in the future.
Access Road 4	Existing Dirt Road	TAR - No improvements or modifications currently proposed, but may be improved in the future.
Access Road 5	Existing Dirt Road	TAR - No improvements or modifications currently proposed, but may be improved in the future.
Access Road 6	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.
Access Road 7	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.
Access Road 8	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.
Access Road 9	New Dirt Road	TAR - Minor modifications include adding gravel entry/exit pads at road confluences.

Table 3. Non-Public Access Roads Proposed for Use for the Projects

Access Roads	Road Type	Proposed Use
Access Road 10	Existing Dirt Road	PAR - No improvements or modifications proposed. PAR will be maintained for operations and maintenance and may be improved in the future.
Access Road 10a	Existing Dirt Road	PAR - No improvements or modifications proposed. PAR will be maintained for operations and maintenance and may be improved in the future.

Notes:
TAR = temporary access road
PAR = permanent access road

As shown in the table, timber mats, geotech fabric, and/or gravel entry/exit pads would be used to improve some of the proposed new/existing dirt access roads. Following installation of the proposed facilities, all timber mats and/or geotech fabric would be removed from the improvement area and all contours would be restored to pre-construction contours and conditions, including minor grading and seeding where appropriate.

A.7. Construction Schedule

Texas Eastern and Pomelo have requested that construction commence in 2017 with construction scheduled to last for about 12 months. The anticipated in-service date is expected in late 2018.

A.8. Future Plans and Abandonment

Pomelo would abandon all the capacity of the Pomelo Pipeline by lease to Texas Eastern upon the in-service date. However, Pomelo would continue to operate and maintain the pipeline. The facilities would be abandoned by Texas Eastern and Pomelo at the end of their useful life after obtaining the necessary authorizations. For any proposed future construction or abandonment, Texas Eastern and Pomelo would be subject to the approval of the FERC under Section 7(c) and 7(b) of the NGA, respectively.

A.9. Related Non-Jurisdictional Facilities

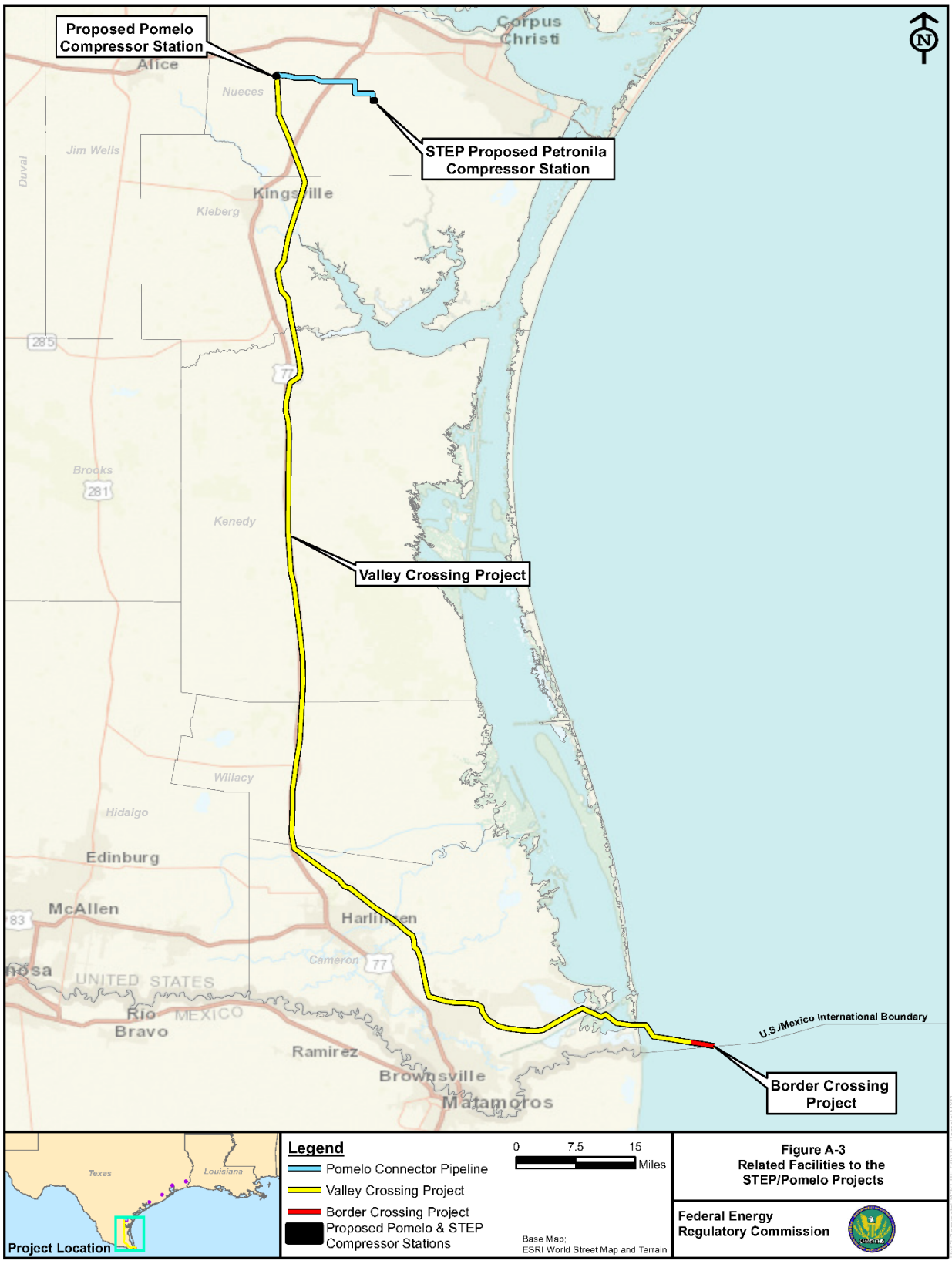
Occasionally, proposed projects have related facilities that do not come under the jurisdiction of the Commission. Non-jurisdictional facilities are those facilities that are related to the Project and are constructed, owned, and operated by others, but are not subject to FERC jurisdiction.

Texas Eastern has not identified any non-jurisdictional facilities associated with the STEP. The non-jurisdictional facilities for the Pomelo Project would include minor

facilities necessary to provide power, telephone, and water for the proposed Pomelo Compressor Station. The new compressor station would require the installation and connection to an electric powerline and communications line to serve the aboveground facility. Specifically, American Electric Power would replace approximately 1,200 feet of its existing single-phase electrical distribution line with a three-phase electrical distribution line to provide the necessary power for the compressor station. American Electric Power will be responsible for permitting, constructing, owning, and operating the new electric powerline. The new line would parallel an existing unnamed county road and will connect directly into the Pomelo Compressor Station. The replacement/upgrade of this line would occur before or simultaneously with the compressor station construction. The electric powerline is not FERC-jurisdictional, but is under the jurisdiction of the Public Utility Commission of Texas. It would cross privately owned land and may also be subject to local permit requirements. The typical right-of-way required to construct the electric powerline would be 50 feet wide, and Pomelo estimated it would require a total of approximately 0.55 acres of land disturbance, which could change depending on the final routing and design of the powerline. The Pomelo Compressor Station would also require the installation communications lines and equipment, which typically include a combination of standard cable, microwave radio, and/or satellite link for supervisory control and data acquisition (SCADA) and voice communications.

The impacts of these non-jurisdictional facilities within the compressor station boundaries are included in our impact assessment. The impacts associated with these non-jurisdictional utility lines outside of the compressor station boundaries are included in our cumulative impacts analysis (section B.10).

Overall, the Projects' facilities are intended to interconnect with the planned non-jurisdictional Valley Crossing System, a new (under construction) intrastate pipeline system planned (and currently under construction) by Valley Crossing Pipeline, LLC, located entirely within the state of Texas (map provided in Figure A-3). The Valley Crossing System consists of approximately 167 miles of 42- and 48-inch-diameter


Proposed Pomelo Compressor Station
STEP Proposed Petronila Compressor Station
Valley Crossing Project
Border Crossing Project
U.S./Mexico International Boundary
Corpus Christi
Alice
Nueces
Jim Wells
Duval
Kingsville
Kleberg
Brooks
Kenedy
Willacy
Hidalgo
Edinburg
McAllen
Harlingen
Cameron
UNITED STATES
MEXICO
Rio Bravo
Ramirez
Brownsville
Matamoros
Texas
Louisiana
Project Location
Legend
Pomelo Connector Pipeline
Valley Crossing Project
Border Crossing Project
Proposed Pomelo & STEP Compressor Stations
0 7.5 15
Miles
Base Map:
ESRI World Street Map and Terrain
Figure A-3
Related Facilities to the STEP/Pomelo Projects
Federal Energy Regulatory Commission

intrastate pipeline (traversing Nueces, Kleberg, Kennedy, Willacy, and Cameron Counties, Texas); a header system (Nueces Header) in Nueces County, near the Agua Dulce Hub; and related facilities including two compressor stations (one in Agua Dulce, Texas, and one near Brownsville, Texas), multiple meter stations, and ancillary facilities. These facilities extend from Nueces County to a point in the Gulf of Mexico in Texas State waters near the International Boundary between the United States and Mexico. According to the Spectra Energy/Enbridge webpage for the Valley Crossing Project, construction of this project commenced in April 2017 and has an anticipated completion date of October 2018.

The Valley Crossing System will transport natural gas intended to serve the country/Republic of Mexico (specifically, to supply the Comisión Federal de Electricidad [CFE], Mexico's State-owned utility) and to other shippers through interconnections with intrastate pipelines and delivery points in South Texas. The Valley Crossing System facilities are not under FERC's jurisdiction, but would be subject to the jurisdiction of the Railroad Commission of Texas (RCT), the state agency that regulates the oil and gas pipeline industry in Texas. The environmental review and permitting agencies for this project include the RCT, United States Army Corps of Engineers (USACE), Texas Commission on Environmental Quality, and the FWS. Where the Valley Crossing System connects with a segment of pipeline (called the Border Crossing Project) that crosses the International Boundary between the United States and Mexico, it is required to obtain an authorization from the Commission under Section 3 of the NGA. The Commission issued an EA for the Border Crossing Project on June 30, 2017, and the project is currently under review.

We received comments noting that because the Pomelo Project and STEP (which would be connected to the interstate Texas Eastern system) would connect physically to the Valley Crossing System, the Valley Crossing System should be considered an interstate pipeline subject to FERC jurisdiction and should also be evaluated in its entirety in this EA. The Valley Crossing System is an intrastate pipeline (wholly located within the State of Texas) regulated by the RCT. On September 15, 2016, RCT issued Valley Crossing a permit to operate its proposed system. Although the Commission has no authority to approve or deny the Valley Crossing System and no ability to require the avoidance or minimization of related impacts, we disclose the available resource impact information for the Valley Crossing System in the Related Facilities section of this EA (section B.11) to inform decision-makers, concerned citizens, and other stakeholders. Proximal segments of the Valley Crossing System are also considered in the Cumulative Impacts section of this EA.

The Valley Crossing System is being constructed using conventional industry techniques. The onshore portion of the Valley Crossing System is approximately 150 miles in length and is generally being installed within a 125-foot-wide construction right-of-way. Through wetlands, the construction right-of-way width is being reduced to 100

feet and, where necessary, Valley Crossing is using additional temporary workspace. Construction of the two compressor stations is occurring on approximately 135 acres of land, 45 acres of which will be permanently maintained. Following construction, Valley Crossing would maintain a 50-foot-wide permanent easement to operate the project. The offshore portion of the Valley Crossing System is approximately 15 miles in length. In total, approximately 2,500 acres of land will be affected by the construction of the Valley Crossing System and approximately 1,000 acres will be permanently maintained.

To minimize impacts on waterbodies, Valley Crossing will implement measures described in its Erosion and Sediment Control Plan. Valley Crossing will also implement measures described in its Spill Prevention, Containment, and Countermeasures Plan.

In wetlands, during operations only a 10-foot-wide corridor centered over the pipeline will be regularly maintained. Additionally, trees over 15 feet in height will not be permitted within 15 feet of the pipeline in wetlands.

A.10. Permits and Approvals

Texas Eastern and Pomelo would construct the Projects in accordance with all applicable federal, state, and local regulatory requirements. Table 4 lists all federal, state, and local environmental permits and approvals associated with the Projects.

Table 4. Permits and Approvals Required for the Projects

Agency	Permit/Consultation	Status
Federal		
U.S. Department of Defense, Army Corps of Engineers	Authorization for activities that would occupy navigable waters under Section 10 of the Rivers and Harbors Act of 1899 (33 USC § 403) Authorization to discharge dredged or fill materials into waters of the United States under Section 404 of the Clean Water Act (CWA) (33 USC § 1344).	STEP - Not Applicable Pomelo - Determination received April 6, 2017
United States Department of the Interior, U.S. Fish and Wildlife Service	Consultation under Section 7 of the Endangered Species Act; the Migratory Bird Treaty Act; and the Fish and Wildlife Coordination Act (16 USC § 661 et seq.).	STEP – Response received April 23, 2015; Final response received September 10, 2015; An updated species list was obtained on May 8, 2017 and coordination is ongoing Pomelo - Concurrence received March 14, 2017

Table 4. Permits and Approvals Required for the Projects

Agency	Permit/Consultation	Status
Texas		
Texas Commission on Environmental Quality Division of air Pollution Control	State Minor Source Permits – By Rule applications (for the Pomelo & Petronila Compressor Station)	STEP – Permit issued January 24, 2017 Pomelo – Permit received March 20, 2017
	Oil and Gas Standard Permit Revision & Unregistered Permit by Rule; State Operating Permit 1 (Blessing Compressor Station)	STEP – Permit issued November 17, 2015 State Operating Permit to be obtained prior to operation Pomelo – N/A
	Oil and Gas Standard Permit Revision (Mont Belvieu Compressor Station)	STEP – Permit issued April 27, 2017 Pomelo – N/A
	Unregistered Permit by Rule (Angleton Station)	STEP - Permit documentation completed December 30, 2016. No agency response required Pomelo – N/A
	Oil and Gas Standard Permit Revision (Vidor Compressor Station)	STEP – Issuance anticipated October, 2017.
Texas General Land Office	Consistency with the Texas Coastal Management Program under the Coastal Zone Management Act	STEP – Consistency review or confirmation of non-applicability required Pomelo - Consistency review or confirmation of non-applicability required
Texas Historical Commission	Section 106 of the National Historic Preservation Act (NHPA) – review, consultation, and comment on cultural resources studies and mitigation plans.	STEP – Response received April 20, 2015 Pomelo – Concurrence received March 16, 2017
Texas Parks and Wildlife Department	Review and consultation regarding fish and wildlife recreational resources/habitat.	STEP – Response received May 18, 2015; Updated correspondence in May 2017 and coordination is ongoing Pomelo – Concurrence received March 9, 2016
Railroad Commission of Texas	National Pollutant Discharge Elimination System (NPDES) Hydrostatic Test Water Discharge Permit	Permit applications to be filed 2nd Quarter 2018

SECTION B – ENVIRONMENTAL ANALYSIS

Construction and operation of the Projects 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 to five years. Long-term impacts would eventually recover, but require more than five years. Permanent impacts are defined as lasting throughout the life of the Projects.

B.1. Geology

The following subsections discuss geological resources and impacts for the STEP and Pomelo Project.

B.1.1. Geologic Setting

The Projects are located within the Gulf Coast Plain Division of the Coastal Plain Physiographic Province of the United States (United States Geological Survey [USGS], 2008). The Coastal Plain Physiographic Province consists primarily of relatively flat, low lying areas which extend between 30 and 60 miles inland along the southern and eastern coasts of Texas. These areas consist of young deltaic sands, silts, and clays which erode to nearly flat grasslands.

The topography of the Projects areas is relatively flat with elevations ranging from 19 to 82 feet above mean sea level. There are no locations within the Projects areas where depth to bedrock is less than six feet below the ground surface.

The Pomelo Connector Pipeline and four of the five STEP facilities are located within the Beaumont Formation (which has been divided into areas of predominantly sand, and areas of predominantly clay); the Vidor Compressor Station is atop the Deweyville Formation.

The Beaumont Formation (areas predominantly sand) deposits includes stream channel, point-bar, crevasse-splay, and natural levee ridge deposits, and clayey fill in abandoned channels. Along the coast, this formation includes marine delta-front sand, lagoonal clay, and near-shore marine sand beneath and landward of bays. The average thickness of this formation is three to ten meters on outcrops and thickens southeastward in the subsurface to more than 100 meters (USGS, 2017a).

The Beaumont Formation (areas predominantly clay) deposits are dominantly clay and mud and characterized by low permeability. This formation contains beds and lenses of fine sand, decayed organic matter, and buried organic-rich, oxidized soil zones that contain calcareous and ferruginous nodules. Thickness along the north edge of the

outcrop is approximately five to ten meters and thickens southward in the subsurface to more than 100 meters thick (USGS, 2017a).

The Deweyville Formation deposits include sand, silt, clay, and gravel with locally indurated calcium carbonate (caliche). This formation includes point bar, natural levee, stream channel and sand dune deposits, locally. The surface shows relict meanders of much larger radius of curvature than those of present streams. The formation is greater than 15 meters thick (USGS, 2017a).

B.1.2. Mineral and Petroleum Resources

Mineral resources within 0.5 mile of the Projects areas consist of oil and natural gas, salt, anhydrite, clay, and aggregate materials. No current or active surface mines, quarries, or subsurface mines have been identified within 0.5 mile of the Projects (USGS, 2017b). Twenty-two oil/gas wells have been identified within 0.5 mile of the STEP facilities and 69 oil/gas wells have been identified within 0.5 mile of the Pomelo Connector Pipeline. No oil/gas wells are located within or immediately adjacent to the proposed Projects' workspaces with the nearest active oil/gas wells located approximately 245 feet (0.04 mile) from the Pomelo Connector Pipeline centerline and approximately 0.1 mile from the construction workspaces at the Blessing Compressor Station. Therefore, impacts on oil/gas wells are not anticipated to occur as a result of construction or operation of the Projects' facilities.

B.1.3. Geologic Hazards

Geologic hazards are naturally occurring physical conditions that, when active, can impact environmental features and man-made structures and may present public safety concerns. Such hazards typically include seismicity, faulting, soil liquefaction, landslides, subsidence, flooding, and volcanism.

Seismicity

Seismic risk can be quantified by the motions experienced by the ground surface or structures during a given earthquake as expressed in terms of g (the acceleration due to gravity). The USGS has developed a series of maps for the entire United States that describes the likelihood for shaking of varying degrees to occur in a given area. The hazard potential is shown as peak ground acceleration in percent of g for an earthquake with a two percent probability of exceedance in 50 years. Values for the entire Projects' area range from 0-2 percent g (Petersen et al., 2011).

Since 1970, two earthquakes with a magnitude of 4.0 or higher on the Richter scale have occurred within 100 miles of the Projects (USGS, 2017c), and one earthquake (magnitude 3.9) occurred within 5 miles of the Projects (approximately 3 miles southwest of the Pomelo Connector Pipeline) (USGS, 2017c).

Based on this information there is a low probability that the Projects' activities would be adversely affected by risks associated with seismicity in the region.

Faulting

The nearest fault to any of the STEP workspaces is 6.3 miles away and is not expected to impact the STEP activities.

The Pomelo Connector Pipeline is underlain by gulf-margin normal faults which are classified as Class B faults. These faults consist of a belt of mostly seaward facing normal faults. The gulf-margin normal faults in Texas are assigned as Class B structure due to their low seismicity and because they may be decoupled from underlying crust, making it unclear if they can generate significant seismic ruptures that could cause damaging ground motion (Crone, 2000). These faults are not classified as active or potentially active faults (active fault: surface displacement within Holocene time; potentially active fault: surface displacement within Quaternary time).

Based on the distance from STEP facilities and low seismicity associated with the faults underlying the Pomelo Connector Pipeline, it is unlikely that the Projects' facilities would be adversely affected by these hazards.

Subsidence

Most of the subsidence in the Texas coastal region has been caused by the withdrawal of groundwater and by production of oil, gas, and associated groundwater; incidences of land surface subsidence in Texas are generally less than 0.5 feet (Ratzlaff, 1980). Additionally, there are no known areas of karst terrain or significant subsidence within or near the Projects areas. Subsidence is not a significant concern to the construction, operation, or maintenance of Projects' facilities.

Flooding

The STEP facilities are located within the Federal Emergency Management Agency (FEMA) Flood insurance Rate Maps Zone B and Zone X; Zone B is between the limits of the Special Flood Hazard Area (SFHA) (100 year flood) and the 0.2 percent annual chance (500 year) flood area and Zone X is outside of the 0.2 percent annual chance flood area (FEMA, 2017). Because the project locations are outside of the SFHA, flooding is not anticipated to occur within the Projects areas.

The Pomelo Connector Pipeline is located in the FEMA Flood Insurance Rate maps Zone C and Zone A4; Zone C is outside of the 0.2 percent annual chance flood, but Zone A4 is within SFHA (FEMA, 2017). The Pomelo Connector Pipeline would be placed at a minimum depth of four feet to the top of the pipe to protect it from flooding and stream scour. Therefore, flooding is not anticipated to affect the Projects' facilities.

Conclusion – Geologic Hazards

Due to the low probability of seismic activity, the lack of known karst terrain, and aboveground facilities being located outside the SFHA, it is not likely that the Projects would be adversely affected by geologic hazards.

B.1.4. Blasting

The Projects areas are underlain by unconsolidated alluvium, predominantly sand, silt, and clay, with few gravels. In addition, depth to bedrock is greater than six feet in all Projects areas. The lack of well-indurated sediments and the depth to bedrock precludes the need for blasting during construction activities.

B.1.5. Paleontology

No paleontological resources have been identified within the Projects areas through a desktop study of available reports. In addition, the project does not include any near surface fossiliferous bearing rock formations. If rock is encountered, the Environmental Inspector would make a preliminary assessment of the strata and if fossils appear to be present. If fossils are found, Pomelo would notify FERC and the landowner and implement the Paleontological Resource Plan. Due to the lack of fossiliferous formation and proposed procedures, construction and operation of the Projects would likely have no adverse impacts on paleontological resources.

B.2. Soils

Soil associations and soil series and map unit descriptions that occur within the Projects areas were identified using the USDA NRCS Web Soil Surveys for Nueces, Matagorda, Chambers, Brazoria, and Orange Counties, Texas (NRCS 2015a). Important attributes of the soil map units that would be crossed by the Projects include erosion potential, fertility, and drainage characteristics.

B.2.1. Existing Soil Characteristics and Limitations

Soil types encountered by the Projects were assessed to identify severe erosion potential soils, high compaction potential soils, poor revegetation potential soils, and excessively drained soils. These specific soil attributes were selected based on the attributes' potential to cause construction limitations or hazards. Table 5 identifies the amount of soils, in acres, with important attributes within the Projects areas. No soils identified as being susceptible to wind or water erosion occur within the limits of the Projects.

Construction activities that could affect soils include clearing and grading, trenching, backfilling, and restoration along the pipeline right-of-way and at aboveground facility sites. Potential impacts on soils could include compaction, erosion, mixing of

topsoil and subsoil, and a decrease in soil productivity. Texas Eastern and Pomelo would implement measures identified in Texas Eastern's E&SCP and as required by FERC's Plan and Procedures, respectively, to limit impacts on soil resources, and for restoration in agricultural and residential areas, including topsoil segregation, backfilling practices, and reseeding.

Due to reported soil thickness (at least 80 inches thick) underlying the Projects areas, bedrock is not likely to be encountered during construction. None of the soils present in the proposed Projects areas indicate that significant construction limitations or hazards are likely to occur.

Prime/Unique Farmland

Prime farmland soils are defined by the USDA as having the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are available for these uses. It has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods (NRCS, 2015b).

The USDA also identifies unique farmland and farmland of statewide agricultural importance. Unique farmland areas are identified as soils that support specific high-valued foods, but these soils require proper management. Farmland of statewide importance soils are valuable for crop production, but typically require more management and have lower yields than prime farmland soils (NRCS, 2015b).

Texas Eastern and Pomelo would work with landowners in the areas with prime and statewide or local important farmland to ensure that proper restoration of affected agricultural area is implemented, including topsoil segregation, soil de-compaction, and reseeding in compliance with specifications. Prime farmlands and farmlands of statewide and local importance occurring within the pipeline right-of-way would be returned to pre-construction uses following construction and therefore would not be permanently affected by the Projects. Table 5 contains a summary of the prime farmland soils associated with the Projects' facilities.

For the STEP, up to 83.5 acres of prime farmland could be temporarily disturbed at the existing compressor stations during construction, and 15.7 acres of prime farmland would be permanently lost for operational use. However, all proposed facility modifications at the existing compressor stations (Blessing, Mont Belvieu, Vidor, and Angleton Station) would occur inside the existing fence lines. The proposed Petronila Compressor Station could disturb up to 24.5 acres of prime farmland during construction, of which 20.8 acres would be permanently lost for operational use. For the Pomelo Connector Pipeline, approximately 157.6 acres (12.7 miles) of prime farmland soils and

Table 5. Summary of Important Soil Attributes Associated with Projects' Facilities

Facility	Prime/ Statewide Importance Farmland (acres)	Compaction Prone [1] (acres)	Highly Erodible (wind and water) (acres)	Shallow Bedrock (acres)	Construction (Extent) (acres)	Operation (Extent) (acres)
STEP						
Existing Compressor Stations	83.5	24.5	0.0	0.0	83.5	15.7
Petronila Compressor Station	24.5	20.5	0.0	0.0	38.7	29.0
Pomelo Project						
Pomelo Connector Pipeline[1]	157.6 / 1.5	158.1	0.0	0.0	167.9	167.9
Pomelo Compressor Station	8.0	1.8	0.0	0.0	8.0	5.7
Discharge Pipelines[1]	2.7	2.7	0.0	0.0	2.7	2.7
Launcher/Valve/Meter Sites	2.1	2.1	0.0	0.0	2.7	1.6
Permanent Access Roads	0.8	0.2	0.0	0.0	0.9	0.9
Temporary Access Road	4.7	4.5	0.0	0.0	5.7	0.0

Notes:
1 Compaction prone soils include those ranked as high, or those soils with very poorly drained and poorly drained drainage classes.

Source: NRCS 2015a

approximately 1.5 acres (0.2 miles) of soils designated as local importance would be crossed. The proposed Pomelo Compressor Station could disturb up to 8.0 acres of prime farmland during construction, of which 5.7 acres of prime farmland would be permanently lost to operational use. About 0.8 acre (0.3 miles) of prime farmland or soils with statewide designation would be affected by permanent access roads. Approximately 4.7 acres (2.9 miles) of prime farmland soils, would be affected by temporary access roads.

Texas Eastern and Pomelo would segregate topsoil as described in the Texas Eastern's E&SCP and as required by FERC's Plan and Procedures, respectively, to ensure continued productivity of these farmlands as well as USDA designated farmland soils. Measures for maintaining soil fertility in active agricultural lands temporarily affected by trenching and backfilling activities that may be used are summarized as follows:

- The entire topsoil layer, up to a maximum depth of 12 inches, would be segregated during grading and stockpiled then reapplied over the area of disturbance as the surficial soil layer. Topsoil segregation would maintain surface horizons with higher organic matter content.

- The topsoil and subsoil would be tested for compaction at regular intervals in agricultural lands.

- If drain tiles are encountered in agricultural lands, flow would be maintained in the drainage systems during construction.

- If irrigation systems are encountered in agricultural lands, flow would be maintained during construction to the extent possible, and any damage would be repaired.

Due to the STEP facilities being constructed within existing Projects areas and the fact that the Pomelo impact takes place within Nueces County which has 362,697 acres of prime farmland, these Projects would not result in substantial impacts to prime farmland.

Compaction Prone Soils

Soil structure and compaction can inhibit a particular soil type's ability to hold water and the ability for vegetation to root. Compaction prone soils in the project area are those soils with a surface texture of sandy clay loam or finer and a drainage class of somewhat poorly drained, poorly drained, or very poorly drained. For the STEP, the majority of the soils within the existing compressor stations are classified as moderately well-drained to well-drained (typically upland soils). Thus, damage to soil structure or

soil compaction is not expected in the majority of upland soils within the existing compressor stations. However, the League clay found at the Mont Belvieu Compressor Station is a compaction prone soil, meaning that it is somewhat poorly drained and is characterized by sandy clay loam or finer texture; 19.1 acres of League clay are within the construction footprint. For the Pomelo Project, compaction prone soils would be encountered in the following amounts: about 12.6 miles crossed by the pipeline; the proposed Pomelo Compressor Station construction footprint contains about 1.8 acres; the launcher/valve/meter site construction footprint contains about 2.1 acres; permanent access roads cross 0.4 mile, and temporary access roads cross 2.8 miles.

Areas with higher potential of compaction are typically poorly drained soils at lower elevations. To the extent practicable, Texas Eastern and Pomelo would avoid construction during periods of heavy rainfall, snowmelt, or unusual soil saturation. Grading to restore natural site contours and repair rutted areas would be completed prior to final revegetation seeding and mulching, which would initiate natural restoration of soil structure and bulk density. Agricultural land would be tested for compaction and treated by plowing topsoil layers or other means, as needed. Given these measures, we conclude that soil structure and compaction should not be adversely affected by Project-related activities.

B.2.2. Poor Revegetation Potential Soils

Soil characteristics are favorable for successful revegetation of the Projects areas. The ability of soils within the Projects areas to support successful revegetation was determined by NRCS series descriptions and county soil surveys. All soils within the Projects areas are rated between very poorly drained and well drained, are sloped less than 8 percent, have a Wind Erosion Group rating above 3, and have a "slight" water erosion potential, therefore, revegetation concerns are not expected in association with this Project. However, Texas Eastern and Pomelo would promote soil revegetation through the implementation of Texas Eastern’s E&SCP and FERC’s Plan and Procedures, respectively.

Standard revegetation measures include fertilizer and pH amendments (except in wetlands), seedbed preparation, use of a proven seed mix, consideration of seasonal constraints, and mulch application. Where necessary, erosion control fabric or matting would be used on steep slopes to ensure that these soils are successfully revegetated.

With implementation of Texas Eastern’s E&SCP and FERC’s Plan and Procedures, we conclude that reestablishment of vegetation should be successful, and impacts would be minor and temporary.

B.2.3. Shrink-Swell Potential

Soil expansion occurs when soils consisting primarily of clay and silt expand as a result of increased moisture content, and shrink upon drying. Expansion and shrinking of soils due to moisture fluctuations can cause damage to concrete slabs, foundations, and other confining structures. Shrink-swell potential is the relative change in volume to be expected with changes in moisture content, measured as the linear extensibility percent.

Shrink-swell soils are only a concern where there are building foundations. Based on review the Soil Surveys of Nueces, Chambers, Brazoria, Matagorda, and Orange Counties, Texas (NRCS, 2015a), the construction and operational areas for the proposed Petronila and Pomelo compressor stations overlie soils with high shrink-swell potential. Construction on shrink-swell soils requires special design and/or construction techniques or maintenance to mitigate for potential damage to foundations, the most basic of which is proper drainage. Texas Eastern and Pomelo would employ proper engineering of the building foundations in accordance with applicable federal, state, and local building codes and standards to mitigate the potential damaging effects from these soils.

Clearing, grading, and movement of heavy equipment could increase erosion and result in transport of eroded sediments into wetlands and waterbodies. To minimize erosion during construction, Texas Eastern and Pomelo would implement the measures in Texas Eastern's E&SCP, and FERC's Plan and Procedures, respectively. Texas Eastern and Pomelo would install and maintain erosion and sedimentation controls within and at the limits of the Project's workspaces. Temporary erosion controls include hay bales and silt fence immediately following land clearing, or before clearing in sensitive areas. Texas Eastern and Pomelo may install permanent erosion control devices such as slope breakers to minimize erosion during construction of the Projects. Following construction, Texas Eastern and Pomelo would restore original surface contours and plant recommended vegetation seed mixes to stabilize workspace areas following initial restoration. We do not anticipate that the construction and operation of the Projects would result in any significant impacts from erosion and sedimentation.

B.2.4. Inadvertent Spills or Discovery of Contaminants

Soil contamination may result from at least two sources: hazardous material or fuel spills during construction; and/or those occurring prior to construction in pre-existing contaminated areas that are encountered during construction. During construction, contamination from accidental spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils. The effects of such contamination are typically minor because of the low frequency and volumes of spills and leaks. Texas Eastern and Pomelo have developed SPCC Plans that specify cleanup procedures in the event of soil contamination from spills or leaks of fuel, lubricants, coolants, or solvents. Texas Eastern, Pomelo, and its contractors would use the SPCC Plans to minimize

accidental spills of materials that may contaminate soils, and to ensure that inadvertent spills of fuels, lubricants, or solvents are contained, cleaned up, and disposed of as quickly as possible and in an appropriate manner.

Based on a review of Texas Commission on Environmental Quality (TCEQ) data (TCEQ 2015, 2017) and EPA Toxic Release Inventory data (EPA 2015, 2017), no potentially contaminated sites were identified within the Projects areas. In the event that contaminated media is discovered during construction, Texas Eastern and Pomelo would notify the FERC, TCEQ, and applicable state agencies, and work in the area would typically be halted until the type and extent of the contamination is determined. As described in Pomelo's Unanticipated Hazardous Materials Management Plan, TCEQ would be contacted to report the area of potential contamination and to receive TCEQ guidance prior to commencing any further disturbing activities. If directed by TCEQ, TCEQ procedures would be followed to determine if the petroleum release is subject to Texas Risk Reduction Program.

The type and extent of contamination would determine the appropriate mitigation for these areas and mitigation would be conducted in accordance with applicable state and federal regulations. We conclude that the potential for significant contaminated soil impacts is unlikely.

Conclusion – Soils

With implementation of Texas Eastern's E&SCP and FERC's Plan and Procedures, restoration of original surface contours and re-establishment to stabilize workspace areas, we do not anticipate that the construction and operation of the Projects would result in erosion and sedimentation or effects from contaminated soils.

B.3. Water Resources and Wetlands

B.3.1. Groundwater Resources

STEP

There are no EPA sole source aquifers in the vicinity of the STEP. The Gulf Coast aquifer, which underlies the Projects areas, is the principal source of groundwater for Nueces, Matagorda, Chambers, Brazoria, and Orange Counties (USGS, 2005). The Texas Water Development Board (TWDB) designated nine aquifers, including the Gulf Coast Aquifer, as major aquifers in the State (TWDB, 2011).

The closest public water supply to the proposed Petronila Compressor Station is the Robstown Reservoir, located approximately 7.2 miles to the north. The closest private well to the proposed Petronila Compressor Station is 0.9 mile to the southeast (Texas Commission on Environmental Quality [TCEQ], 2014a). The closest public

water supply to the Blessing Compressor Station is a surface intake 4.0 miles to the north and the closest private well is on the Blessing Compressor Station site owned by Texas Eastern (TWDB, 2014). The closest water supply to the Mont Belvieu Compressor Station is located 0.7 mile to the southwest (TCEQ, 2014a). The closest private water supply to the Angleton Station is 1.6 miles to the west and the closest groundwater well to the existing Vidor Compressor Station is located 1.8 miles to the northwest (TCEQ, 2015b). No additional private wells are located within 0.5 mile of the Project components.

The TCEQ implements a voluntary Source Water Protection program (TCEQ, 2014b). The workspaces within the Mont Belvieu Compressor Station are located within three Source Water Protection Areas. As only limited construction-related surface disturbance would occur at the existing Mont Belvieu Compressor Station, impacts to these Source Water Protection Areas are not anticipated to occur. The remaining STEP workspaces are not located within a Source Water Protection area (TCEQ, 2015b). Based on the TCEQ review of source water protection areas (TCEQ, 2015b), Texas Eastern does not anticipate encountering contaminated groundwater during construction. If contaminated groundwater would be encountered during construction activities, Texas Eastern would implement measures in its E&SCP.

Accidental spills of fuels, lubricants, and other petroleum products could occur during construction activities. Texas Eastern would not conduct refueling activities and storage of hazardous liquids within 200 feet of all private wells and 400 feet of all municipal or community wells. Texas Eastern also prepared a Spill Prevention, Control, and Countermeasure (SPCC) Plan, which includes spill avoidance measures as well as measures to contain and clean up materials in the event of a release.

With the implementation of measures described in its E&SCP and SPCC Plan, we conclude that impacts on groundwater resources would be avoided or minimized.

Pomelo Project

The closest public drinking water source is 4.0 miles from the Pomelo Project. Three private wells are located within 150 feet of the Pomelo Project area (Table 6).Table 6

Table 6. Water Supply Wells within 150 Feet of Projects' Work Areas

Project and Facility	MP	Latitude	Longitude	Well Type	Well ID	Well Depth (feet)	Approx. Distance from Construction Workspace
Pomelo Mainline	3.5	27.7178	-97.6686	Domestic	8319205	322	113
Pomelo Mainline	10.3	27.7392	-97.7603	Domestic	8318301	192	63
Pomelo Mainline	4.3	27.7285	-97.6682	Domestic	83190203	170	0

No public wells or natural springs are located within 150 feet of the Pomelo Project area. According to TCEQ, there are no source water protection areas within 1 mile of the Pomelo Project area (TCEQ, 2016).

The Pomelo Project is not anticipated to adversely affect the quality or quantity of groundwater. Pomelo's SPCC Plan would be implemented to avoid and minimize potential Project impacts on groundwater resources. The SPCC Plan includes protocols to manage hazardous materials, prevent spills, and mitigate impacts in the event of a spill. Protocols specific to the SPCC Plan include the measures described below.

- Refueling and storage of hazardous substances would be prohibited within 200 feet of private wells, within 400 feet of municipal wells, and within 100 feet of streams. Restricted activities within these buffers would also include burning debris, discharging water from excavations, and refueling and maintaining equipment.
- Construction equipment would not be left unattended, parked, or stored in the buffer area.
- Disturbed areas would be seeded and mulched in accordance with the FERC's Plan and Procedures.
- No overnight parking, fuel storage, fuel transfer, oil change, or hydraulic fluid additions would occur within 100 feet of waterbodies or wetlands.
- The EI would ensure that protective measures are in place. If previously unidentified water wells are located within workspaces during construction, Pomelo would narrow the work area or right-of-way, where possible, to avoid the well; or would surround the well with safety fence to protect the well.
- Pomelo would coordinate with landowners regarding pre- and post-construction sampling of any water wells that are found within 150 feet of the construction workspaces. If necessary, Pomelo would work with the landowner to identify, correct, or mitigate any impacts, as appropriate. Temporary water supplies would

be provided to any affected homeowners in the event no other potable water supply is available. Pomelo would compensate any affected farmer(s) for revenue lost due to reduced livestock or crop yields; however, Pomelo would not provide temporary water supplies for crops.

Based on the measures discussed above, we conclude that the Projects would not have a significant impact on groundwater.

B.3.2. Surface Water

STEP

The STEP would be located within five watersheds defined at the 8-digit hydrologic unit code (HUC) (USEPA, 2012a). The proposed Petronila Compressor Station site is within the Baffin Bay Watershed (HUC-8 12110205). The existing Blessing Compressor Station is within the East Matagorda Bay Watershed (HUC-8 12100401). The existing Mont Belvieu Compressor Station is within the Lower Trinity Watershed (HUC-8 12030203). The existing Angleton Station is within the Austin-Oyster Watershed (HUC-8 12040205). The existing Vidor Compressor Station is within the Lower Neches Watershed (HUC-8 12020003).

Seven man-made, ephemeral, drainage features are located within the STEP Project area, including four ditches within the Mont Belvieu Compressor Station staging area and three ditches within the Vidor Compressor Station staging area. Based on field surveys conducted in 2014, no waterbodies with perceptible flow occur within the proposed construction or operational footprint. The seven ditches were determined to be non-jurisdictional under Section 404 of the Clean Water Act. They were classified as non-flowing linear features absent of an Ordinary High Water Mark. Although the seven drainage features occur within the boundary of the proposed staging areas, no impacts are anticipated to occur during construction or operation of the proposed facilities. If necessary, Texas Eastern would cross the drainage features with timber mats to avoid construction related impacts.

The drainage features in the STEP Project area are not identified as sensitive surface waters; therefore, no impacts on waterbodies of concern are anticipated to occur. Also, no potable water intakes are located within 1-mile of the STEP workspace areas (TCEQ, 2015b).

Texas Eastern would minimize the potential for impacts such as sedimentation to surface waters offsite by implementing the measures in its E&SCP. We received a comment from an adjacent landowner regarding poor drainage from the proposed Petronila Compressor Station site's existing dirt access road. Texas Eastern has committed to addressing this landowner's concerns and would take into consideration

drainage in designing and constructing improvements to the existing access road. Therefore, we conclude that the STEP Project would not have a significant impact on surface waters.

Pomelo Project

The Pomelo Project occurs within the Baffin Bay Watershed (HUC-8 12110205). The Project would cross three intermittent, man-made, drainage ditches and one intermittent stream identified as Petronila Creek. These waterbodies are listed in Table 7.

Pomelo conducted a wetland and other Waters of the United States field delineation in 2016. Results were reported to the USACE with a preliminary jurisdictional determination request. The Pomelo Project would avoid direct impacts on surface waters by crossing the four waterbodies via trenchless construction methods or via a timber mat for the access road crossing. The USACE determined that the Pomelo Project would not require a Clean Water Act Section 404 permit.

To minimize the potential for sediment transport, ATWS have been sited at least 50 feet from identified wetlands or waterbodies. Indirect effects caused by turbidity and sedimentation would be further minimized through Pomelo's implementation of erosion and sedimentation controls and FERC's Plan and Procedures. Waterbody buffers would be clearly marked in the field until construction-related ground disturbance is complete. Following construction, disturbed areas would be restored to pre-construction contours.

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; 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. The nearest surface water intake occurs approximately 6.2 miles northeast of the Pomelo Project (TCEQ, 2016). No National Wild and Scenic Rivers have been identified within the Baffin Bay Watershed (USGS, 2016).

Petronila Creek Segment 2204 is listed as impaired due to total dissolved solids (TDS), chloride, and sulfates. A total maximum daily load report was developed in 2007 to address TDS, chloride, and sulfate.

Table 7. Waterbodies Crossed by the Pomelo Project

Project	Facility	MP Begin	MP End	Waterbody Name - Type	Crossing Length (ft)	State Water Quality Classification	Designated Uses and/or Fishery Type	Crossing Method
Pomelo Project	Mainline Pipeline	2.52	2.52	Ditch #02	11	N/I	NA	Bore
	Access Road	2.51	2.52	Ditch #02	29	N/I	NA	Timber Mat
	Mainline Pipeline	5.98	5.99	Ditch #03	16	N/I	NA	Bore
	Mainline Pipeline	7.99	7.99	Ditch #04	19	N/I	NA	Bore
	Mainline Pipeline	10.46	10.48	Petronila Creek - Stream	83	Impaired 303(d)	Recreation and Intermediate Aquatic Life/ Warm Water	HDD

The Pomelo Project would avoid impacts on water quality in Petronila Creek by using the HDD construction crossing method. Pomelo would conduct waterbody construction activities in accordance with FERC's Plan and Procedures. In addition, the Pomelo Project would adhere to its SPCC Plan. These mitigation efforts, along with construction best management practices, would be strictly enforced by the EI during construction to avoid and minimize impacts on waterbodies and their adjacent wetlands and/or riparian buffers. Consultation with TCEQ on May 9, 2017 confirmed that no additional mitigation measures or BMPs are recommended or required.

Using the HDD crossing method avoids potential impacts on waterbodies, unless an inadvertent release of drilling fluid occurs directly or indirectly into the waterbody. Drilling fluid consists of nontoxic materials including primarily water and bentonite clay, and would be used to remove the cuttings from the borehole, stabilize the borehole, and act as a lubricant and coolant to the drill. Water would be obtained from a nearby water source or trucked to the drilling site (see subsection B.3.3. below regarding hydrostatic testing). Although drilling fluid is not a hazardous material, an inadvertent return in the water could affect fisheries or other aquatic organisms by increasing turbidity, 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). Pomelo would also implement the measures identified in its HDD Contingency Plan to minimize the risk and impact of a release of drilling fluid should one occur. These measures include:

- reducing fluid volumes and pressures or ceasing pumping immediately in the event a reduction or loss of drilling fluid circulation is detected;
- containing and cleaning up any drilling fluid that has surfaced;
- notifying the FERC, USACE, Chief Inspector, EI and other applicable agencies; and
- evaluating the best method to seal the fracture

We conclude that use of the HDD Contingency Plan will minimize impacts in the unlikely event of an inadvertent release into water resources.

B.3.3. Hydrostatic Testing

Hydrostatic testing involves filling the pipeline facilities with water and pressurizing the pipeline facilities above their maximum allowable operating pressure.

STEP

Texas Eastern would hydrostatically test the pipelines associated with the Blessing, Mount Belvieu, and Petronila Compressor Stations, as described in section A.5 of this EA.

Texas Eastern would minimize impacts from the discharge of the hydrostatic test water by using measures described in the STEP Project specific E&SCP. The hydrostatic test water discharge locations at the Blessing, Mont Belvieu, and Petronila Compressor Stations would occur within temporary workspaces and in well-vegetated and stabilized areas. If adequate discharge buffers are not available, sediment barriers or other erosion control devices would be installed to prevent hydrostatic test water from entering federally-jurisdictional surface waters. The discharge rate would be 200 gallons per minute or less and would be regulated using energy dissipation devices.

For the reasons discussed above, we conclude impacts on surface water resources would be minimized during hydrostatic testing.

Pomelo Project

Pomelo would submit a final hydrostatic test plan to FERC for review after a construction contractor is selected. The hydrostatic testing would be completed in three sections with each being cascaded to the next test section upon the completion of each test. Approximately one million gallons of water would be used per test section. Discharge rate would be throttled so as not to overwhelm the water containment structures at the discharge locations. The source is expected to be a private well and/or a municipal water source. No chemical additives or biocides would be used during testing for the pipeline. Hydrostatic test water would be discharged in a stable, upland area and through energy-dissipating devices. Temporary straw bales would be used to contain discharges and to dissipate energy, thus, spreading water flow to avoid erosion and promote penetration. The hydrostatic test discharge would not reach federally jurisdictional surface waters. A NPDES hydrostatic test discharge permit would be obtained through the RCT. For the reasons discussed above, impacts on surface water resources would be minimized during hydrostatic testing.

B.3.4. Wetlands

STEP

Field surveys conducted in 2014 and 2015 identified no wetlands within the STEP Project area. The wetland delineation identified wetlands at four of the five facility locations. However, Texas Eastern would not impact any of these wetland areas. Texas

Eastern would avoid the wetlands and prevent impacts during construction by delineating the wetland areas to be avoided, and implementing protection measures in its E&SCP.

The Texas Parks and Wildlife Department (TPWD) commented on wetlands resources and recommended that impacts on aquatic resources should be mitigated. As there would be no impacts on wetlands from the STEP, mitigation should not be necessary.

Pomelo Project

Wetland delineations conducted in October 2016 within areas proposed for surface disturbance documented two forested wetlands adjacent to Petronila Creek. These wetlands are listed in Table 8.

Table 8. Wetlands Crossed by the Projects

Wetland Name	MP begin/end	Wetland Type	Area within Workspace (acres)	Temporary/Permanent Impacts (acres)
Wetland #01	10.46/10.46	Palustrine Forested	0.01	0
Wetland #02	10.48/10.50	Palustrine Forested	0.13	0
		Totals	**0.14**	**0**

The wetlands identified adjacent to Petronila Creek would be avoided using HDD crossing construction methods. The HDD workspaces would be located outside of the wetlands. There would be no permanent loss of or impact to wetlands associated with the Pomelo Project. Some minimal hand clearing of vegetation may be required to deploy guide wires for the HDD. In this event, Pomelo would manually clear a three-foot-wide line of sight path using hand tools (i.e., a machete, axe, chainsaw, or hand saw). No soil or substrate disturbance would occur within the wetland and the HDD contractor would avoid tree removal and woody vegetation clearing to the maximum extent practicable. With these avoidance measures, impacts on wetlands would be temporary and are anticipated to be minimal as a result of the proposed Pomelo Project.

The TPWD commented that impacts on aquatic resources would be mitigated through the use of the HDD crossing methods. As mentioned above, Pomelo would also implement the measures identified in its HDD Contingency Plan to minimize the risk and impact of a release of drilling fluid should one occur. Based on this information, we conclude that any impacts on wetlands would be minimal.

B.3.5. Floodplains

STEP

The STEP aboveground facilities are not located within floodplains (FEMA 1985).

Pomelo Project

The Pomelo Compressor Station and all other above-ground facilities have been sited outside of FEMA 100-year floodplain boundaries; therefore, no impacts to floodplains or their flood storage capacity are anticipated.

The pipeline crosses the FEMA 100-year floodplain associated with Petronila Creek from pipeline milepost (MP) 10.05 to MP 12.41. There are currently no reasonable alternatives to siting the pipeline in the floodplain as the pipeline directly and perpendicularly crosses the Petronila Creek floodplain. This floodplain must be crossed in order to reach the delivery point.

The Pomelo Project workspaces within the 100-year floodplain include 14.4 acres of permanent right-of-way, 0.2 acre of temporary access roads, 13.1 acres of TWS and 2.8 acres of ATWS; for a total Pomelo Project footprint of 30.5 acres.

Pipeline construction activities would be temporary in nature and would be restored to preconstruction contours and returned to existing land use following installation of the pipeline. With the exception of small volume of the pipeline itself, no permanent impacts on the 100-year floodplain or its flood storage capacity are anticipated.

B.4. Vegetation, Wildlife, Fisheries, and Threatened and Endangered Species

B.4.1. Vegetation

The general vegetation types that would be affected by the STEP and Pomelo Projects are described in Table 9.

Table 9. Vegetation Types in the STEP and Pomelo Projects Areas

Habitat	General Description	Vegetation Type - Common Species
STEP		
Developed Land	Well-maintained grassed lawn	Bermuda grass (*Cynodon dactylon*), dallisgrass (*Paspalum dilatatum*), southern dewberry (*Rubus trivialis*), switchgrass (*Panicum virgatum*), thin paspalum (*Paspalum setaceum*), St. Augustine grass (*Stenotaphrum secundatum*), dwarf spikerush (*Elocharis parvula*), white clover (*Trifolium repens*), and smut grass (*Sporobolus indicus*).
Agriculture	Pastureland	Big bluestem (*Andropogon gerardii*), Bermuda grass, and dallisgrass
Pomelo Project		
Forest and Woodland	Wetland and upland riparian deciduous forests	Carolina ash (*Fraxinus caroliniana*), black willow (*Salix nigra*), water oak (*Quercus nigra*), Mexican Palo-Verde (*Parkinsonia aculeate*), knockaway (*Ehretia anacua*), silk tree (*Albizia julibrissin*), dwarf palmetto (*Sabal minor*), sandbar willow (*Salix exigua*), blackberry (*Rubus sp.*), poison ivy (*Toxicodendron radicans*)
Agriculture	Pastureland and cultivated crops	Angleton bluestem (*Dicanthium aristatum*), big bluestem, switchgrass, cotton (*Gossypium spp.*) or sorghum (*Sorghum bicolor*)
Developed Land	Well-maintained grassed lawn, landscaping, buildings, infrastructure, road rights-of-way	Non-native ornamental tree and shrub species, Bermuda grass, and bluestem (where vegetation is present)
Open Water	Waterbodies (e.g., creek, manmade ditches)	Duckweed (*Lemna spp.*), Mexican mosquito fern (*Azolla microphylla*), green flat sedge (*Cyperus virens*), and white doll's daisy (*Boltonia diffusa*)
Open Land	Upland grasslands on banks of manmade ditches	Bermuda grass, angleton bluestem, big bluestem, switchgrass, common sunflower (*Helianthus annuus*), and giant cane (*Arundo donax*)

STEP

Texas Eastern identified vegetation and land use types based on field surveys conducted at the existing Blessing, Mont Belvieu, and Vidor Compressor Stations, and the Angleton Station areas between November 2014 and March 2015. The existing station areas consist of well-maintained grassed lawn and existing industrial facilities. The proposed Petronila Compressor Station consists of pastureland.

No unique or sensitive vegetation types, plant communities, or trees would be affected by STEP. Texas Eastern does not plan to remove any trees during the construction or maintenance phases of STEP.

Construction for STEP would consist of removing the existing vegetation within the construction workspaces. As stated in Table 13 below, approximately 122.2 acres

(including 46.0 acres of improved pastureland) would be temporarily disturbed during construction and approximately 44.7 acres (including 29.0 acres of improved pastureland) would be permanently disturbed.

The areas temporarily affected during construction would be re-seeded or replanted and allowed to return to prior land uses upon completion of construction. TPWD recommended that disturbed soils within the construction area be re-seeded with native species, avoiding the planting of Bermuda grass (TPWD, 2017a).

Texas Eastern proposes to use a native or local seed mix (to minimize invasive plant species) that does not contain Bermuda grass for re-seeding areas that do not contain lawn grass species (i.e., Bermuda grass and St. Augustine grass) prior to construction. Disturbed areas located within existing station fence lines would be re-seeded or graveled and maintained as station yards.

Given the lack of sensitive vegetation types (defined as protected or designated as sensitive by any local, state, or federal regulatory agency) and Texas Eastern's commitment to re-seeding temporary work areas affected by construction in accordance with its E&SCP, FERC's Plan and Procedures, and TPWD's recommendations, we conclude that the STEP Project's impacts on vegetation would be temporary and minor.

Pomelo Project

Pomelo identified vegetation and land use types based on field surveys conducted in the Project area in October 2016.

No unique or sensitive vegetation types, plant communities, or trees would be affected by the Pomelo Project. The majority of the Pomelo pipeline route is composed of agricultural row crops (e.g., cotton, sorghum). The upland and wetland forest and woodland habitat (riparian habitat adjacent to Petronila Creek) within the Pomelo Connector Pipeline route would be avoided through use of the HDD crossing method.

As noted above, the HDD process may require the use of guide wires which would require manual clearing (of vegetation) in a three-foot-wide line-of-sight path across Petronila Creek's forested wetlands (for a total of approximately 0.04 acre); however, tree removal and woody vegetation clearing would be avoided and minimized to the maximum extent practicable. The three drainage ditches would remain undisturbed through use of a trenchless construction method (bore). The banks of Petronila Creek and the three drainage ditches would not be cleared or maintained as part of operations and would remain in their current state. As stated in Table 12, the impacts include

approximately 190.3 acres[5] that would be temporarily disturbed during construction and approximately 91.5 acres that would be permanently disturbed.

Similar to STEP, areas temporarily affected during construction would be re-seeded or replanted and allowed to return to prior land uses upon completion of construction. TPWD recommended that disturbed soils within the construction area be re-seeded with native species, avoiding the planting of Bermuda grass (TPWD, 2017a).

The Pomelo Project's permanent right-of-way would be restored and maintained in naturally occurring vegetation areas for safety and maintenance. Pomelo would follow the Texas Department of Transportation (TXDOT) Corpus Christi District recommendations for appropriate seed mix (TXDOT, 2017). Pastureland, agricultural production, or other human land use areas (i.e., developed areas) would be allowed to return to prior land uses. Cultivated croplands would be restored at the direction of landowners and lessees.

Pomelo would implement preventative measures to minimize the establishment and spread of noxious weeds during ground-disturbing activities associated with construction of the Project. These preventative measures and management strategies (e.g., prevention of spread, hand removal) are outlined in Pomelo's Noxious Weeds and Invasive Species Control Plan.

Based on the avoidance of sensitive vegetation types, avoidance of Petronila Creek and the three drainage ditches by use of boring techniques, re-seeding areas temporarily affected during construction per the FERC Plan, and the implementation of Pomelo's Noxious Weeds and Invasive Species Control Plan, we conclude that the Pomelo Project's impacts on vegetation would be temporary and minor.

B.4.2. Wildlife

General Wildlife

The Projects would cross habitat types as outlined in Table 9 and as quantified in Table 12. Common wildlife species occurring or potentially occurring in the Project area are listed in Table 10.

[5] Total acreage does not include the approximately 0.5-acre forest and woodland and approximately 0.2-acre open water areas listed in Table 12 that would be avoided by the HDD of Petronila Creek.

Table 10. Common Wildlife Species in the STEP and Pomelo Projects Areas

Common Name	Scientific Name	Project		Common Habitat Types
		STEP	Pomelo	
Mammals				
Black-tailed jackrabbit	*Lepus californicus*	X	X	Developed Land, Agriculture
Coyote	*Canis latrans*	X	X	Forest and Woodland, Developed Land, Open Land, Agriculture
Desert cottontail	*Sylvilagus audubonii*	X	X	Developed Land, Agriculture
Eastern fox squirrel	*Sciurus niger*	X	X	Forest and Woodland, Developed Land, Open Land, Agriculture
Gray fox	*Urocyon cinereoargenteus*	X	X	Forest and Woodland, Developed Land, Open Land, Agriculture
Nine-banded armadillo	*Dasypus novemcinctus*	X	X	Developed Land, Agriculture
Opossum	*Didelphis virginiana*	X	X	Developed Land, Agriculture
Pocket gopher	*Thomomys bottae*	X		Developed Land, Agriculture
White-tailed deer	*Odocoileus virginianus*	X	X	Developed Land, Agriculture
Birds				
American kestrel	*Falco sparverius*	X		Developed Land, Agriculture
Brown-headed cowbird	*Molothrus ater*		X	Forest and Woodland, Agriculture, Open Land
Carolina wren	*Thryothorus ludovicianus*	X		Developed Land, Agriculture
Cattle egret	*Bubulcus ibis*	X	X	Forest and Woodland, Agriculture, Open Land, Open Water
Crested caracara	*Caracara cheriway*		X	Forest and Woodland, Agriculture, Open Land
Eastern meadowlark	*Sturnella magna*	X		Developed Land, Open Land, Agriculture
Great blue heron	*Ardea Herodias*		X	Forest and Woodland, Agriculture, Open Land
Great egret	*Ardea alba*		X	Forest and Woodland, Agriculture, Open Land
Killdeer	*Charadrius vociferous*	X	X	Forest and Woodland, Agriculture, Open Land
Loggerhead shrike	*Lanius ludovicianus*	X	X	Developed Land, Open Land, Agriculture
Merlin	*Falco columbarius*		X	Forest and Woodland, Agriculture, Open Land
Mourning dove	*Zenaida macroura*	X	X	Forest and Woodland, Agriculture, Open Land

Table 10. Common Wildlife Species in the STEP and Pomelo Projects Areas

Common Name	Scientific Name	Project		Common Habitat Types
		STEP	Pomelo	
Northern mockingbird	*Mimus polyglottos*	X	X	Developed Land, Open Land, Agriculture
Red-winged blackbird	*Agelaius phoeniceus*		X	Forest and Woodland, Agriculture, Open Land
Turkey vulture	*Cathartes aura*	X	X	Forest and Woodland, Agriculture, Open Land
White-tailed hawk	*Geranoaetus albicaudatus*		X	Forest and Woodland, Agriculture, Open Land
Reptiles				
Western ribbon snake	*Thamnophis proximus*		X	Open Water
Amphibians				
Frog species	---		X	Forest and Woodland, Open Water

STEP

The primary impacts on wildlife would be associated with increased noise and human activity during construction. Texas Eastern's existing facilities are not extensively utilized by wildlife due to the existing infrastructure and human activity in the vicinity of the STEP Project area.

During construction, some non-mobile, small individuals could be inadvertently injured or killed by construction equipment. However, more mobile species would likely relocate to other nearby suitable habitat and avoid the Project area due to construction noise and ground vibrations.

As the STEP Project is proposed to occur mainly within developed-industrial/commercial land, cultivated areas, and pastureland such that minimal native vegetation would be affected, construction of STEP is expected to have minor, short-term disturbance impacts on wildlife.

Pomelo

The majority of the areas proposed for the Pomelo Project facilities are not extensively utilized by wildlife due to the lack of habitat. Existing land uses include agricultural pastureland, cultivated crops, developed-industrial/commercial, and open land. Some species that are able to adapt to these environments such as small mammals, reptiles, and amphibians, may be present in the Projects areas. A nominal amount of habitat (forest and woodland) adjacent to Petronila Creek would be avoided by use of the HDD method such that construction activity impacts on wildlife in this habitat would be minimal.

Impacts on wildlife could occur from entrapment in pipeline trenches prior to backfilling activities and entombment in pipeline trenches during backfilling activities. Pomelo indicated it would implement, on as as-needed, site-by-site basis and at the discretion of the EI, wildlife avoidance, protection, and conservation measures:

- Earthen wildlife escape ramps would be placed within the pipeline trench at no greater distance than every 0.25 mile.
- Open trench inspections would be conducted daily and prior to filling of trenches by the EI. Wildlife found in a trench or excavation would be promptly and safely removed by the EI and placed in a safe area off the right-of-way.
- Wildlife exclusion fencing would be installed along the perimeter of the right-of-way, or portions thereof, in areas that are adjacent to or near suitable wildlife habitat to deter wildlife from entering the right-of-way.
- Wildlife exclusion fencing would be regularly monitored and maintained to repair damage and to maintain its integrity. Upon the completion of construction and restoration activities, the wildlife exclusion fencing should be removed.
- A litter control program should be implemented to minimize predators such as foxes, coyotes, raccoons, and skunks on the right-of-way.
- Project vehicle use would be restricted to existing public roads, designated access roads, and within the construction right-of-way. Overnight parking and storage of equipment and materials, including stockpiling, would be in previously disturbed areas within the designated right-of-way. Project personnel would check for wildlife underneath stationary vehicles or Project equipment before moving them.
- Construction pipe, culvert, or materials of similar structure with a diameter greater than three inches stored less than eight inches above the ground would be inspected for wildlife before the material is moved, buried, or capped. Wildlife would be safely removed by the EI and placed in a safe area off the right-of-way.

Similar to STEP, some non-mobile, small individuals could be inadvertently injured or killed by construction equipment during construction. However, more mobile species would likely relocate to other nearby suitable habitat and avoid the Project area due to construction noise and ground vibrations.

The minor disturbance of developed-industrial/commercial lands, cultivated areas, and pastureland is not expected to have population-level effects on wildlife. Therefore, we conclude that the Projects would not have a significant impact on wildlife.

B.4.3. Fisheries

STEP

No waterbodies with perceptible flow are located within the STEP Project area. Texas Eastern would implement the measures in its E&SCP to prevent sediment transport during precipitation events or fugitive dust migration into a waterbody. Given that no waterbodies with perceptible flow are located within the STEP facilities area and Texas Eastern's implementation of erosion and sedimentation control measures in its E&SCP during construction, no impact to fisheries is anticipated to occur.

Pomelo

Waterbodies identified in the Pomelo Project area include Petronila Creek and three drainage ditches. No federally designated essential fish habitat is present in these waterbodies. Petronila Creek would be avoided by use of HDD technology and the three drainage ditches would be avoided by use of boring techniques. In the event of an inadvertent return of drilling fluid, Pomelo would implement its HDD Contingency Plan to avoid or minimize impacts on aquatic features, potential habitat, water quality, and surrounding habitat. Given the limited habitat that could be affected and the construction measures that would be used, we conclude that little or no impact on fisheries.

B.4.4. Special Status Species

B.4.4.1 Federally Listed Species

Federal agencies are required under section 7 of the ESA, as amended, to ensure that any actions authorized, funded, or carried out by the agency would not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally listed species. As the lead federal agency authorizing the Projects, the FERC is required to consult with the FWS to determine whether federally listed endangered or threatened species or designated critical habitat are found in the vicinity of the Projects, and to evaluate the proposed action's potential effects on those species or critical habitats.

Texas Eastern and Pomelo, as FERC's non-federal representatives, conducted informal consultations with the FWS to determine if any federally-listed threatened and endangered species or their designated critical habitats occurred within the either of the Projects areas. Fourteen federally-listed species were identified as potentially occurring in the vicinity of the Projects based on county potential occurrences obtained from the FWS *Information, Planning, and Conservation System* website (FWS, 2017a) for a list of federally-listed species and critical habitat that might be present within the proposed Projects areas. Table 11 below provides the fourteen federally-listed threatened and

endangered species that could potentially occur in the vicinity of the STEP and Pomelo Projects.

For the STEP Project, of the 14 federally-listed species indicated in Table 11, the Project will have no effect on 13 of the federally-listed species with potential to occur in the listed STEP Project counties because the species' baseline or specific habitat requirements do not occur within or adjacent to the Project. The whooping crane may be affected by the portions of the STEP Project in Brazoria, Matagorda, and Nueces counties as these areas would be located within the whooping crane annual migration corridor.

Table 11. Federally-listed Species in the STEP and Pomelo Project Areas

Common Name	Scientific Name	Federal Status[1]	Counties	Project and Determination
Mammals				
Gulf Coast jaguarundi	*Herpailurus yagouaroundi cacomitli*	E	Nueces	STEP: No effect Pomelo: May affect, but not likely to adversely affect
Ocelot	*Leopardus pardalis*	E	Nueces	STEP: No effect Pomelo: May affect, but not likely to adversely affect
West Indian manatee	*Trichechus manatus*	T	Brazoria Chambers Matagorda Nueces Orange	STEP and Pomelo – No effect
Birds				
Piping plover	*Charadrius melodus*	T	Brazoria Chambers Matagorda Nueces Orange	STEP and Pomelo: No effect
Least tern	*Sterna antillarum*	E	Nueces Orange	STEP: No effect Pomelo: No effect[2]
Northern aplomado falcon	*Falco femoralis septentrionalis*	E	Matagorda Nueces	STEP: No effect Pomelo: May affect, but not likely to adversely affect
Red knot	*Calidris canutus rufa*	T	Brazoria Chambers Matagorda Nueces Orange	STEP and Pomelo: No effect
Whooping Crane	*Grus americana*	E	Brazoria Matagorda Nueces	STEP and Pomelo: May affect, but is not likely to adversely affect

Table 11. Federally-listed Species in the STEP and Pomelo Project Areas

Common Name	Scientific Name	Federal Status[1]	Counties	Project and Determination
Reptiles				
Hawksbill sea turtle	*Eretmochelys imbricata*	E	Brazoria Chambers Matagorda Nueces	STEP and Pomelo: No effect
Kemp's Ridley sea turtle	*Lepidochelys kempii*	E	Brazoria Chambers Matagorda Nueces	STEP and Pomelo: No effect
Leatherback sea turtle	*Dermochelys coriacea*	E	Brazoria Chambers Matagorda Nueces	STEP and Pomelo: No effect
Loggerhead sea turtle	*Caretta*	T	Brazoria Chambers Matagorda Nueces	STEP and Pomelo: No effect
Plants				
Slender rush-pea	*Hoffmannseggia tenella*	E	Nueces	STEP: No effect Pomelo: May affect, but not likely to adversely affect
South Texas ambrosia	*Ambrosia cheiranthifolia*	E	Nueces	STEP: No effect Pomelo: May affect, but not likely to adversely affect

Notes:
1 E – Endangered
T – Threatened
2 Least tern receives full protection except within 50 miles of the Gulf Coast (where the Project is); additionally, this species only needs to be considered for wind related projects within the birds' migratory route.

For the Pomelo Project, of the 14 federally-listed species indicated in Table 11, the Project will have no effect on six of the federal-listed species with potential occur in the listed Pomelo Project counties because these species' baseline or specific habitat requirements do not occur within or adjacent to the Project. Although the least tern is listed in Nueces County, it is provided full protect, except within 50 miles of the Gulf Coast (USFWS 2017d). Additionally, it only needs to be considered for wind related projects located within the birds' migratory route (USFWS 2017a). Given the Pomelo Project is not a wind related project, it will have no effect on the least tern.

Given the aforementioned considerations, FWS focused their review on listed species that could potentially be affected by the Projects (USFWS 2015, USFWS 2017d, USFWS 2017e), which include whooping crane, South Texas ambrosia (*Ambrosia*

cheiranthifolia), slender rush-pea, Gulf Coast aguarondi, ocelot, and the Northern aplomado falcon.

B.4.4.1.1 Whooping Crane

The federally endangered whooping crane was historically located from the Arctic coast south to central Mexico and extended from Utah east towards New Jersey, South Carolina, Georgia and Florida. Poorly drained wetlands, marshes and sloughs and lake margins best describe summer habitats for the whooping crane. During their annual migration, whooping cranes are known to use croplands and large wetland areas for feeding and roosting purposes. During the winter, the whooping crane occupies the marshes and salt flats of the Aransas National Wildlife Refuge (FWS, 2017b) located in Aransas County, Texas located approximately 25-30 miles south/southwest of the Blessing Compressor Station and approximately 50 miles north/northeast the Nueces County facilities. Given the Projects area's lack of suitable habitat for the whooping crane during the summer and distant proximity to the Aransas National Wildlife Refuge, it is unlikely that the Projects would impact the whooping crane.

STEP

STEP's proposed Petronila Compressor Station in Nueces County, existing Blessing Compressor Station in Matagorda County, and existing Angleton Station in Brazoria County, would be located within the whooping crane annual migration corridor. To minimize potential impacts on the whooping crane, Texas Eastern would implement the avoidance and minimization measures during construction activities at the Blessing and Petronila Compressor Station listed below.

- Prior to construction, educate all construction personnel and other applicable staff on potential for the whooping crane to occur within the Projects area, including species identification, habitat and measures to avoid or minimize impacts.
- During whooping crane migration periods (October, November, and March 15 through April), construction cranes over 15 feet would be laid down at night or equipped with red downward-facing warning lights. In addition, equipment cranes would be flagged for visibility during the day to prevent collisions by whooping crane.
- If a whooping crane is observed within 1,000 feet of a work area during construction activities, work would be suspended until the whooping crane moves from the area or relocates itself beyond 1,000 feet.
- Workers or the Projects' EIs would report any whooping crane sightings within 1,000 feet of construction areas to the FWS Texas Coastal Ecological Services Field Office in Corpus Christi.

With the above measures implemented, we conclude the STEP Project *may affect, but is not likely to adversely affect* the whooping crane. The Texas Coastal Ecological Services Field Office of the FWS agreed that the proposed measures are acceptable on September 10, 2015 and August 3, 2017, and concurred on August 3, 2017.

Pomelo

Similar to STEP, the entire Pomelo Project area would be located within the whooping crane annual migration corridor. Therefore, to minimize potential impacts on the whooping crane, Pomelo would also implement the aforementioned avoidance and minimization measures during construction activities at the Pomelo Project area.

B.4.4.1.2 South Texas ambrosia (Ambrosia cheiranthifolia)

STEP

South Texas ambrosia, a federally endangered plant, is found along coastal Texas south into Mexico. It can survive in a variety of soils ranging from heavy clays to sandy loams. The South Texas ambrosia grows in grasslands and shrub lands that are dominated by various species of mesquite, usually over the Quaternary-age Beaumont Formation (FWS, 2017c). TPWD identified the South Texas ambrosia as occurring within 5 miles of the proposed STEP Petronila Compressor Station. However, given that the proposed Petronila Compressor Station area is comprised mostly of pastureland and disturbed lands within fenced aboveground facilities, it is unlikely that the South Texas ambrosia would be affected by the proposed STEP. Therefore, STEP is not anticipated to have any effect on the South Texas ambrosia.

Pomelo

Because grassland habitat is present in the Pomelo Project area, South Texas ambrosia potentially could occur within the grassland habitat. The FWS Texas Coastal Ecological Services Field Office provided concurrence on a *may affect, but is not likely to adversely affect* determination for South Texas ambrosia given Pomelo's implementation of surveys for this species within all grassland habitat within the Project workspace limits before construction commences (i.e., prior to clearing/removal of vegetation from the Pomelo Project area). We concur.

B.4.4.1.3 Other Federally Listed Species

STEP

No other federally-listed species were identified within the STEP Project area. The other federally listed species with potential to occur in the STEP Projects' counties

have no potential to be affected by the proposed STEP Project, as the species baseline or specific habitat requirements do not occur within or adjacent to the Project areas or would not be affected by the Project. Given the absence of suitable habitat for other federally listed species, we conclude the STEP Project would have *no effect* on federally listed species, with the exception of the whooping crane as indicated above. The Texas Coastal Ecological Services Field Office of the FWS agreed that the proposed whooping crane conservation measures are acceptable on September 9, 2015 and August 3, 2017, and concurred with the *may affect, but not likely to adversely affect* whooping crane. The FWS states that it will not provide a concurrence with *no effect* determinations by federal agencies.

Pomelo

For the Pomelo Project, the FWS Texas Coastal Ecological Services Field Office provided concurrence on a *may affect, but is not likely to adversely affect* determination on threatened and endangered species given Pomelo's implementation of certain conservation measures. Pomelo would implement the following conservation measures to avoid and minimize impacts on other federally-listed species.

- Survey for South Texas ambrosia (as indicated above) and slender rush-pea (*Hoffmannseggia tenella*) before construction commences (i.e., prior to clearing/removal of vegetation from the Pomelo Project area) within all grassland habitat within the proposed workspace limits.
- Implement the whooping crane conservation measures as indicated above.
- Cross forested areas using HDD or conventional boring techniques to minimize impacts on migratory birds, ocelot, and jaguarundi.
- Cross two wetlands, three drainage ditches, and one natural intermittent stream (Petronila Creek) within the Pomelo Connector Pipeline workspace area using HDD or conventional boring techniques.
- Immediately contact the FWS Texas Coastal Ecological Services Field Office in Corpus Christi if any protected species are observed during construction to discuss measures to minimize and avoid impacts including facility construction, timing restrictions, biological monitoring, and employee awareness training.

The Texas Coastal Ecological Services Field Office of the FWS agreed that the proposed measures are acceptable on September 10, 2015 (FWS, 2015) and August 3, 2017 (FWS, 2017e) for STEP and on December 13, 2016 (FWS, 2016) and March 14, 2017 (FWS, 2017d) for the Pomelo Project. Therefore, consultation requirements under the ESA are complete.

B.4.4.2 State-Listed Species

STEP

Fifty-one state-listed species were identified by Texas Eastern as potentially occurring in the vicinity of the STEP facilities based on county potential occurrences obtained from the TPWD County Rare, Threatened, and Endangered Species Lists (TPWD, 2017b). The Texas threatened sheep frog (*Hypopanachus variolosus*), the Texas horned lizard (*Phyrnosoma cornutum*), the endangered South Texas ambrosia, and state species of concern Texas windmill-grass (*Chlris texensis*) have been documented within 5 miles of the STEP facilities. However, as noted above, given that STEP would occur within disturbed areas that do not contain native habitat, none of these species, other than the Texas horned lizard (described below), are expected to occur within the STEP Project area.

The Texas horned lizard, listed as threatened by the TPWD, occurs within open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees. Suitable habitat might be present for this species within the Projects areas. The TPWD recommended that Texas Eastern conduct pre-construction surveys to determine whether the Texas horned lizard is present within or in the vicinity of the STEP Project area. Potential habitat for the Texas horned lizard is not present at the Blessing Compressor Station, Mont Belvieu Compressor Station, Angleton Station, and Vidor Compressor Station due to the presence of clay soils and well-maintained grassed lawn. The Petronila Compressor Station could provide potential habitat for Texas horned lizard due to the presence of sandy loam soils and undeveloped land. Therefore, Texas Eastern would conduct pre-construction surveys within the construction workspace at the Petronila Compressor Station in accordance with the TPWD recommended guidelines. If any Texas horned lizards are identified on-site, Texas Eastern would coordinate with the TPWD to develop a relocation plan and determine measures to be implemented in accordance with the Texas Horned Lizard Watch – Management and Monitoring Packet (TPWD, 2017c) and Texas Tortoise Best Management Practices (TPWD, 2017d) for concentrated construction activities. The TPWD agreed that these measures and the conclusions above were acceptable on May 18, 2015 (TPWD, 2015).

Pomelo

Thirty-two state-listed species were identified by Pomelo as potentially occurring in the vicinity of the Pomelo Project based on county potential occurrences obtained from the TWPD County Rare, Threatened, and Endangered Species Lists (TPWD, 2017b). However, as the Pomelo Project would generally occur within disturbed areas that do not contain native habitat, none of these species, other than the Texas horned lizard, are expected to occur within the Pomelo Project area.

The Pomelo Project area does not contain extensive habitat for the Texas horned lizard along the pipeline route; however, there is a potential for this species to be found in roadside environments or other disturbed areas. During construction, this species would likely avoid the construction area and move to nearby foraging grounds due to increased noise and human activity. Pomelo would implement the TPWD Texas Tortoise Best Management Practices (TPWD, 2017d) which are applicable to the Texas horned lizard (TPWD, 2017d). Additionally, during construction Pomelo would implement wildlife avoidance, protection, and conservation measures as indicated in Section B.4.2 to further avoid or minimize impacts on Texas horned lizard.

With the implementation of the measures noted above, we conclude that the Projects' impacts would be minimal on State sensitive or listed species.

B.4.4.3 Migratory Birds

Migratory birds are species that nest in the United States and Canada during the summer and then migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Most migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 United States Code [U.S.C. 703-711) and Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Act (16 U.S.C. 668-668d). The MBTA, as amended, prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. Executive Order (EO) 13186 (66 Federal Register [FR] 3853) was enacted in 2001 to, among other things, ensure that environmental analyses of federal actions evaluate the impacts of actions on migratory birds. EO 13186 directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and avoid or minimize adverse impacts on migratory birds through enhanced collaboration with the FWS. The agency's environmental analysis should further emphasize species of concern, priority habitats, key risk factors, and that particular focus should be given to population-level impacts.

On March 30, 2011, the FWS and the Commission entered into a Memorandum of Understanding (MOU) between the FERC and the FWS Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds" that focuses on avoiding or minimizing adverse impacts on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies. This voluntary MOU does not waive legal requirements under the MBTA, Bald and Golden Eagle Protection Act, ESA, Federal Power Act, NGA, or any other statutes and does not authorize the take of migratory birds.

STEP

No migratory bird species of special concern or their known habitat occur within the STEP Project area. However, the existing Blessing Compressor Station in Matagorda County and the proposed Petronila Compressor Station in Nueces County are located within the whooping crane annual migration route. Additional information on the whooping crane and whooping crane conservation measures to be implemented are provided in Section B.4.4. Texas Eastern has stated that no tree clearing would occur during construction of the Project. Only previously disturbed land, including existing compressor stations, developed industrial/commercial, cultivated cropland, and agricultural land, would be affected during construction.

However, as the construction schedule for STEP could overlap with the recognized migratory bird nesting season, Texas Eastern stated that a biologist would conduct a pedestrian field survey of the its Project workspaces no more than two weeks prior to the start of construction (i.e., clearing/removal of vegetation) to identify evidence of active nests. If an active nest is found within the STEP Project workspaces, Texas Eastern would implement the following conservation measures to ensure construction does not result in the take of migratory bird eggs and migratory birds:

- clearing/removal of vegetation where occupied/active nests are located would be halted until the eggs have hatched and the young have fledged the nest, unless alternative mitigation measures are provided by TPWD and/or FWS on a site-specific basis;
- the nest would be photographed and its location documented using a global positioning system; and
- the results of the survey would be summarized in a letter report to TPWD and/or FWS.

Pomelo

The Pomelo Project in Nueces County is also located within the whooping crane annual migration route. Additional information on the whooping crane and whooping crane conservation measures to be implemented are provided in Section B.4.4.

Similar to STEP, Pomelo has stated that no tree clearing would occur during construction of the Project. Only previously disturbed land, including existing compressor stations, developed industrial/commercial, cultivated cropland, and agricultural land, would be affected during construction.

To minimize impact on migratory birds, Pomelo has planned to conduct clearing activities for pipeline construction outside the migratory bird nesting season (March 1 to July 1).

Given that no trees would be removed, the proposed minimization measures, and as most work would occur in previously disturbed areas, we have determined that the construction of the STEP and Pomelo Projects would not result in significant or population level impacts on migratory bird species within the Projects areas.

B.5. Land Use, Recreation, and Visual Resources

B.5.1. Land Use

The predominant land uses characterized within the Projects areas include industrial/commercial and agricultural land. Construction of the Projects would affect a total of 313.2 acres, including an overlap of 2.9 acres of workspace associated with the STEP and Pomelo Project within the proposed Petronila Compressor Station. A total of 136.8 acres would be retained for operation, with 176.4 acres restored and allowed to return to previous uses. STEP would temporarily affect 122.2 acres of land during construction. Of this, 44.7 acres would be used during operation of the Project. The Pomelo Project would temporarily affect 191.0 acres of land during construction. Of this total, 92.1 acres would be used during operation of the Project. The following sections identify the land requirements for each Project by facility type. Table 12 provides a summary and breakdown of land use affected by construction and operation of the Project.

STEP

Table 12 displays the temporary and permanent land use impacts for the STEP facilities. Texas Eastern would use existing roadways to access the proposed Petronila Compressor Station (County Road 26 and County Road 67), Blessing Compressor Station (Graff Road and an existing station driveway), Mont Belvieu Compressor Station (Farm-to- Market Road 565 and an existing station driveway), Angleton Station (County Road 45), and Vidor Compressor Station (South Mansfield Ferry Road). No improvements to these roadways would be required.

Texas Eastern identified one access road that would require minor improvements (0.03-acre) to allow for construction equipment to safely access the existing Petronila facility. During construction of the proposed Petronila Compressor Station, timber mats would be placed within the improvement area to facilitate a safe turning radius for the construction equipment. No grading would occur and no permanent fill material would be placed within the improvement area. Following installation of the proposed facilities, all timber mats would be removed from the improvement area and disturbed areas would be restored.

Table 12. Land Use Affected by Construction and Operation of the Projects

Location/Facility	Agricultural [1]		Developed Industrial/ Commercial[2]		Forest and Woodland		Open Land		Open water		Total	
	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op[6] (ac)	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op.[6] (ac)
STEP												
Nueces County												
Petronila Compressor Station	38.7	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.7[j]	29.0
Access Road	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	0.0
Matagorda County												
Blessing Compressor Station[3, 4]	0.0	0.0	39.4	11.6	0.0	0.0	0.0	0.0	0.0	0.0	39.4	11.6
Chambers County												
Mont Belvieu Compressor Station[4]	0.0	0.0	19.1	2.4	0.0	0.0	0.0	0.0	0.0	0.0	19.1	2.4
Brazoria County												
Angleton Station[4]	7.3	0.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.6
Orange County												
Vidor Compressor Station[4]	0.0	0.0	17.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	17.1	0.8
STEP Subtotal	**46.0**	**20.9**	**76.2**	**15.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**122.2**	**44.7**

Table 12. Land Use Affected by Construction and Operation of the Projects

Location/Facility	Agricultural [1]		Developed Industrial/ Commercial[2]		Forest and Woodland		Open Land		Open water		Total	
	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op[6] (ac)	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op.[6] (ac)	Const.[5] (ac)	Op.[6] (ac)
Pomelo Project												
Nueces County												
Mainline Pipeline	165.5	79.9	5.2	1.8	0.5	0.5	0.1	0.1	0.2	0.2	171.4[i]	82.3
Discharge Pipeline	2.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	1.3
Aboveground Facilities[7]	2.6	1.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	1.9
Access Roads	1.0	0.3	5.1	0.6	0.0	0.0	<0.01	0.0	0.0	0.0	6.2	0.9
Pomelo Compressor Station[8]	7.9	5.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	8.0	5.7
Pomelo Subtotal	**179.7**	**89.0**	**10.5**	**2.4**	**0.5[9]**	**0.5 [9]**	**0.1**	**0.1**	**0.2** [9]	**0.2** [9]	**191.0**	**92.1**
Projects Total	**225.7**	**109.9**	**86.7**	**18.1**	**0.5**	**0.5**	**0.1**	**0.1**	**0.2**	**0.2**	**313.2[10]**	**136.8**

1. Agricultural land is defined as areas actively cultivated or rotated croplands, pasture and hayfields. Specifically, for the STEP it includes open, improved pastureland and for the Pomelo Project it includes improved pastureland and cultivated crops.
2. Includes developed land, natural gas utility facilities, manufacturing or industrial plants, commercial facilities, and active construction of such facilities. For Pomelo this land use category also includes rural single family homes as well as industrial areas.
3. Includes new compressor, control building, and piping modifications.
4. All construction activities would occur within the fence line of the existing developed station site.
5. Construction impacts equal all impacts due to construction and operation (including permanent easement, temporary workspace [TWS], additional temporary workspace [ATWS], above-ground facility permanent footprints and construction workspace, compressor station permanent footprint and construction workspace, access roads, and contractor yard/staging area).
6. Operation impacts include the impacts on operate the Projects (including permanent easement, above-ground facility permanent footprints, compressor station permanent footprint, and permanent access roads).
7. Includes launcher site, mainline valve and meter site; excludes the compressor station and all above-ground facilities located at the compressor station site (e.g., receiver).
8. Construction impacts for the compressor station include 2.21 acres for the contractor yard (land use for contractor yard is cultivated cropland), which would be used as temporary workspace for construction of the compressor station.
9. Acreages of Forest and Woodland and Open Water would not be affected; the Pomelo Connector Pipeline would be installed via HDD technology at this location to avoid impacting these features. Approximately 2.7 acres of impact would be avoided.
10. Pomelo workspace overlaps the workspace at Petronila Compressor Station by about 2.8 aces. Therefore, the combined total would be decreased by 2.8 acres to reflect the overlap.

Pomelo Project

Mainline Pipeline and Discharge Pipeline

The construction of the pipeline would require a 50-foot-wide permanent easement and 25 feet of TWS on either side of the permanent easement, totaling 100 feet of construction workspace, as well as ATWS areas where required. Because approximately 94 percent of the land crossed by the pipeline is agricultural land (i.e., cropland and pasture), a minimum of 100 feet of workspace is needed to ensure adequate space for topsoil and subsoil segregation and storage, as well as general access for construction.

The mainline and discharge pipelines (collectively referred to as Pomelo Connector Pipeline) traverse a total of 13.8 miles. Approximately 57 percent of the pipeline parallels existing utility or pipeline right-of-ways, roads or property boundaries. Land requirements by land use type for the mainline and discharge line are presented in Table 12, and include the permanent right-of-way, temporary workspace (TWS) and ATWS.

Construction of the Pomelo Connector Pipeline would affect 168.2 acres of agricultural land, including 163.4 acres of cultivated crops and 4.9 acres of pasture lands. A total of 81.2 acres would be converted to permanent right-of-way. All TWS and ATWS areas would be restored to pre-construction agricultural use. Cropland and pasture use would be permitted within the permanent right-of-way in accordance with applicable easement agreements.

There are three residential structures (i.e., one residence and two sheds) and two industrial structures located within 50 feet of the Pomelo Connector Pipeline workspace. A fence would be installed at the edge of the construction work area, remain throughout the open trench phase of construction, and areas would be restored after backfilling the trench. Pomelo would coordinate with landowners prior to and after construction and construction activities are located in agricultural fields adjacent to the residences.

Approximately 0.5 acre of land traversed by the pipeline right-of-way is classified as forested/woodland. However, no tree removal is proposed because the only forest/woodland area that is crossed by the pipeline borders Petronila Creek and it would be crossed via HDD. Additionally, impacts on open land (approximately 0.1 acre of upland grassland on steep banks of three manmade ditches) and open water (Petronila Creek and three manmade ditches) would be avoided through the use of HDD and bored crossing techniques.

Aboveground Facilities

Construction of the aboveground facilities associated with the Pomelo Project include the Pomelo Compressor Station, meter station, mainline block valve site (which

is located within the proposed permanent easement), and the pig launcher/receiver site. Acreage affected by construction and operation for each of the aboveground facilities is shown in Table 12.

Construction of the new Pomelo Compressor Station would impact a total of approximately 8.0 acres, including 7.9 acres of agricultural land consisting of cultivated cropland and 0.1 acre of industrial land. Approximately 2.2 acre of the compressor station workspace would be used as a contractor yard. Approximately 5.7 acres of agricultural land would be permanently converted to industrial land and would be used for operational purposes, with the remaining 2.3 acres maintained in an herbaceous state. Approximately 0.1 acre of developed land would be affected during construction and would be used for operation of the facility.

Access Roads

Pomelo would use a total of 15 non-public access roads for construction of the Project. Three non-public access roads would be maintained permanently for operations and maintenance after construction is complete. Six of the non-public access roads proposed for use are existing dirt roads and nine of the non-public access roads proposed for use would be new dirt access roads (see Section A.6. for additional information). For the access roads associated with Pomelo, minor modifications proposed at new access roads include placement of gravel entry/exit pads at road confluences. Additional access road modifications may include grading and general upkeep and maintenance as conditions dictate during construction.

Planned Development

Table 13 identifies three development projects within 0.25 mile of the Projects (see Section B.10 for additional information).

The LGI Homes Texas, LLC housing development project located approximately 0.25 west of the Mont Belvieu Compressor Station would not be affected by the proposed Projects' components and upgrades as work is planned to occur within the limits of the existing station. Furthermore, construction of LGI Homes is currently underway. Therefore, it is anticipated that construction impacts from the proposed Projects components and upgrades at the existing Mont Belvieu Compressor Station would be minimal.

Construction of U.S. Route 77 Expansion Project, is currently underway and would most likely be completed before construction commences on the Pomelo Project. Even if there were some aspects of two projects occurring during the same timeframe, coordination with TXDOT would implement appropriate mitigation measures necessary to avoid or minimize impacts.

Table 13. Developments Planned within 0.2 mile of the Projects

Planned Development	MP or Nearest Project Component[1]	Status (Anticipated date of Construction)
LGI Homes-Texas, LLC (LGI Homes) 93.5-acre single family residential development and utilities	STEP/ Mont Belvieu Station	Construction in progress as of March 2016. Permitting status for Phase 3 of the residential construction is currently unknown.
La Paloma Estates Subdivision Project	Pomelo/ MP 6.71–6.77	*Unknown*
U.S. Route 77 Expansion Project (Project ID 105202080)	Pomelo/ MP 7.50–7.87	Construction in progress
Agua Dulce Compressor Station Valley Crossing Pipeline Project	Pomelo MPs 0.0 & 13.4	Construction in progress; Anticipated In-Service date of October 2018

Note:
[1] MP = milepost.

Timeframe of the construction Agua Dulce Compressor Station and the La Paloma Estates Subdivision Project is uncertain, but in the event either of these projects overlap with construction of the Pomelo Project, coordination would occur with the developer and other appropriate parties to avoid or minimize impacts by implementing BMPs and other mitigation measures.

B.5.2. Public Land, Recreation, Other Designated or Special Use Areas

No National Park Service designated natural, recreational or scenic areas or Bureau of Land Management lands are located within 0.25 mile of the Projects' areas (National Park Service [NPS], 2017a; National Atlas, 2014; Bureau of Land Management [BLM], 2014). No other recreational areas/public lands are located within 0.25 mile of the Projects' areas.

The Projects would not affect any federally-designated or recognized natural, recreational, or scenic areas, wildlife refuges, national parks, Indian reservations or tribal land, wild and scenic rivers, trails, wilderness areas, or natural landmarks. No public land, recreation, or other designated areas are within the extent of the Project. (NRCS, 2014c; NRCS, 2014d; NRCS, 2017a; NRCS, 2017b; USDAFS, 2014; NPS, 2017a; TPWD, 2017e; TPWD, 2017f; DOT, 2017; FWS 2017f; USGS 2013).

The STEP Blessing, Petronila, Mont Belvieu, and Vidor Compressor Stations are located in the Texas Coastal Zone. The Pomelo Connector Pipeline is located within the Coastal Zone area from approximately MP 0.0 to MP 6.7. Both Texas Eastern and Pomelo concluded that a Texas Coastal Management Program Federal Coastal Zone Consistency Review is not required for either project. FERC staff conducted its own verification with the Texas General Land Office (GLO) and concluded that coastal zone

consistency review may be required for the portions of the Projects located in the Coastal Zone (including those portions within uplands and/or wetlands). Therefore, **we recommend that:**

Prior to construction, Texas Eastern and Pomelo shall file with the Secretary of the Commission (Secretary) documentation of concurrence from the Texas GLO that the Projects have been reviewed and is consistent with the Texas Coastal Management Program, or file documentation from the GLO that consistency review is not required.

There are no Superfund sites within 0.25 mile of the Projects (EPA, 2015; EPA, 2017; TCEQ, 2015a; TCEQ, 2017). An active landfill is located approximately 0.5 mile east of the Pomelo Connector Pipeline between MPs 4.0 and 4.5; however, impacts to the landfill are not anticipated.

We conclude that the construction and operation of the Projects would not have an impact on recreational areas, other designated or special use lands and would only minimally affect existing land use in the region, mostly by the small areas converted at the compressor station sites.

B.5.3. Visual Resources

The Projects would not be located within any federal, state, or locally designated scenic areas, such as national Wild and Scenic Rivers and scenic highways; therefore no sensitive areas were identified.

Construction of the new compressor station at the existing Petronila facility would occur in a rural area with the nearest structure (residence) located approximately 0.25 mile to the west. The proposed construction at all existing station sites (Blessing, Mont Belvieu, and Vidor Compressor Stations, and Angleton Station), would be located entirely within the fence line of the existing properties.

The potential for visual impacts during operation of the Pomelo Project would be limited to the Pomelo Compressor Station because it is a new facility. However, the area has a history of oil and gas development and related infrastructure is commonplace and part of the established landscape. Pipeline construction would have some minor and temporary visual impacts; however, the right-of-way and temporary workspaces would be restored immediately after construction. Furthermore, no tree clearing is required for construction of the pipeline.

The Pomelo Compressor Station would be visible from the adjacent roadways (west, east, north and south). The maximum height of any structure at the compressor

station would be (with the exhaust stack) about 19 feet high. Pomelo identified 12 residences or farmstead, within the potential viewshed and approximately 1 mile from the proposed compressor station. Based on distance and location within the existing landscape, as well as some vegetation or existing structures that would screen or partially obscure views, the compressor station would pose varying degrees of visibility from the 12 identified residences.

Because of the amount of existing natural gas industry-related infrastructure in the Projects areas, the Pomelo Compressor Station is not expected to have a significant impact on the landscape. The compressor station building would be of a monochromatic color to blend in with the surrounding landscape. Moreover, Pomelo would mitigate any visual impact by using external lighting with capping and cut off angles to minimize nighttime glare and potential light pollution.

Therefore, we conclude that the construction and operation of the Projects would have discernable but not significant adverse impacts on visual resources.

B.6. Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires the FERC to take into account the effect of its undertakings (including the issuance of certificates) on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking. Texas Eastern and Pomelo, as nonfederal parties, provided us with information, analyses, and recommendations in accordance with the ACHP's regulations at 36 CFR 800.2(a)(3).

The area of potential effect (APE) for direct effects includes the construction right-of-way along the pipeline route, ATWS areas, compressor/meters stations, staging areas, and new or to-be-improved access roads. Horizon Environmental Services, Inc. (Horizon), surveyed all areas where ground disturbing activities are proposed. These areas include: a 40.0-acre tract of land for the STEP Petronila Compressor Station; a 13.6-mile-long, 300-foot-wide natural gas pipeline study corridor; an 8.4 -acre tract of land for the Pomelo Compressor Station and associated contractor yard; and a 0.21-mile-long, 300-foot-wide discharge pipeline survey corridor at the western terminus. Modifications at existing aboveground facilities, where no ground disturbing activities are proposed, were not surveyed. The APE for indirect effects (visual or audible) includes those aboveground ancillary facilities or Projects' elements that are visible from historic properties in which setting contributes to their NRHP-eligibility.

Horizon conducted the cultural resources survey for archaeological and historic architectural/industrial properties within the APE for both the STEP and Pomelo Project.

The survey recorded 15 newly identified archeological sites. All 15 sites consist of surface and/or shallow subsurface scatters of late 19th- to mid-20th-century domestic debris and construction materials that have been interpreted as the remnants of historic-age farmsteads and dumps. Sparse scatters of aboriginal lithic artifacts were observed on two of the sites, though the primary cultural components on these two sites are associated with the historic-age occupations. The investigated portions of all 15 sites are recommended as non-contributing to the overall eligibility of the sites for inclusion in the NRHP based on their disturbed character and lack of integrity.

Horizon recommended the Projects would have no effect on historic properties. In letters dated April 20, 2015, January 24, 2017, and March 16, 2017, the Texas Historical Commission (THC) concurred that the proposed undertakings would have no effect on any properties listed in, or eligible for listing in, the NRHP. We also concur.

B.6.1. Native American Consultation

On March 31, 2015, Edge Engineering and Science (for STEP) and March 2, 2017, Horizon (for Pomelo) wrote to: the Alabama Coushatta Tribe of Texas; the Apache Tribe of Oklahoma; the Comanche Nation of Oklahoma; the Tonkawa Tribe of Oklahoma; the Wichita and Affiliated Tribes (Wichita, Keechi, Waco, and Tawakonie) of Oklahoma; the Kickapoo-Traditional Tribe of Texas; and the Ysleta Del Sur Pueblo of Texas and provided a project description, mapping, reroute updates, and a summary of the survey results. On April 6, 2017, the FERC sent the NOI to the same tribes and on May 2, 2017, the FERC staff wrote to the same tribes to request their comments on the Projects.

Horizon has received three responses from Native American tribes. On April 3, 2015, Ysleta Del Sur Pueblo responded, “The Ysleta del Sur Pueblos does not have any comments nor does it request consultation on this proposed project due to its location being outside of our Pueblo's Native American Graves Protection and Repatriation Act (NAGPRA) area of interest and/or relevance.” On April 28, 2017, the Alabama Coushatta Tribe of Texas responded “no known impacts to cultural assets of the Alabama Coushatta Tribe of Texas are anticipated in conjunction with this proposal. In the event of the inadvertent discovery of archaeological artifacts and/or human remains, activity in proximity to the location must cease and appropriate authorities, including this office, notified without delay for additional consultations.” On May 10, 2017, the Kickapoo-Traditional Tribe of Texas (KTTT) responded, “the Kickapoo-Traditional Tribe of Texas (KTTT) does not own land in the areas where the construction, operation, and maintenance of the proposed project would be taking place. Therefore, the Projects would not affect any of the Tribe’s historic or sacred sites that we are aware of.” No other tribal responses have been received to date.

B.6.2. Unanticipated Discoveries Plan

Horizon has prepared an Unanticipated Discovery Plan which outlines the procedures that would be followed in the event that unanticipated cultural resources 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 have reviewed the plan and find it acceptable.

Based on the information provided by Horizon and consultations the THC and Native American tribes, we have determined that the proposed Projects would have no effect on properties listed in, or eligible for listing in, the NRHP.

B.7. Socioeconomics

The potential socioeconomic effects of construction and operation of the Projects includes temporary changes in population levels or local demographics, increased opportunities for employment, increased demand for housing and public services, transportation impacts, and an increase in government revenue associated with sales, payroll, and property taxes within the Projects areas. The Projects' areas includes Nueces County in Texas for both STEP and Pomelo Project and Matagorda, Brazoria, Chambers, and Orange Counties, Texas for STEP.

The STEP involves modifications at existing compressor stations, with the exception of the new Petronila Compressor Station in Nueces County. All of the Pomelo project facilities are also in Nueces County. Accordingly, we provide socioeconomic data for Nueces County.

Population and Employment

A summary of elected demographic and socioeconomic conditions for affected communities is provided in Table 14.

The most recent population estimate in Nueces County is 359,715 in 2015 (United States Census Bureau 2015a). Population density, a general indicator of the extent of development in Nueces County is approximately 405.8 persons per square mile (United States Census Bureau 2010). The civilian labor force was 63.8 in 2010 and major industries include educational services, and health care and social assistance (23.6 percent) and the retail trade (11.9 percent) (United States Census Bureau 2015b). The unemployment rate average between 2010 and 2014 was 6.48 percent (Bureau of Labor Statistics 2016).

Table 14. Existing Economic Conditions for the Pomelo Project Area

County	Population[1] (2015 estimate)	Population Density (2010) (persons per square mile)[2]	Per Capita Income[3]	Rental Vacancy Rate (2010) (percent)[2]	Civilian Labor Force[2]	Unemployment Rate (average 2010 to 2014) (percent)[4]	Top Two Major Industries [5]
Nueces	359,715	405.8	$24,875	11.1	63.8	6.48	E, R

Notes:
E – educational services, health care, and social assistance
R – retail trade

Sources:
1 United States Census Bureau 2015a
2 United States Census Bureau 2010
3 United States Census Bureau 2014
4 Bureau of Labor Statistics 2016
5 United States Census Bureau 2015b

It is anticipated that non-local workers could comprise a large percentage of the construction workforce for STEP. Approximately 100 workers would be required for construction of the STEP Project facilities. Local workers would be employed for construction when available and typically constitute a smaller percentage of the required workforce.

Construction of the Pomelo Project is expected to begin in October 2017 and continue until spring 2018. The average number of workers on-site for the Pomelo Project would be 45 workers for construction of the pipeline and 15 workers for the compressor station. The anticipated maximum number of workers at one time is 75 workers for the pipeline and 20 for the compressor station. Due to the specialized skills required for construction activities, it is expected that less than 15 percent of the construction workers would be local hires. Temporary population levels would increase as workers with specialized skills locate into the area. The influx of non-local workers would result in a temporary, negligible impacts to population and employment within Nueces County.

During operation, the Pomelo Project would employ three new permanent employees required to operate the new facility/compressor station. The addition of permanent employees would have no long-term effect on population.

Housing

Nueces County has a rental vacancy rate of 11.1 percent. There are more than 9,000 units available for rent, 259 hotels/motels, and 60 recreational vehicle and trailer parks (United States Census Bureau 2010, Yellowbook 2016).

The temporary housing available near the Projects areas would be capable of meeting the temporary and moderate increased demand for housing resulting from construction of the Projects. Additional temporary housing would be available in counties adjacent to the Projects as well. The influx of non-local workers would result in a temporary, negligible impact to housing resources within Nueces County.

The three operational staff that would be hired permanently would have a negligible long-term effect on housing demand.

Public Services

The number of existing public services available in Nueces County are listed in Table 15. Nueces County has sufficient medical, fire and police services and the capacity to manage the temporary influx of project personnel. The community medical services in Nueces County would provide short-term or continuing general health care services and are capable of responding to minor or routine medical needs.

Construction of the Pomelo Project would result in negligible impacts to public services, except in the event of a fire or other emergency. In the event of an emergency, fire, police and emergency medical services may be required. These service requirements would be temporary and only required in the unlikely event of an emergency.

Public service requirements associated with the Projects and/or temporary increases of non-local workforces should not place an increased burden on the services available to the general public in Nueces County.

Table 15. Existing Public Services for Nueces County

Public Schools[1]	Hospitals[2]	Police Services[2]	Fire Services[2]
115	Emergency Medical Services	Nueces County Sheriff's Department	Corpus Christi Fire Department
	Best Care Emergency Medical Services	Corpus Christi Police Department	Robstown Volunteer Fire Department
	Family Health Clinic and Minor Emergency Room	Driscoll Police Department	Agua Dulce Fire Department
	CHRISTUS Spohn Hospital – Shoreline	Robstown Police Department	
	CHRISTUS Spohn Hospital – Memorial	Alice Police Department	
	Concentra Urgent Care		
	Nova Medical Centers		

Sources:
1 Total number of public schools in the County. National Center for Education Statistics 2016 (NCES 2016)
2 Pomelo 2016

Transportation

Construction of the Projects could result in minor, short-term impacts on the transportation network due to movement of and delivery of equipment, materials, and workers. Once equipment and materials reach the construction workspace, the majority of construction traffic would be confined to the designated workspace for the Projects except for daily travel to and from the construction site by construction personnel. Adequate additional temporary workspace has been designated for vehicle turnaround and parking areas; in addition, the contractor yard would provide adequate storage space for Project materials. Appropriate traffic control measures, such as flagmen and signs, would be used to ensure the safety of local traffic. To ensure safe travel conditions, contractors would be required to adhere to local vehicle weight restrictions, roads would be swept to reduce the deposition of soil, and mats or other measures would be utilized to protect the road surface at equipment crossings. As a result of these measures, it is

anticipated that construction of the Projects would have minor and temporary impacts on road traffic.

Economy and Tax Revenues

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

Pomelo estimates that approximately $5 million would be distributed in construction payroll, of which approximately $1 to $1.5 million would likely be used by construction personnel for goods, services, and entertainment. Pomelo also estimates that approximately $1 million would be spent locally and/or regionally for construction materials and fuel.

Beneficial impacts to the local economies during operation of the Pomelo Project would include the payroll associated with the hiring of three permanent staff to operate the new Pomelo Compressor Station and continued operations of the Project facilities. Operation of the Project would also provide additional tax revenues through ad valorem and property taxes.

Calculation of property tax revenues would be subject to the state, county, and local taxes upon completion of construction. Actual property taxes are estimated to be approximately $1.6 million and Texas Franchise taxes are estimated to be approximately $225,000. These values are estimates and actual values are subject to calculation by the appropriate state and local authorities based on appropriate documentation provided by Pomelo.

Based on the information presented above and due to the size of the Projects, we conclude that the Projects combined would have minimal socioeconomic impacts on population, employment and income, housing, public services, economy and tax revenues, and transportation.

B.8. Air Quality and Noise

B.8.1. Air Quality

Federal and state air quality standards are designed to protect human health. The EPA has developed National Ambient Air Quality Standards (NAAQS) for criteria air pollutants such as oxides of nitrogen (NO_x) and carbon monoxide (CO), sulfur dioxide (SO_2), and inhalable particulate matter ($PM_{2.5}$ and PM_{10}). $PM_{2.5}$ includes particles with an aerodynamic diameter less than or equal to 2.5 micrometers, and PM_{10} includes

particles with an aerodynamic diameter less than or equal to 10 micrometers. The NAAQS were set at levels the EPA believes are necessary to protect human health and welfare. Volatile organic compounds (VOC) and hazardous air pollutants (HAP) are also emitted during fossil fuel combustion.

Greenhouse Gases (GHG) produced by fossil-fuel combustion are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). GHGs status as a pollutant is not related to toxicity. GHGs are non-toxic and non-hazardous at normal ambient concentrations, and there are no applicable ambient standards or emission limits for GHG under the Clean Air Act. GHGs emissions due to human activity are the primary cause of increased levels of all GHG since the industrial age. These elevated levels of GHGs are the primary cause of warming of the climate system since the 1950s. These existing and future emissions of GHGs, unless significantly curtailed, will cause further warming and changes to the local, regional and global climate systems. During construction and operation of the Projects, these GHGs would be emitted from construction equipment and fossil fuel combustion equipment like turbines and engines. Emissions of GHGs are typically expressed in terms of CO_2 equivalents (CO_{2e}).

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 STEP project area includes multiple sites and are located in both attainment areas for all NAAQS and nonattainment areas for certain NAAQS. All of the Pomelo Connector Pipeline facilities would be located in attainment areas. Below is a listing of various sites for STEP and indicates the county in which the site is located and if the site is located in an attainment area for all NAAQS or if the site is located in a nonattainment or maintenance area and the associated pollutant.

Emission generating equipment or activities from STEP would primarily consist of the following:

Petronila Compressor Station
(Nueces County – Attainment for all NAAQS pollutants.)

- One new 8,400 hp Solar Taurus 70 gas turbine-driven compressor;
- One Ultrasonic meter & regulating station with filter separator;
- One emergency internal combustion engine;
- One process heater, five separator vessels, three storage tanks; and
- One parts washer.

Blessing Compressor Station
(Matagorda County – Attainment for all NAAQS pollutants.)

- One new 8,400 hp Solar Taurus 70 gas turbine-driven compressor;
- Two new internal combustion engines;
- One new process heater; two new separator vessels; one new tank; and

- Modifications to existing separator vessel, storage tanks, truck loading operations, and piping components.

Mont Belvieu Compressor Station
(Chambers County – NAAQS Ozone Severe Non-Attainment Area [NOx and VOC are the precursors to ozone]. Attainment for all other NAAQS pollutants.)

- Clean burn modifications to improve engine efficiency; and
- piping modifications to the existing launcher/receiver on Line 16 MP 357.15 at the existing Mont Belvieu Compressor Station for reversal of flow.

Angleton Station
(Brazoria County – NAAQS Ozone Severe Non-Attainment Area [NOx and VOC are the precursors to ozone]. Attainment for all other NAAQS pollutants.)

- Piping modifications to the existing launcher/receiver at MP 298.98 on Line 16 within Texas Eastern's Angleton Station.

Vidor Compressor Station
(Orange County – NAAQS Ozone Maintenance Area [NOx and VOC are the precursors to ozone]. Attainment for all other NAAQS pollutants.)

- Piping modifications to the existing launcher/receiver at MP 412.73 on Line 16 within Texas Eastern's Vidor Compressor Station.

Emission generating equipment or activities from the Pomelo Project would primarily consist of the following:

Pomelo Compressor Station
(Nueces County – Attainment for all NAAQS pollutants.)

- Two new 2,500 hp internal combustion engine compressors;
- Associated above ground facilities such as connectors and valves;
- Truck loading operations of crude oil or condensate; and
- Three storage tanks.

Pomelo Pipeline
(Nueces County – Attainment for all NAAQS pollutants.)

- One 30-inch diameter natural gas pipeline extending 13.63 miles;
- One 30-inch diameter 0.21 mile discharge pipeline; and
- Associated above ground facilities such as connectors and valves.

The following section outlines the existing environment; the federal regulations applicable under the Clean Air Act (CAA); the need for air quality permits; the magnitude and impact of construction emissions, and the magnitude and impact of operational emissions from the Project.

Existing Environment

For STEP, the proposed Petronila Compressor Station is located within the West Coast Plain Section of the Atlantic Plain physiographic province. Nueces County is an urban county in the eastern part of Texas. The existing Blessing, Mont Belvieu, and Vidor compressor stations and the existing Angleton Station are all located within the West Gulf Coast Plain Section of the Atlantic Plain physiographic province. Matagorda County, the location of the existing Blessing Compressor Station, is a rural county in the eastern part of Texas. Brazoria County is a rural and suburban County in the eastern part of Texas. Chambers County is a metropolitan area approximately 26 miles east of the center of the City of Houston. Orange County is a mostly rural and suburban county approximately 80 miles northeast of the City of Houston.

For the Pomelo Project, both the Pomelo Compressor Station and the Pomelo Pipeline are located within the West Coast Plain Section of the Atlantic Plain physiographic province. Nueces County is an urban county in the eastern part of Texas.

Air Quality Control Regions and Attainment Status

Air Quality Control Region (AQCR), as defined in Section 107 of the CAA is a federally-designated area in which federal ambient air quality standards must be met. EPA designates the attainment status of an area for each criteria pollutant based on whether an area meets the NAAQS. Areas that meet the NAAQS are termed “attainment areas.” Areas that do not meet the NAAQS are termed “nonattainment areas”. Areas for which insufficient data are available to determine attainment status are termed “unclassified areas.” Areas formerly designated as nonattainment areas that have subsequently reached attainment are termed “maintenance areas.”

As indicated above, Nueces County and Matagorda County are currently designated as attainment/unclassifiable for all pollutants. Orange County, Texas is currently designated as an 8-hour ozone maintenance area and attainment/unclassifiable for all other pollutants. Chambers County and Brazoria County are both designated as 8-hour ozone nonattainment areas and attainment/unclassifiable for all other pollutants.

Federal Air Quality Requirements

The CAA (42 U.S.C 7401 et seq., as amended in 1977 and 1990), and 40 CFR Parts 50 through 99 provide the federal statutes and regulations governing air pollution in

the United States. The following federal requirements have been reviewed for applicability to the Project.

State Air Permit and Air Quality Regulations

The TCEQ regulates the construction and operation of stationary sources of emissions in Texas. As a result, the Projects would be subject to and would need to comply with the regulations that apply to the new and modified stations. Compliance with the applicable state air regulations would be demonstrated through the air permitting process. A Minor Source State Permit would be issued by the TCEQ based upon delegated authority from the EPA. The emissions associated with the Project for all sites will qualify and obtain a Minor Source State Permit.

Title V Operating Permit

The Title V Operating Permit Program, as described in 40 CFR Part 70, requires major sources of air emissions to obtain a federal operating permit. The major source emissions thresholds for determining the need for a Title V operating permit are: 100 tons per year (tpy) of any regulated air pollutant, 10 tpy of any individual hazardous air pollutants (HAPs), or 25 tpy for all HAPs, and 100,000 tpy for GHG (expressed as CO_{2e}). More stringent major source thresholds apply for VOC and NO_x in ozone nonattainment areas, namely 50 tpy of VOC or NO_x in areas defined as serious, 25 tpy in areas defined as severe, and 10 tpy in areas classified as extreme. Additionally, as of July 1, 2011, stationary sources with PTE equal to or greater than 100,000 tpy of CO_{2e} are subject to Title V permitting. The Blessing Compressor Station, Mont Belvieu Compressor Station, and Vidor Compressor Station have existing Title V permits and will need to modify these permits for changes associated with this Project.

Construction Emissions

During construction, a temporary increase in ambient air quality may result from emissions and fugitive dust generated by construction equipment. Air pollutants from construction equipment would be limited to the immediate vicinity of the construction area and would be temporary. There also would be some emissions attributable to vehicles driven by construction workers commuting to and from each Project's work site during construction. Fugitive dust and other emissions from construction activities generally do not result in a significant increase in regional pollutant levels, although local pollutant levels could increase temporarily. Each site owner would implement dust control measures as necessary during certain construction activities, such as transporting soil or rock, trenching, and use of access roads. These measures would include frequent water applications on access roads and in construction work areas; vehicle speed

restrictions; use of gravel or asphalt at site exit points to remove dirt from tires and tracks; and replanting disturbed areas as soon as possible following construction.

Construction emissions from the Projects are shown in Table 16.

Table 16. Projects' Construction Emissions

Source	NO_x (tons)	CO (tons)	$PM_{10/2.5}$ (tons)	SO_2 (tons)	VOC (tons)	Total HAP (tons)	CO_{2e} (tons)
STEP							
Proposed Petronila Compressor Station Nueces County	3.9	15.7	0.4	0.0	1.4	0.0	764.4
Blessing Compressor Station Matagorda County	7.5	38.7	0.8	0.0	3.5	0.1	1,441.5
Angleton Station Brazoria County	0.6	5.2	0.1	0.0	0.2	0.0	116.8
Mont Belvieu Compressor Station Chambers County	4.0	28.7	0.7	0.0	3.3	0.0	715.5
Vidor Compressor Station Orange County	0.3	0.8	0.0	0.0	0.04	0.0	78.8
Subtotal	16.2	89.0	1.9	0.0	8.4	0.2	3,117.0
Pomelo Project							
Pomelo Pipeline Nueces County	5.0	117.8	69.1	0.1	3.2	0.1	1,096.8
Pomelo Compressor Station Nueces County	0.5	26.3	3.0	0.0	0.6	0.0	127.0
Subtotal	**5.5**	**134.1**	**72.1**	**0.1**	**3.9**	**0.1**	**1,224.8**
Projects Total	**21.7**	**223.1**	**74.0**	**0.1**	**12.2**	**0.3**	**4,341.8**

Criteria pollutant and GHG emissions during construction equipment would result from combustion of gasoline and diesel fuels, primarily NO_2, CO, volatile organic compounds (VOCs), PM_{10}, $PM_{2.5}$, and CO_{2e} as well as small amounts of SO_2 and HAP. Emissions would occur over the duration of the construction activity. As stated, impacts from construction equipment would be temporary and would not result in a significant impact on regional air quality or result in any violation of applicable ambient air quality standard. Furthermore, current EPA fuel sulfur standards would also minimize emissions from construction equipment.

General Conformity

General conformity regulations in 40 CFR Part 93, Subpart B, are designed to ensure that federal actions that occur in nonattainment and maintenance areas do not interfere with a state's ability to attain or maintain compliance with NAAQS. Both Projects are considered to be a Federal action, since FERC would be licensing, permitting, or otherwise approving each of the two Projects. General Conformity applies to projects that would generate direct and indirect emissions from both operational and construction emissions that exceed the applicable General Conformity thresholds, excepting operational emissions permitted under a federal air quality permit. For STEP, activities would occur in a designated severe nonattainment area (Chambers and Brazoria Counties) and in a designated maintenance area (Orange County). For the Pomelo Connector Pipeline, no activities would occur in a designated severe nonattainment area or in a designated maintenance area. Therefore, a general conformity applicability analysis for STEP is required, but not required for the Pomelo Connector Pipeline. The following is the analysis for the stated counties for the STEP Project activities.

Chambers and Brazoria Counties (For STEP Project)

For areas classified as severe ozone nonattainment, the emission thresholds are 25 tpy of NOx and 25 tpy of VOC. The total combined NO_x and VOC emissions resulting from the construction activity in Chambers and Brazoria Counties would be 4.6 tpy in NOx and 3.5 tpy in VOC. The combined VOC and NO_x emissions resulting from the STEP Project in Chambers and Brazoria Counties would be below the applicable thresholds, and General Conformity does not apply.

Orange County (For STEP Project)

For areas classified as a maintenance area, the thresholds are 100 tpy of NOx and 100 tpy of VOC. The total combined NOx and VOC emissions resulting from STEP Project construction activity in Orange County would be 0.3 and 0.04 tpy, respectively—well below the applicable 100 tpy thresholds, and General Conformity does not apply.

Operational Emissions

STEP

Operation of the STEP Project would result in long-term increases and/or decreases on emissions of air pollutants from the new and modified compressor station equipment. Table 17 provides the potential operating emissions increases or decreases summary in tpy of criteria pollutants, GHG emissions, and HAPs for each of the STEP facilities.

Table 17. STEP Potential to Emit Operating Emissions Increases/Decreases Summary

Facility	Emissions Type	NO_x (tpy)	CO (tpy)	$PM_{10/2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	Total HAP (tpy)	CO_2e (tpy)
Petronila Compressor Station	Increases Only	16.0	13.1	2.5	5.2	24.5	3.0	56,786.0
Blessing Compressor Station[1]	Existing	956.0	1127.5	16.6	0.2	93.6	27.4	52,970.0
	New	43.3	44.5	14.7	4.8	119.4	22.0	142,881.0
	Increase / Decrease	912.6	-83.0	-1.9	4.6	25.8	-7.8	89,911.0
Mont Belvieu Compressor Station[1]	Existing	89.9	129.4	19.8	5.5	73.4	56.16	9,558.6
	New	49.5	59.4	18,8	5.5	49.5	33.26	7,871.6
	Increase / Decrease	-40.4	-70.0	-1.0	0.0	-23.9	-22.9	-1,687.0
Angleton Station	Increases Only	0.0	0.0	0.0	0.0	0.1	0.0	5.6
Vidor Compressor Station	Increases Only	0.0	0.0	0.0	0.0	0.1	0.0	5.2
	STEP Total	**-937.0**	**-139.9**	**-0.4**	**9.8**	**26.6**	**-27.7**	**145,020.8**

[1] The Project for these sites include installing pollution control equipment and new equipment that is more efficient and emits less pollution to result in an overall decrease of emissions in comparison to existing emissions.

Petronila Compressor Station

Operation of the new gas-fired turbine, emergency internal combustion engine, and process heater would generate emissions of criteria pollutants and greenhouse gases. The new piping at the station would generate fugitive emissions, VOCs, HAPs, and greenhouse gases. Tanks, and separators at the facility would results in emissions of VOCs, HAPS, and GHGs. The parts washer would result in emissions of VOCs due to the evaporation of the solvent used by the machine. The emissions are based on all FERC submittals including the response to a data request submittal to FERC on May 24, 2017. Table 17 identifies the estimated PTE operating emissions increases for the proposed Petronila Compressor Station after the facility is put into service.

Blessing Compressor Station

Operation of the new gas-fired turbine, emergency internal combustion engines, and process heater would generate emissions of criteria pollutants and greenhouse gases at the existing Blessing Compressor Station. The station modifications would alter the piping components, which would change the fugitive emissions resulting from piping component equipment leaks. Tanks and separators at the facility would result in emissions of VOCs, HAPS, and GHGs. Based on the response to a data request submittal to FERC on May 24, 2017, a pollution control project would be included with these changes that would result in a large decrease of emissions once it is implemented. Table 17, identifies the estimated PTE operating emissions increases and/or decreases for the Blessing Compressor Station after the facility is put into service.

Mont Belvieu Compressor Station

Modifications to the existing Mont Belvieu Compressor Station include the implementation of a clean burn emissions project and piping modifications to an existing launcher/receiver. The clean burn project involves the modification of four of the five existing compressor engines. Modifications would generate potential fugitive emissions, VOC, HAPs, and greenhouse gases. As shown in Table 17, the change in PTEs of operational emissions at the Mont Belvieu Compressor Station is reduced for every air pollutant type. The change in PTE operational emissions results from the Project's proposed implementation of "clean-burn" technologies on four of the reciprocating compressors. "Clean-burn" technologies is a layered emissions reduction technologies approach of improved change air delivery (turbocharger and cooling upgrade), electronic pre-combustion chamber (PCC) check valves, enhanced missing, auto balancing with main chamber, and PCC optimization capabilities, and advanced air-to-fuel ratio control.

Vidor Compressor Station and Angleton Station

Table 17 identifies the change in PTE of operational emissions at the Vidor Compressor Station and Angleton Stations. The change in PTE operational emissions

would result from the additions of new piping equipment components (i.e., valves, flanges, connectors, etc.) and gas releases (i.e., blowdown).

Pomelo Project

Operation of the Pomelo Project would result in long-term increases in emissions of air pollutants from the new compressor station equipment. Operation of the Pomelo pipeline is not expected to generate emissions as the pipeline is expected to be located underground and/or welded. As shown in Table 18, estimated increases in PTE operating emissions for the Pomelo Pipeline is 0.01 tpy (all of it would be CO_2e).

The new piping at the Pomelo Compressor Station would generate fugitive emissions and blowdown emissions resulting in VOCs and greenhouse gases being emitted. Tanks, loading operations, and maintenance activities at the facility would result in emissions of VOCs totaling 18.48 tpy. Table 18 identifies the estimated increases in PTE operating emissions.

Table 18. Pomelo Project Potential to Emit Operating Emissions

Facility	NO_x (tpy)	CO (tpy)	$PM_{10/2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	Total HAP (tpy)	CO_2e (tpy)
Pomelo Compressor Station	24.3	12.2	1.7	2.3	18.5	2.5	26,968.4
Pomelo Pipeline	0.0	0.0	0.0	0.0	0.0	0.0	0.01
Pomelo Project Total	24.3	12.2	1.7	2.3	18.5	2.5	26,968.4

Combined Projects

Operation of the Projects would result in long-term increases on emissions from the new and modified compressor station equipment of some air pollutants and decreases in others. Table 19 summarizes the potential increases or decreases in emission in tpy for criteria pollutants, GHG emissions, and HAPs during operation of both Projects.

Table 19. Projects Potential to Emit Operating Emissions

Facility	NO_x (tpy)	CO (tpy)	$PM_{10/2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	Total HAP (tpy)	CO_2e (tpy)
STEP	-937.0	-13939	-0.4	9.8	26.6	-27.7	145,020.8
Pomelo Project	24.3	12.2	1.7	2.3	18.5	2.5	26,968.4
Projects Total	-935.7	-127.7	1.3	12.1	45.1	-25.2	171,989.2

Air Quality Modeling

STEP

For the STEP Project, only the proposed Petronila Compressor Station and the existing Blessing Compressor Station were modeled. This is because the expected emissions from all other sites associated with the project are considered minimal and would not be expected to significantly affected NAAQS compliance. See Table 17 for a detailed list and explanation of Project emissions increases and decreases.

Petronila Compressor Station

An air modeling analysis was conducted for the proposed Petronila Compressor Station using the screening mode of American Meteorological Society/Environmental Protection (AERMOD) as a conservative screening approach to evaluate a range of meteorological conditions. The purpose of the AERMOD model was to evaluate the cumulative air impacts of the proposed Petronila Compressor Station. The model calculated impacts of the proposed Petronila Compressor Station in combination with ambient monitoring data, which was used to account for other nearby sources, and compared to EPA's NAAQS. The AERMOD analysis was performed in a conservative manner.

Table 20 presents the AERMOD modeling results for the proposed Petronila Compressor Station. The maximum modeled concentrations were compared to the Significant Impact Levels (SILs). The SIL is the threshold below which maximum modeled ambient concentrations from a project's emissions increases are determined not to significantly impact the surrounding area.

Table 20. Petronila Compressor Station AERMOD Results and NAAQS Comparison Summary

Pollutant	Averaging Period	SIL (µg/m³)	Background Concentration below the SIL	Model + Background[1]	NAAQS (µg/m³)	NAAQS (Pass/Fail)
PM_{10}	**24-hour**	5.0	Yes	5.0	150	Pass
$PM_{2.5}$	**Annual**	0.3	Yes	0.1	12	Pass
	24-hour	1.2	Yes	1.1	35	Pass
SO_2	**3-hour**	25.0	Yes	25.0	1300	Pass
	1-hour	7.8	Yes	7.8	196	Pass
NO_2 (For NOx)	**Annual**	1.0	No	7.0	100	Pass
	1-hour	7.5	No	56	188	Pass
CO	**8-hour**	500	No	500	10,000	Pass
	1-hour	2,000	No	2,000	40,000	Pass

[1] The level represents the SIL level and the actual value represents below the SIL

As shown, results of the modeling demonstrate that emissions from the proposed Petronila Compressor Station are below the NAAQS and would not result in significant impacts on air quality.

Blessing Compressor Station

Air modeling analysis was conducted for the existing Blessing Compressor Station for all combustion sources. The following sources are included in the modeling:

- proposed one new simple cycle natural gas fired turbine driving a reciprocating compressor; and
- six existing 2 stroke lean burn natural gas fired engines driving reciprocating compressors.

In order to reduce the impacts from the existing six grandfathered engines, Texas Eastern proposes to utilize clean burn technology to reduce the site-wide CO and NO_x emissions. A Pollution Control Project Standard Permit application to authorize the addition of clean burn technology would be submitted to the TCEQ. Therefore, within this modeling exercise, Texas Eastern has represented clean burn technology on the existing engines.

Texas Eastern used the EPA's AERMOD model to perform a refined site-wide air dispersion modeling. The purpose of the AERMOD model was to evaluate the cumulative air impacts of the Blessing Compressor Station. Table 21 identifies the modeling result for the Blessing Compressor Station. Pollutants assessed within the air dispersion modeling analysis include CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$.

A comparison of the sum of the model-predicted results and background concentrations to the NAAQS demonstrates that the combination of existing combustion sources and the proposed compressor would not significantly impact ambient air quality.

Thus, through implementation of construction work practices, the short duration of the construction activities, a review of the estimated emissions from construction and operation, and an analysis of the modeled air quality impacts from operation, we find that the STEP Project would not cause regionally significant impacts on air quality.

Pomelo Project

For the Pomelo Compressor Station, EPA's AERMOD model was used to perform a refined site-wide air dispersion modeling. The purpose of the AERMOD model was to evaluate the cumulative air impacts from the compressor station. Table 22 identifies the modeling results for the Pomelo Compressor Station. Pollutants assessed within the air dispersion modeling analysis include CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$.

A comparison of the sum of the model-predicted results and background concentrations to the NAAQS demonstrates that the combination of existing combustion sources and the proposed compressor station would not significantly impact ambient air quality.

Thus, through implementation of construction work practices, the short duration of the construction activities, a review of the estimated emissions from construction and operation, and an analysis of the modeled air quality impacts from operation, we find that the Pomelo Connector Pipeline would not cause regionally significant impacts on air quality.

Table 21. Blessing Compressor Station AERMOD Results and NAAQS Comparison

Pollutant	Averaging Period[1]	Max. Modeled Concentration (µg/m^3)	Significant Impact Level (SIL) (µg/m^3)	Is Max. Modeled Concentration <SIL?	Background Concentration (µg/m^3)	Total Ambient Concentration (µg/m^3)	NAAQS (µg/m^3)	Is Total Concentration < NAAQS?
NO_2 (For NOx)	1-hour	17.2	7.5	No	26.4	43.6	188	Yes
	Annual	2.4	1.0	No	4.4	6.8	100	Yes
SO_2[2]	1-hour	1.3	7.8	Yes	<SIL	<SIL	196	<SIL
	3-hour	1.1	25.0	Yes	<SIL	<SIL	1,300	<SIL
	24-hour	0.9	5.0	Yes	<SIL	<SIL	365	<SIL
	Annual	0.1	1.0	Yes	<SIL	<SIL	80	<SIL
CO	1-hour	762.6	2,000	Yes	<SIL	<SIL	40,000	<SIL
	8-hour	627.2	500	No	1,105	1,732	10,000	Yes
PM_{10}[3]	24-hour	7.3	5	No	62	69.3	150	Yes
$PM_{2.5}$	24-hour	7.3	1.2	No	23.4	30.6	35	Yes
	Annual	1.7	0.3	No	9.2	10.9	12	Yes

Notes:
[1] All pollutants/averaging periods are based on one year of meteorological data for Matagorda County.
[2] The 24-hour and annual SO_2 standards would be revoked one year after an area is designated for the 2010 standard.
[3] The annual PM_{10} NAAQS was revoked, effective December 19, 2006. The maximum modeled 24-hr $PM_{2.5}$ concentration was used for both $PM_{2.5}$ and PM_{10} NAAQS.

Table 22. Pomelo Compressor Station AERMOD Results and NAAQS Comparison

Pollutant	Averaging Period[1]	Max. Modeled Concentration (µg/m^3)	Significant Impact Level (SIL) (µg/m^3)	Is Max. Modeled Concentration <SIL?	Background Concentration (µg/m^3)	Total Ambient Concentration (µg/m^3)	NAAQS (µg/m^3)	Is Total Concentration < NAAQS?
NO_2 (For NOx)	**1-hour**	61.8	7.5	No	62.1	123.9	188	Yes
	Annual	10.1	1.0	No	8.5	18.6	100	Yes
SO_2[2]	**1-hour**	7.5	7.8	Yes	10.1	<SIL	196	<SIL
	3-hour	7.5	25.0	Yes	12.3	<SIL	1,300	<SIL
CO	**1-hour**	41.1	2,000	Yes	4,023.0	4,064.1	40,000	<SIL
	8-hour	36.1	500	Yes	2,643.7	2,679.8	10,000	<SIL
PM_{10}[3]	**24-hour**	3.7	5	Yes	62.0	65.7	150	<SIL
$PM_{2.5}$	**24-hour**	2.7	1.2	No	22.9	25.5	35	Yes
	Annual	0.8	0.3	No	9.2	10.0	12	Yes

[1] All pollutants/averaging periods are based on one year of meteorological data for Nueces County.
[2] The 24-hour and annual SO_2 standards revoked.
[3] The annual PM_{10} NAAQS was revoked, effective December 19, 2006. The maximum modeled 24-hr $PM_{2.5}$ concentration was used for both $PM_{2.5}$ and PM_{10} NAAQS.

Combined Projects

Only the proposed Petronila and Pomelo Compressor Stations were combined in regards to modeling assessment as they are both located in Nueces County and are within 50 kilometers (km) of each other.

Texas Eastern used the EPA's AERMOD model to perform a refined site-wide air dispersion modeling. The purpose of the AERMOD model was to evaluate the cumulative air impacts of the existing Blessing Compressor Station. Table 21 identifies the modeling results for the Blessing Compressor Station. Pollutants assessed within the air dispersion modeling analysis include CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$.

Table 23 identifies the sum of the modeling results of the proposed Petronila and Pomelo Compressor Stations, and background concentrations, compared to the NAAQS to demonstrate that the combination of existing sources in the area and the proposed compressor stations would not significantly impact ambient air quality. Pollutants assessed within the air dispersion modeling analysis include CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$.

Further, Pomelo submitted additional cumulative air dispersion modeling results on June 12, 2017 (Table 24). The modeling includes all present and foreseeable future projects. As indicated in Pomelo's modeling report, results for CO, SO_2, PM, and PM_{10} were below the SIL and would not have any significant impact on air quality; further detailed air dispersion modeling was not needed for these pollutants. Further air dispersion modeling was performed for NO_x and $PM_{2.5}$ and is presented in Table 24. As indicated in Table 24, all present and foreseeable future projects would result in emissions that would be below the NAAQS limits, and thus, would not result in significant cumulative impacts on air quality.

Thus, through implementation of construction work practices, the short duration of the construction activities, a review of the estimated emissions from construction and operation, and an analysis of the modeled air quality impacts from operation, we find there would be no regionally significant impacts on air quality.

Table 23. Combined Petronila Facility and Pomelo Compressor Station AERMOD Results and NAAQS Comparison

Pollutant	Averaging Period[1]	Max. Modeled Concentration (µg/m^3) [4]	Significant Impact Level (SIL) (µg/m^3)	Is Max. Modeled Concentration <SIL?	Background Concentration (µg/m^3)	Total Ambient Concentration (µg/m^3)	NAAQS (µg/m^3)	Is Total Concentration < NAAQS?
NO_2 (For NOx)	1-hour	69.3	7.5	No	62.1	131.4	188	Yes
	Annual	11.1	1.0	No	8.5	19.6	100	Yes
SO_2[2]	1-hour	15.3	7.8	No	10.1	25.4	196	Yes
	3-hour	32.5	25.0	No	12.3	44.8	1,300	Yes
CO	1-hour	2,041.1	2,000	No	4,023.0	6,064.1	40,000	Yes
	8-hour	536.1	500	No	2,643.7	3,179.8	10,000	Yes
PM_{10}[3]	24-hour	8.7	5	No	62.0	70.7	150	Yes
$PM_{2.5}$	24-hour	3.8	1.2	No	22.9	26.6	35	Yes
	Annual	0.9	0.3	No	9.2	10.1	12	Yes

[1] All pollutants/averaging periods are based on one year of meteorological data for Nueces County.
[2] The 24-hour and annual SO_2 standards were revoked.
[3] The annual PM_{10} NAAQS was revoked, effective December 19, 2006. The maximum modeled 24-hr $PM_{2.5}$ concentration was used for both $PM_{2.5}$ and PM_{10} NAAQS.
[4] Based on the modeling results represented in Tables 20 and 22.

Table 24. Combined Current and Foreseeable Future Projects AERMOD Results and NAAQS Comparison

Pollutant	Averaging Period	Rank of Model Impacts	Total Maximum AERMOD Predicted Concentration ($\mu g/m^3$)	Ambient Background Concentration ($\mu g/m^3$)[1]	Total Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of Criteria (%)	Is Total Concentration < NAAQS?
NO_2 (For NOx)	1-hour	98th	71.0	62.1	133.1	188	71	Yes
	Annual	H1H (max)	10.6	8.5	19.1	100	19	Yes
$PM_{2.5}$	24-hour	98th	3.7	22.9	22.9	35	76	Yes
	Annual	H1H (5yr avg.)	0.8	9.2	9.2	12	84	Yes

[1] Design concentration for NAAQS are based on standards listed in Table 9-2-1 of Pomelo Resource Report 9.

B.8.2. Noise

Regulatory Noise and Vibration Requirements

Noise quality can be affected both during construction and operation of the Projects. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetative cover. Two measures to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{dn} is an energy average of the daytime L_{eq} (i.e., L_d) and nighttime L_{eq} (i.e., L_n) plus 10 decibel (dB). The A-weighted scale is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for noise change is considered to be 3 A-weighted decibel (dBA); 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise.

In 1974, the EPA published its Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA, 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has determined that an L_{dn} of 55 dBA adequately protects the public from indoor and outdoor activity noise interference. FERC's regulations require that the noise attributable to any compressor station, compression added to an existing station, or any modification, upgrade or update of an existing station, must not exceed an L_{dn} of 55 dBA at noise sensitive areas (NSAs). NSAs include residences, schools and daycare facilities, hospitals, long-term care facilities, places of worship, libraries, and parks and recreational areas especially known for their solitude and tranquility, such as certain wilderness areas. An L_{dn} of 55 dBA is equivalent to a continuous noise level of 48.6 dBA.

Compressor unit blowdowns (gas venting) can occur during initial construction/testing, operational startup and shutdown of the compressor or maintenance activities, and for emergency purposes. During construction and testing of the station, there is an increased frequency of blowdowns to ensure the facility would be operated reliably and safely. Blowdowns during compressor startup/shutdown would be infrequent as normal operation does not require venting and units are in pressurized state to facilitate operation. Occasional maintenance and startup/shutdown blowdowns can occur. To minimize the impact of blowdown noise from the maintenance activity, Texas Eastern and Pomelo would control the blowdown rate to minimize the noise contribution and would conduct blowdowns during daylight hours. Full compressor station blowdowns would only occur during an emergency event, are very infrequent, and are typically less than 5 minutes in duration.

In addition to noise requirements, FERC, under 18 CFR 380.12(k)(v)(B) requires that operation of compressor stations not result in any perceptible increase in vibration. There are no state or county noise ordinances applicable to the Projects' components.

Construction Noise

Noise would be generated during construction of the Projects' facilities. While individuals in the immediate vicinity of the construction activities would experience an increase in noise, this effect would be temporary and localized. The changing number and type of construction equipment at these sites would result in varying levels of noise. Construction activities associated with the Projects would be performed with standard heavy equipment. The most prevalent sound source during construction would be the internal combustion engines used to power the construction equipment, such as backhoes, track-excavators, and cement trucks. Construction noise, while varying according to equipment in use, would be mitigated by the attenuating effect of distance and the intermittent and short-lived character of the noise. The Pomelo pipeline traverses mostly rural areas, and these NSAs consist of single family rural residences. Construction would not generally affect nighttime noise levels as it would be limited to daylight hours. No significant noise impacts are anticipated during construction.

Horizontal Directional Drilling

HDD would be required during pipeline installation of the Pomelo Project. All activities, except potentially the pipe pullback, would be performed during daylight hours. The drilling contractor would determine if pipe pullback should be performed on a 24-hour basis until completed based on many factors, including soil conditions, equipment and personnel schedule, landowner requests, and permit approvals. The equipment would consist of an HDD drill rig and auxiliary support equipment including electric mud pumps, portable generators, a crane, mud mixing and cleaning equipment, forklifts, loaders, trucks, and portable light sets. Of these, the HDD drill rig is expected to be the dominant sound source. Construction activity that would or may occur during nighttime hours would be performed with the goal that the activity contribute noise levels below 55 dBA L_{dn} and 48.6 L_{eq}, or no more than 10 dBA over background if ambient noise levels are above 55 dBA L_{dn}.

Currently, two HDD sites are proposed for the Pomelo Connector Pipeline: one across U.S. Highway 77 and Union Pacific railroad track, and the other across Petronila Creek and its associated wetland complex. There are no NSAs within 0.5 mile of the proposed the U.S. Highway 77/Union Pacific railroad crossing.

Crossings completed using HDD may require that drilling operations are not stopped until completed to increase the probability of a successful HDD crossing. Pomelo would comply with the intent of the Commission's noise limit of 55 dBA at the

nearest NSAs regarding noise related to HDD operations. As shown in Table 25, the results of the acoustical analysis indicate a marginal exceedance of the 55 dBA (L_{dn}) limit at an NSA located in proximity to the HDD exit point at Petronila Creek (Hoover and Keith 2016a). Pomelo developed a HDD Noise Mitigation Plan that provides further direction and candidate noise mitigation measures to ensure compliance. To ensure that the NSA associated with the Petronila Creek and wetlands HDD crossing is not significantly affected by HDD noise approaching the sound level limit of 55 dBA (L_{dn}), Pomelo proposes to implement its HDD Noise Mitigation Plan as necessary to meet regulatory objectives. We conclude that Pomelo's proposed plan will sufficiently ensure that noise associated with the HDD will not result in significant impacts at the nearest NSAs.

Table 25. Noise Quality Analysis for the Petronila Creek and Wetlands HDD Crossing

HDD Crossing Location	Entry or Exit Point	Distance & Direction to Entry or Exit Point	Current Ambient L_{dn} (dBA)	Est'd L_{dn} of HDD Operations (dBA)	L_{dn} of HDD+ Ambient (dBA)	Potential Increase in Ambient Sound Level (dBA)
Petronila Creek and wetlands	Entry	1,700 ft. (E)	50.7	46.7	52.1	1.4
	Exit	600 ft. (ENE)	50.7	53.3	55.2	4.5

Operational Noise

Based on the scope of the Projects, the operational noise would be limited to the sites where new compressors are being constructed. The Projects shall implement noise control measures to minimize noise from these facilities. The following is a list of noise control measures that would be implemented:

- noise control measures would be applied to the compressor building enclosing the new turbine and compressor, including the use of appropriate building materials;
- adequate muffler system for each turbine exhaust system;
- acoustical pipe insulation for outdoor aboveground gas piping;
- adequate silencer for each turbine air intake system;
- low-noise lube oil cooler for each compressor unit;
- low-noise gas cooler; and
- unit blowdown silencer.

Petronila Compressor Station

Table 26 summarizes the estimated noise levels for the closest NSAs during operation at full load of the proposed Petronila Compressor Station (Hoover and Keith 2015). The noise impact considers the noise produced by significant sound sources associated with the new compressor unit that could impact the sound contribution at the nearby NSAs. Two NSAs were identified in proximity to the proposed Petronila Compressor Station.

Table 26. Noise Quality Analysis for the Petronila Compressor Station

Closest NSA and Type of NSA	Distance and Direction of NSA to Site Center	Current Ambient L_{dn} (dBA)	Est'd L_{dn} of the Station (dBA) at Full Load	Est'd Station L_{dn} + Ambient Level/L_{dn} (dBA)	Potential Increase in Ambient Sound Level (dBA)
NSA # 1 (Residence)	2,521 feet (WSW)	48.6	44.0	49.9	1.3
NSA # 2 (Residence)	3,780 feet (SSE)	47.2	38.9	47.8	0.6

Current (ambient) noise level (L_{dn}) at the NSA based on recently-measured 2015 sound survey data.

The results of the measurements, observations and acoustical analysis indicate that, if anticipated and recommended noise control measures for the new compressor at the proposed Petronila Compressor Station are successfully implemented, the noise attributable to the new compressor would be lower than 55 dBA (L_{dn}), including periodic gas blowdown events.

Blessing Compressor Station

Table 27 summarizes the estimated noise levels for the closest NSAs when the Blessing Compressor Station would be operating at full load (i.e., sound level after installation of planned station modifications) (Hoover and Keith 2015). Only one NSA was identified in proximity to the Blessing Compressor Station.

Table 27. Noise Quality Analysis for the Blessing Compressor Station

Closest NSA and Type of NSA	Distance and Direction of closest NSA	Current Ambient L_{dn} (dBA)[1]	Estimated L_{dn} of the Station (dBA) at Full Load	Estimated Station L_{dn} + Ambient Level/L_{dn} (dBA)	Potential Increase in Ambient Sound Level (dBA)
NSA # 1 (Residence)	1,305 (NE)	53.8	45.5	54.4	0.6

[1] Current (ambient) noise level (L_{dn}) at the NSA based on recently-measured 2015 sound survey data.

The results of the acoustical analysis indicate that, if the recommended noise control measures for the modifications at the existing Blessing Compressor Station are successfully implemented, the noise attributable to the station would be lower than 55 dBA (L_{dn}) at the nearby NSAs in which the current sound level is equal to or lower than 55 dBA (L_{dn}).

Pomelo Compressor Station

Table 28 summarizes the estimated noise levels for the closest NSAs during full load operation of the Pomelo Compressor Station, including noise levels due to gas blowdown events (Hoover and Keith 2016b). Two NSAs were identified in proximity to the Pomelo facility.

Table 28. Noise Quality Analysis for the proposed Pomelo Compressor Station

Closest NSA and Type of NSA	Distance and Direction of closest NSA	Current Ambient L_{dn} (dBA)[1]	Estimated L_{dn} of the Station (dBA) at Full Load	Estimated Station L_{dn} + Ambient Level/L_{dn} (dBA)	Potential Increase in Ambient Sound Level (dBA)
NSA # 1 (Residence)	5,300 feet (E)	45.7	50.2	51.5	5.8
NSA # 2 (Residence)	5,400 feet (W)	48.5	49.9	52.3	3.8

[1] Current (ambient) noise level (L_{dn}) at the NSAs based on recently-measured 2016 sound survey data.

The results of the measurements, observations and acoustical analysis indicate that, if anticipated and recommended noise control measures for the new Pomelo Compressor Station are successfully implemented, the noise attributable to the new compressor would be lower than 55 dBA (L_{dn}).

To ensure that the proposed Pomelo and Petronila Compressor Stations and modifications to Blessing Compressor Station operate in compliance with our requirements, **we recommend that:**

Texas Eastern shall file a noise survey with the Secretary no later than 60 days after placing the proposed Petronila Compressor Station in service. If a full load condition noise survey is not possible, Texas Eastern 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 the equipment at the Petronila Compressor Station under interim or full horsepower load conditions exceeds an L_{dn} of 55 dBA at any nearby NSAs, Texas Eastern 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. Texas Eastern 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.

We also recommend:

Texas Eastern shall file a noise survey with the Secretary no later than 60 days after placing authorized unit at the modified Blessing Compressor Station in service. If the noise attributable to the operation of the new unit at the modified Blessing Compressor at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Texas Eastern shall install additional noise controls to meet that level within 1 year of the in-service date. Texas Eastern shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.

We also recommend:

Pomelo shall file a noise survey with the Secretary no later than 60 days after placing the new compressor at the Pomelo Compressor Station in service. If a full load condition noise survey is not possible, Pomelo should provide an interim survey at maximum possible horsepower load and provide a full load survey within 6 months. If the noise attributable to the operation of the equipment at the Pomelo Compressor Station under interim or full horsepower load conditions exceeds an L_{dn} of 55 dBA at any nearby NSAs, Pomelo 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. Pomelo 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.

Based on the analyses conducted and mitigation measures proposed, we conclude that the construction and operation of the Project would result in no significant noise impacts.

Vibration

In addition to noise requirements, the Commission, under 18 CFR 380.12(k)(v)(B), requires that operation of compressor stations not result in any perceptible increase in vibration. Based on the type of driver/compressor and other ancillary equipment proposed for the proposed compressor station and compressor station modifications, no detectable increase in vibration at the NSAs is anticipated. A perceptible level of vibration is extremely unlikely due to proper equipment design, balancing, and maintenance of operational compressor equipment, which prevent vibrations that could be severe enough to be perceptible outside facility boundaries, as they could likely damage the equipment. The proposed configuration of the compressor station would not produce pulsating gas flow at levels significant enough to induce vibration in the associated piping systems.

The noise sources for the compressor station equipment that could generate perceptible noise induced vibration, such as the low-frequency turbine exhaust noise, would be adequately mitigated with silencer systems to ensure that the operation of the turbines would not result in an increase in perceptible vibration at any NSA. In conclusion, there should not be an increase in perceptible vibration at any nearby NSA for the STEP and Pomelo Project components since low-frequency turbine exhaust noise at the compressor stations would be adequately attenuated.

Based on the analyses conducted and mitigation measures proposed, we conclude that the construction and operation of the Project would result in no significant noise impacts.

B.9. Reliability and Safety

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

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. The natural gas for the Pomelo Connector Pipeline would contain a chemical odorant that produces the familiar “natural gas smell”.

Methane has an auto-ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive, however it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

B.9.1. Safety Standards

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

Title 49, U.S.C. Chapter 601 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 DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions.

The DOT pipeline standards are published in Parts 190-199 of Title 49 of the CFR. 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 the DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it will 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 the DOT in accordance with section 3(e) of the Natural Gas Pipeline Safety Act. The FERC accepts this certification and does not impose additional safety standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert DOT. 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.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

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

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

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

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

Class locations also specify the maximum distance to a sectionalizing block valve (*e.g.*, 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures; hydrostatic test pressures; maximum allowable operating pressure (MAOP); inspection and testing of welds; and

frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Preliminary class locations for the Projects have been developed based on the relationship of the pipeline centerline to other nearby structures and manmade features. The majority of the Pomelo Connector Pipeline would be classified Class 1, with 0.21 mile of Class 3 pipe between the compressor station and meter station.

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

The DOT Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contain all the elements described in 49 CFR 192.911 and address the risks on each transmission pipeline segment. The rule establishes an integrity management program which applies to all high consequence areas (HCA).

The DOT has published rules that define HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method, an HCA includes:

- current class 3 and 4 locations,
- any area in Class 1 or 2 where the potential impact radius[6] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[7], or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.

An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

[6] The potential impact radius is calculated as the product of 0.69 and the square root of: the MAOP of the pipeline in psig multiplied by the square of the pipeline diameter in inches.

[7] The potential impact circle is a circle of radius equal to the potential impact radius.

In the second method, an HCA includes any area within a potential impact circle which contains:

- 20 or more buildings intended for human occupancy, or
- an identified site.

Once a pipeline operator has determined the HCAs along its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan at section 192.911. The HCAs have been determined based on the relationship of the pipeline centerline to other nearby structures and identified sites. Of the approximately 14 miles of proposed pipeline route, Pomelo has identified approximately 0.21 mile of Class 3 pipe (between MP 0.00 and 0.21 on the discharge pipeline between the compressor and meter station), that would be classified as an HCA. The pipeline integrity management rule for HCAs requires inspection of the pipeline HCAs every 7 years.

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

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

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

B.9.2. Pipeline Accident Data

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

- caused a death or personal injury requiring hospitalization; or
- involve property damage of more than $50,000 (1984 dollars)[8].

During the 20 year period from 1997 through 2016, a total of 1,329 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide.

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 29 provides a distribution of the causal factors as well as the number of each incident by cause.

Table 29. Natural Gas Transmission Pipeline Significant Incidents by Cause (1997-2016)[1]

Cause	No. of Incidents	Percentage
Corrosion	316	23.8
Excavation[2]	204	15.3
Pipeline material, weld or equipment failure	377	28.4
Natural force damage	150	11.3
Outside force[3]	86	3.3
Incorrect operation	44	3.3
All other causes[4]	152	11.4
TOTAL	1,329	-

Notes:
1. PHMSA 2017
2. Includes third party damage.
3. Fire, explosion, vehicle damage, previous damage, intentional damage.
4. Miscellaneous causes or unknown causes.

The dominant causes of pipeline incidents are corrosion and pipeline material, weld or equipment failure constituting 52.2 percent of all significant incidents. The pipelines included in the data set in Table 29 vary widely in terms of age, diameter, and

[8] $50,000 in 1984 dollars is approximately $112,955.73 as of May 2015 (CPI, Bureau of Labor Statistics, 2015)

level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of significant incidents is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents and material failure, because corrosion and pipeline stress/strain is a time-dependent process.

The use of both an external protective coating and a cathodic protection system[9], required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.

Outside force, excavation, and natural forces are the cause in 29.9 percent of significant pipeline incidents. These result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Table 30 provides a breakdown of external force incidents by cause.

Table 30. Outside Forces Incidents by Cause (1997-2016)

Cause[1]	No. of Incidents	Percent of all Incidents
Third party excavation damage	164	37.5
Operator excavation damage	25	5.7
Unspecified excavation damage/previous damage	15	3.4
Heavy rain/floods	78	17.8
Earth movement	32	7.3
Lightning/temperature/high winds	26	5.9
Natural force (other)	11	2.5
Vehicle (not engaged with excavation)	50	11.4
Fire/explosion	9	2.1
Previous mechanical damage	6	1.4
Fishing or maritime activity	7	1.6
Intentional damage	1	0.2
Electrical arcing from other equipment/facility	1	0.2
Unspecified/other outside force	12	2.7
TOTAL	437	-

[1] Excavation, Outside Force, and Natural Force from Table 29.

[9] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc) that corrodes at faster rate to reduce corrosion.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller-diameter pipelines; which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movement.

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

B.9.3. Impact on Public Safety

The significant incidents data summarized in Table 29 includes natural gas transmission system failures of all magnitudes with widely varying consequences.

Table 31 presents the annual injuries and fatalities that occurred on natural gas transmission lines from incidents for the 5-year period between 2012 and 2016. The majority of fatalities from pipelines are due to local distribution pipelines not regulated by FERC. These are natural gas pipelines that distribute natural gas to homes and businesses after transportation through interstate natural gas transmission pipelines. In general, these distribution lines are smaller diameter pipes and/or plastic pipes which are more susceptible to damage. Local distribution systems do not have large rights-of-ways and pipeline markers common to the FERC regulated natural gas transmission pipelines. Therefore, incident statistics inclusive of distribution pipelines are inappropriate to use when considering natural gas transmission projects.

Table 31. Injuries and Fatalities - Natural Gas Transmission Systems

Year	Injuries	Fatalities
2012	7	0
2013	2	0
2014	1	1
2015	14	6
2016	3	3

Source: PHMSA 2017

The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in Table 32 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to

hazards are not uniform among all categories. The data nonetheless indicate a low risk of death due to incidents involving natural gas transmission pipelines compared to the other categories. Furthermore, the fatality rate is much lower than the fatalities from natural hazards such as lightning, tornados, or floods.

Table 32. Nationwide Accidental Deaths

Type of Accident	Annual No. of Deaths[1]
All accidents	123,706
Motor Vehicle	43,945
Poisoning	29,846
Falls	22,631
Injury at work	5,025
Drowning	3,443
Fire, smoke inhalation, burns	3,286
Floods[2]	84
Lightning[2]	47
Tornado[2]	70
Tractor[3]	151
Natural gas distribution lines[4]	11
Natural gas transmission pipelines[4]	2

1. All data, unless otherwise noted, reflects 2007 statistics (United States Census Bureau 2012)
2. National Oceanic and Atmospheric Administration (NOAA) 2017
3. Bureau of Labor Statistics 2015.
4. PHMSA 2017.

The available data show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. From 1997 to 2016, there were an average of 66 significant incidents, 9 injuries and 2 fatalities per year. The number of significant incidents over the more than 300,000 miles of natural gas transmission lines indicates the risk is low for an incident at any given location. The operation of the Projects would represent a slight increase in risk to the nearby public.

During public scoping, FERC received a comment from the Union Pacific Railroad (UPRR) that the Pomelo Connector Pipeline may parallel and/or cross a UPRR railroad track in the Brownsville Subdivision at approximately Mile Post 136.77. However, no Project facilities are proposed in Brownsville, Texas, which is more than 100 miles from the Projects. The Pomelo Connector Pipeline would cross a UPRR railroad line that parallels the State Highway 77 at MP 6.9. However, the pipeline would be installed via HDD underneath this railroad line as part of a 1,200-foot-long HDD crossing underneath both the railroad and State Highway 77. STEP and Pomelo have committed to engage with UPRR to discuss the Projects, as appropriate, and to ensure that any valid concerns of UPRR are discussed and resolved.

Based on Texas Eastern and Pomelo's commitment to comply with DOT's regulations, construction and operation of the Projects would represent a minimal increase in risk to the public, and we are confident that the Projects' facilities would be constructed and operated safely.

B.10. Cumulative Impacts

Nueces County was first settled by the Spanish as early as the 1760s. Settlement of Matagorda County began in the early 1820s. The mainstay of the local economy remained largely ranching until the latter half of the 19th and early 20th centuries, with Corpus Christi emerging as a commercial hub in the region. Nueces County began to witness cash-crop agriculture and by the late 1870's and early 1880's livestock raising was being supplanted by more traditional farming, including of cotton and vegetables. Cotton production peaked in the 1920 to late 1940's and was replaced by truck farming and sorghum. By the 1980's, the economy of Nueces County was 80 percent agricultural. Oil and gas production and development was also important in the area with over 533 million barrels of oil produced between 1930 and 1989. Thereafter, oil and gas production continued at high levels with drilling permits and production declining since the early 2000s (Texas Drilling 2017).

In accordance with NEPA, we identified other actions located in the vicinity of the Projects' facilities and evaluated the potential for a cumulative impact on the environment. As defined by 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 within the region 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 also considered.

Consistent with CEQ guidance and to determine cumulative impacts, we expanded the geographic boundaries of our review into geographic scopes as described below and listed in Table 33. 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 Projects.

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

be significant. We also conclude that nearly all of the project-related impacts would be contained within or adjacent to the temporary construction right-of-way and ATWS. For example, erosion control measures included in the STEP and Pomelo construction and restoration plans, would keep disturbed soils within work areas. For other resources, the contribution to regional cumulative impacts is lessened by the expected recovery of ecosystem function. This is in contrast with other large-scale development projects in which, for example, wetlands are permanently converted to uplands. Similarly, vegetative communities would be cleared, but revegetation would proceed immediately following construction in all temporary work areas. As described further below, no impacts are anticipated to geology, or cultural resources.

Our previous analysis concluded that most of the impacts of the Projects would be largely limited to the 13.8-mile-long pipeline corridor (including the discharge pipeline) followed by workspaces associated with new and existing compressor stations. Furthermore, because the impacts of the Projects would generally be localized, they would only contribute incrementally to a cumulative impact in the geographic scope. As a result, we have calibrated the scope of our analysis to the magnitude of the aforementioned environmental impacts.

Based on the impacts of the Projects as identified and described in this EA and consistent with CEQ guidance, we have determined that the following resource-specific geographic scopes, described in Table 33, are appropriate to assess cumulative impacts.

We eliminated geologic resources from further discussion because no historic or active mining operations were identified within the geographic scope of the Projects (0.25 mile). Although oil and gas wells and associated gathering pipeline facilities are prevalent in the Projects areas, the majority of these wells and gathering facilities were constructed before 2005; two wells were recently permitted for recompletion in 2014 (API #s 35534044 and 35532237) , and two wells were recently permitted for new drilling in 2012 (API #’s 32132336 and 35534064) with the closest well located approximately 0.2 mile (approximately 1,050 feet) from the existing Blessing Compressor Station. Furthermore, the Projects would not directly impact other reasonably foreseeable future project facilities or indirectly impede potential future oil and gas exploration and production activities outside of the permanent pipeline right-of-way and facility operational areas (i.e., the Crest Resources North Chapman Ranch Project located 13.2 miles southeast of the proposed Petronila Compressor Station and the Start Scientific Palacios Field Exploratory Oil and Gas Well Drilling Project near the Blessing Compressor Station area). Therefore, the Projects do not impact geological resources and no geological hazards are anticipated during construction and operation.

Table 33. Geographic Scope for Resources Affected by the Pomelo/STEP Projects

Resource	Geographic Scope	Rationale
Water Resources and Water Quality, Vegetation and Wildlife, Special-Status Species, and Soils	Watershed Boundary (HUC 12)	The HUC 12 sub-watershed boundary was chosen to analyze cumulative impacts to wildlife and vegetation as impacts to vegetation, wetlands, wildlife, and soils would largely be contained within or adjacent to the proposed workspaces. Surface water impacts could extend outside of the proposed workspaces, but would be contained to a relatively small area.
Land Use, Recreation, and Visual Resources	1 mile	Impacts to land uses, recreation, and aesthetics generally occur within and adjacent to project areas.
Socioeconomics	County	County boundaries were used as a geographic scope because demographic statistics are generally assessed on a County basis.
Air Quality	Operations phase: 50 km – STEP 10 km – Pomelo Project Construction phase: 0.25 mile	STEP - The EPA considers 50 kilometers (km) to be the nominal distance at which most steady-state Gaussian plume models. Pomelo - In lieu of 50-km radius, a 10-km radius with quantitative modeling can be used.
Noise and Vibration	1 mile	Noise impacts are highly localized and attenuate quickly as the distance from the noise source increases.

As previously discussed, no NRHP eligible sites were identified for the Projects within the APE. In addition, no Native American tribes have expressed concerns about potential impacts on tribal land or properties as a result of the Projects. Therefore, development of the Projects would not contribute to or cumulatively result in impacts to cultural resources when combined with other projects.

Appendix A lists the Projects with other past, present, and reasonably foreseeable future projects identified within the geographic scope of the Projects, and shows the potential cumulative effects of all projects, to the extent that specific impact information was available.

Projects selected include several TXDOT projects, the La Paloma Estates Subdivision Project, the Stratton Ridge Expansion Project, and the Valley Crossing System. The Pomelo Project would also require the installation of and connection with an electric powerline and communications line to serve the aboveground facility. Specifically, American Electric Power would need to replace approximately 1,200 feet of its existing single-phase electrical distribution line with a three-phase electrical distribution line, to provide the necessary power for the compressor station. Pomelo

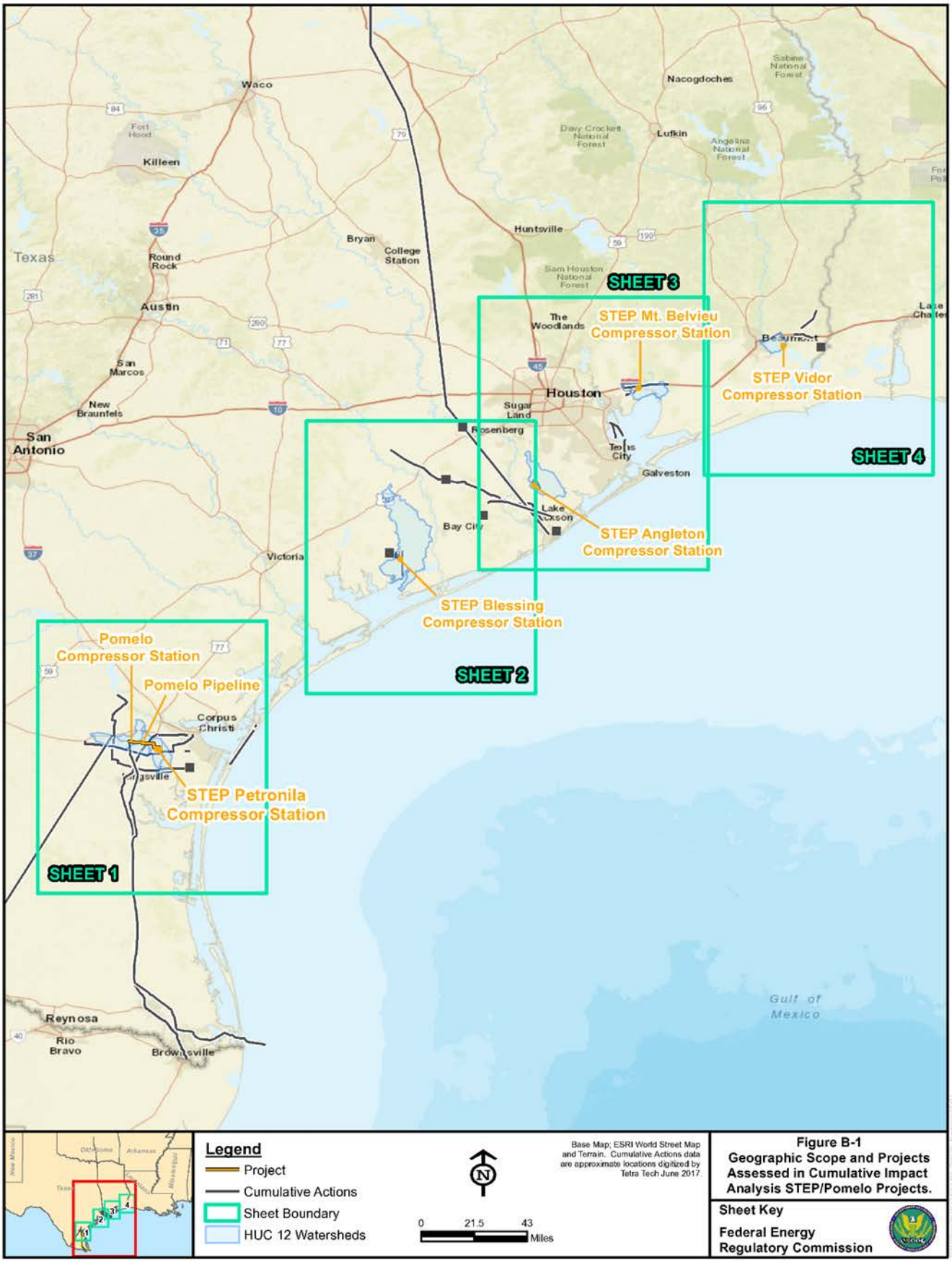
states that American Electric Power would be responsible for permitting, constructing, owning, and operating the new electric powerline. The new three-phase line would connect to an existing powerline paralleling Farm-to-Market Road (FM) 2826, near the intersection of FM 2826 and Access Roads #10 and #10a for this Project. The powerline would parallel existing Access Roads #10 and #10a and then connect directly into the Pomelo Compressor Station. The replacement/upgrade of this line would occur before or simultaneously with the compressor station construction. The electric powerline is not FERC-jurisdictional, but is under the jurisdiction of the Public Utility Commission of Texas. It would cross privately-owned land and may also be subject to local permit requirements. The typical right-of-way required to construct the electric powerline would be 50 feet wide, and Pomelo estimated it would require a total of approximately 0.55 acres of land disturbance, which could change depending on the final routing and design of the powerline.

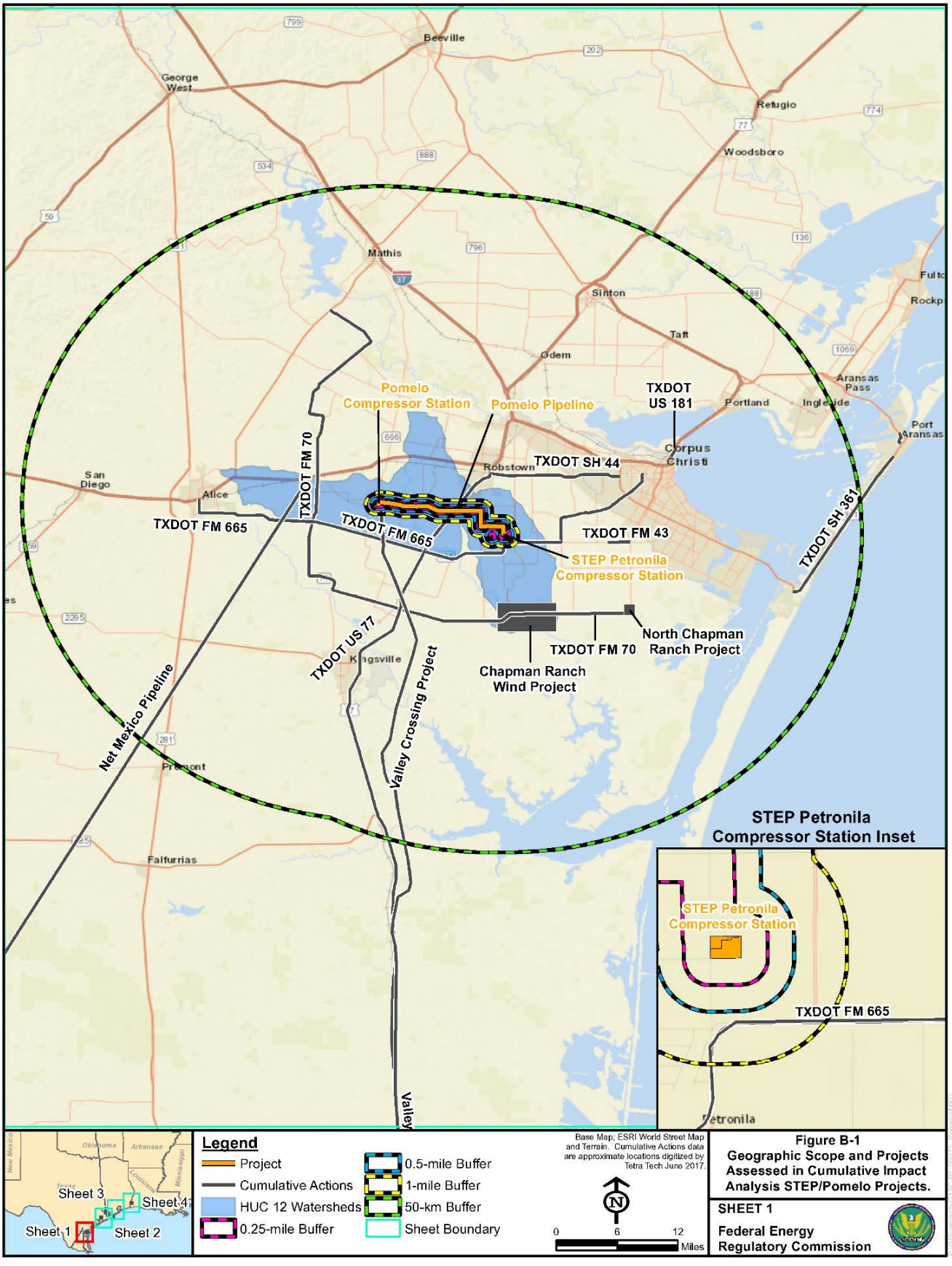
In addition to the electric distribution powerline, the Pomelo Compressor Station would require the installation of communications lines and equipment, which typically include a combination of standard cable, microwave radio, and/or satellite link for Supervisory Control and Data Acquisition (SCADA) and voice communications. Pomelo's application did not at the time of filing include a determination of the specific required communications facilities, but noted that if cable was selected, the cable would likely be routed within the county road right-of-way or mounted to the same poles used for the approximately 1,200-foot- long electric powerline, and would not require any new right-of-way.

The impacts associated with the construction of the non-jurisdictional utility lines outside of the compressor station boundaries are included in this cumulative impact analysis. Maps showing the location of the geographic scope and the projects assessed in the cumulative impact analysis are provided in Figure B-1 (including index sheet key and four sheets).

We recognize that a lack of quantitative data on impacts related to the TXDOT projects limits the scope of this analysis. However, the TXDOT projects largely involve improvements to existing roads, highways and structures (i.e., widening, restriping, or the addition of travel lanes) and would result in minimal temporary construction and cumulative effects to air and noise, soils, and water resources when combined with the Projects.

Similarly, the adjacent proposed La Paloma Subdivision Project would have minimal, temporary construction and cumulative effects to air and noise, soils, and water resources, and minimal operational impacts to soils and water resources when combined with the Projects.


Waco
Killeen
Fort Hood
Round Rock
Austin
San Marcos
New Braunfels
San Antonio
Texas
Bryan
College Station
Huntsville
Sam Houston National Forest
Nacogdoches
Sabine National Forest
Davy Crockett National Forest
Lufkin
Angelina National Forest
The Woodlands
Houston
Sugar Land
Rosenberg
Texas City
Galveston
Lake Jackson
Bay City
Victoria
Corpus Christi
Beaumont
Reynosa
Rio Bravo
Brownsville
Gulf of Mexico
SHEET 1
SHEET 2
SHEET 3
SHEET 4
STEP Mt. Belvieu Compressor Station
STEP Vidor Compressor Station
STEP Angleton Compressor Station
STEP Blessing Compressor Station
Pomelo Compressor Station
Pomelo Pipeline
STEP Petronila Compressor Station
Legend
Project
Cumulative Actions
Sheet Boundary
HUC 12 Watersheds
Base Map: ESRI World Street Map and Terrain. Cumulative Actions data are approximate locations digitized by Tetra Tech June 2017.
0 21.5 43
Miles
Figure B-1
Geographic Scope and Projects Assessed in Cumulative Impact Analysis STEP/Pomelo Projects.
Sheet Key
Federal Energy Regulatory Commission


Beeville
George West
Refugio
Woodsboro
Mathis
Sinton
Taft
Odem
Aransas Pass
Portland
Ingleside
Port Aransas
Corpus Christi
Robstown
San Diego
Alice
Kingsville
Pleasanton
Falfurrias
Pomelo Compressor Station
Pomelo Pipeline
TXDOT US 181
TXDOT SH 44
TXDOT FM 70
TXDOT FM 665
TXDOT FM 43
TXDOT SH 361
STEP Petronila Compressor Station
North Chapman Ranch Project
Chapman Ranch Wind Project
TXDOT US 77
Valley Crossing Project
Net Mexico Pipeline
STEP Petronila Compressor Station Inset
Petronila
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Legend
Project
Cumulative Actions
HUC 12 Watersheds
0.25-mile Buffer
0.5-mile Buffer
1-mile Buffer
50-km Buffer
Sheet Boundary
Base Map; ESRI World Street Map and Terrain. Cumulative Actions data are approximate locations digitized by Tetra Tech June 2017.
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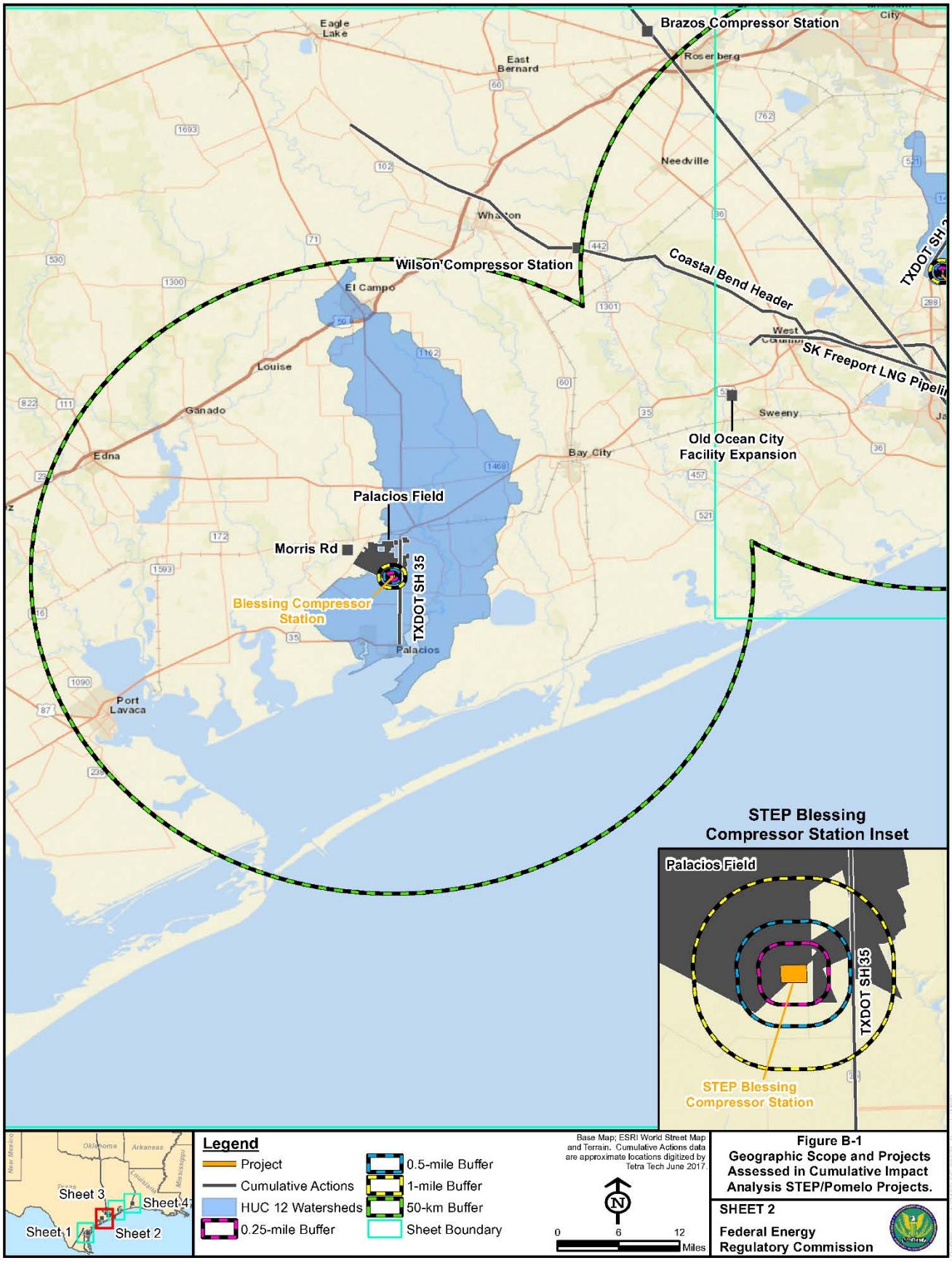
Miles
Figure B-1
Geographic Scope and Projects Assessed in Cumulative Impact Analysis STEP/Pomelo Projects.
SHEET 1
Federal Energy Regulatory Commission


Brazos Compressor Station
Wilson Compressor Station
Coastal Bend Header
SK Freeport LNG Pipeli
Old Ocean City
Facility Expansion
Palacios Field
Morris Rd
Blessing Compressor
Station
TXDOT SH 35
Palacios
Eagle
Lake
East
Bernard
Rosenberg
Needville
Wharton
El Campo
Louise
Ganado
Edna
Bay City
Sweeny
Port
Lavaca
STEP Blessing
Compressor Station Inset
STEP Blessing
Compressor Station
Legend
Project
Cumulative Actions
HUC 12 Watersheds
0.25-mile Buffer
0.5-mile Buffer
1-mile Buffer
50-km Buffer
Sheet Boundary
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Base Map: ESRI World Street Map
and Terrain. Cumulative Actions data
are approximate locations digitized by
Tetra Tech June 2017.
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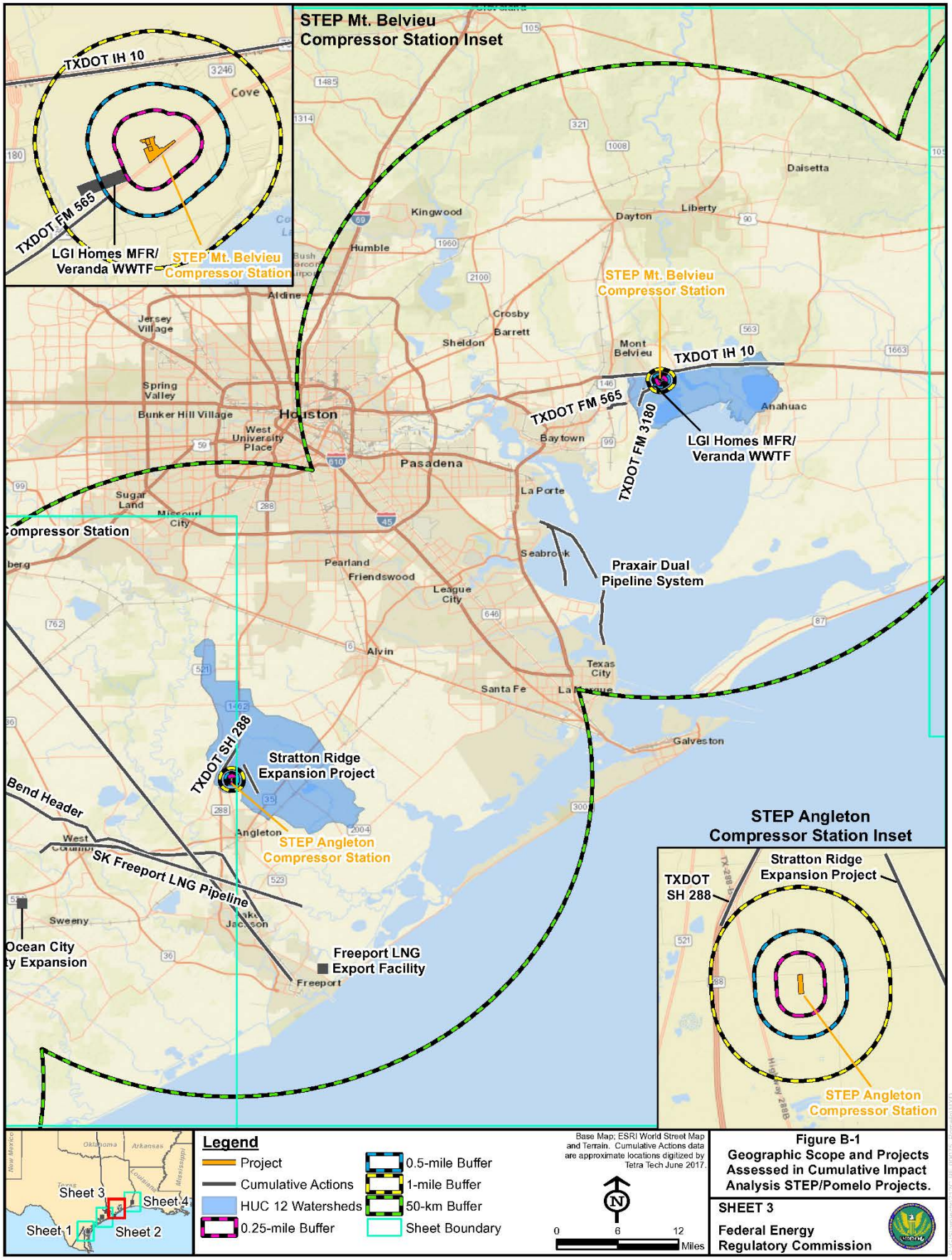
Miles
Figure B-1
Geographic Scope and Projects
Assessed in Cumulative Impact
Analysis STEP/Pomelo Projects.
SHEET 2
Federal Energy
Regulatory Commission


STEP Mt. Belvieu
Compressor Station Inset
TXDOT IH 10
TXDOT FM 565
LGI Homes MFR/
Veranda WWTF
STEP Mt. Belvieu
Compressor Station
STEP Mt. Belvieu
Compressor Station
TXDOT IH 10
TXDOT FM 565
TXDOT FM 3180
LGI Homes MFR/
Veranda WWTF
Praxair Dual
Pipeline System
Stratton Ridge
Expansion Project
TXDOT SH 288
STEP Angleton
Compressor Station
SK Freeport LNG Pipeline
Freeport LNG
Export Facility
Ocean City
STEP Angleton
Compressor Station Inset
Stratton Ridge
Expansion Project
TXDOT
SH 288
STEP Angleton
Compressor Station
Houston
Pasadena
Baytown
La Porte
Seabrook
Pearland
Friendswood
League City
Alvin
Texas City
Galveston
Santa Fe
Angleton
Freeport
Sweeny
Bend Header
Kingwood
Humble
Dayton
Liberty
Daisetta
Anahuac
Mont Belvieu
Crosby
Barrett
Sheldon
Aldine
Jersey Village
Spring Valley
Bunker Hill Village
West University Place
Sugar Land
Missouri City
Cove
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Legend
Project
Cumulative Actions
HUC 12 Watersheds
0.25-mile Buffer
0.5-mile Buffer
1-mile Buffer
50-km Buffer
Sheet Boundary
Base Map: ESRI World Street Map and Terrain. Cumulative Actions data are approximate locations digitized by Tetra Tech June 2017.
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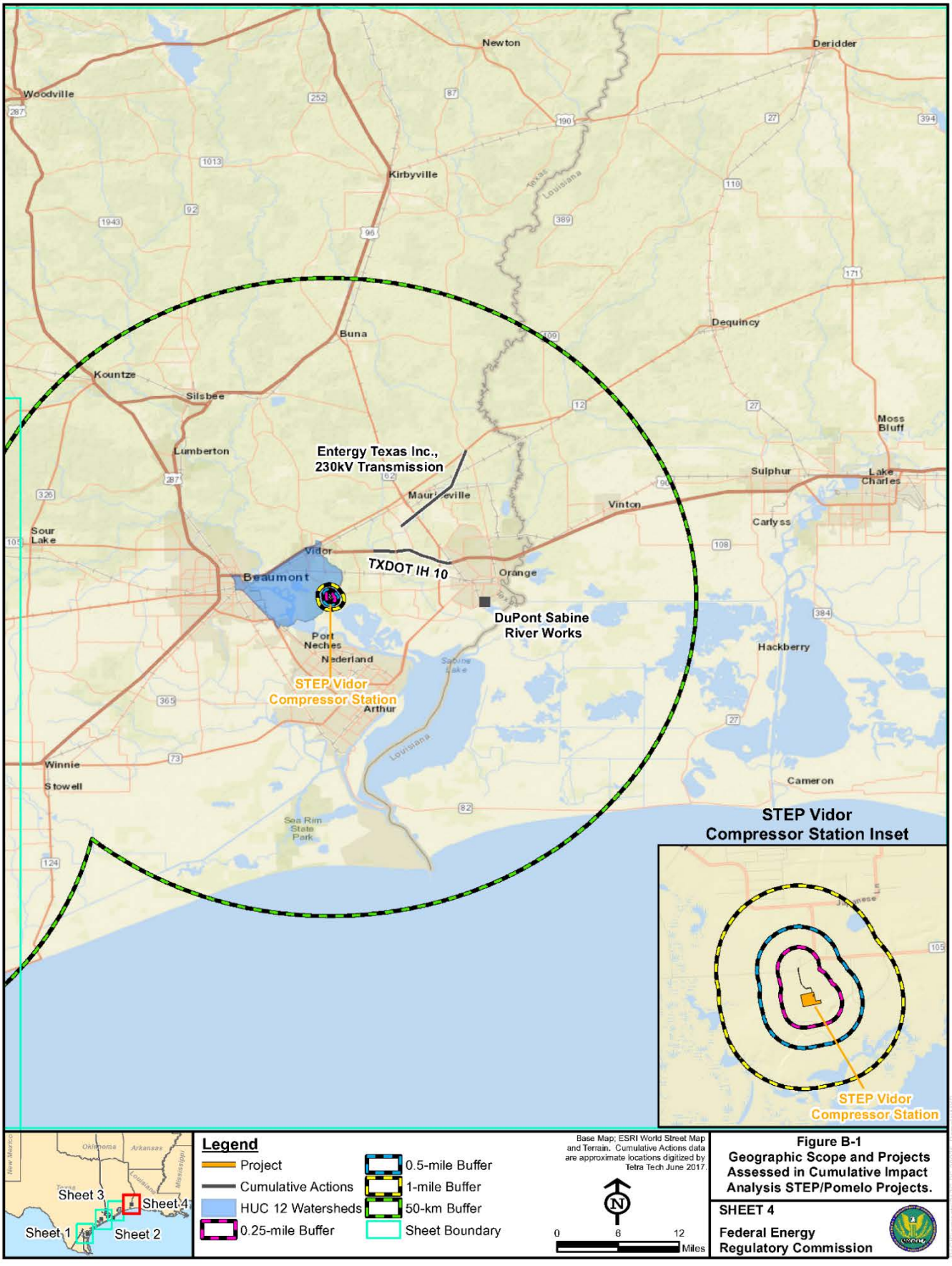
Miles
Figure B-1
Geographic Scope and Projects Assessed in Cumulative Impact Analysis STEP/Pomelo Projects.
SHEET 3
Federal Energy Regulatory Commission


Newton
Deridder
Woodville
Kirbyville
Buna
Kountze
Silsbee
Lumberton
Entergy Texas Inc.,
230kV Transmission
Maurice ville
Dequincy
Moss Bluff
Sulphur
Lake Charles
Vinton
Carlyss
Sour Lake
Vidor
Beaumont
TXDOT IH 10
Orange
DuPont Sabine River Works
Port Neches
Nederland
STEP Vidor Compressor Station
Arthur
Hackberry
Winnie
Stowell
Cameron
Sea Rim State Park
STEP Vidor Compressor Station Inset
STEP Vidor Compressor Station
Sheet 1
Sheet 2
Sheet 3
Sheet 4
Legend
Project
Cumulative Actions
HUC 12 Watersheds
0.25-mile Buffer
0.5-mile Buffer
1-mile Buffer
50-km Buffer
Sheet Boundary
Base Map; ESRI World Street Map and Terrain. Cumulative Actions data are approximate locations digitized by Tetra Tech June 2017.
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Miles
Figure B-1
Geographic Scope and Projects Assessed in Cumulative Impact Analysis STEP/Pomelo Projects.
SHEET 4
Federal Energy Regulatory Commission

Due to the close proximity of the Valley Crossing System's Agua Dulce Compressor Station, it would also result in temporary cumulative soil, water resource, air and noise impacts during construction and minimal air and noise impacts during operation.

Soils

Soil impacts are generally limited to the footprint of the project but may be affected by activities occurring outside of the work area. One of the primary ways that the Projects, in addition to other projects in the geographic scope, may have cumulative impacts on soils is if the Projects would cumulatively result in soil erosion or compaction. Another consideration is if the Projects would cumulatively result in the conversion of a significant amount of prime farmland, unique farmland, and/or farmland of statewide importance—and particularly farmland that is actively used for agricultural purposes.

Texas Eastern and Pomelo would minimize incremental impacts on soils through implementation of Texas Eastern's E&SCP and FERC's Plan and Procedures. Similar undertakings and erosion and sedimentation control practices are anticipated for TXDOT projects and for the La Paloma Estates Subdivision Project to minimize impacts on soils.

The Projects would result in the permanent conversion of approximately 42.3 acres[10] of prime farmland soils to industrial use for the proposed aboveground facilities. Other projects within the Projects' geographic scope, including TXDOT projects such as the TXDOT Farm-to-Market Road 665 Project and the La Paloma Subdivision Project, would cumulatively result in 179.4 acres of prime farmland impacts, albeit only 117.4 acres of permanent conversion of prime farmland soils would occur (due to residential use), and the remainder of acreage impacted is temporary (from TXDOT projects).

In addition, a portion of the Valley Crossing System would also be located within the geographic scope of the proposed Pomelo Compressor Station. Although this project would implement erosion and sediment control practices to minimize impacts to soils, the Valley Crossing System would result in the conversion of an additional approximately 149 acres of prime farmland soils to industrial use. Within the geographic scope of the Projects, the total amount of prime farmland soils is approximately 52,962 acres, and the Projects when added to other past, present, and reasonably foreseeable future projects would result in the permanent conversion of less than 0.6 percent of prime farmland soils to industrial

[10] 42.3 acres includes conversion of prime farmland required for American Electric Power's installation of an electric powerline and communications line for the Pomelo Compressor Station.

and residential uses, with the other prime farmland impacts being temporary and/or unknown (i.e. with regards to the TXDOT roadway maintenance/improvement projects and the Chapman Ranch Wind Project). Therefore, cumulative impacts on prime farmland soils, although permanent, would result in a minor reduction in the availability of prime farmland for agricultural use within the geographic scope of the Projects.

Water Resources and Aquatic Species

The Pomelo pipeline would implement HDD and/or conventional bore crossing methods where it crosses all flowing streams and wetland resources and, therefore, would not directly disturb any flowing streams or wetlands during construction. Upland soil disturbance during construction would have the potential to result in increased sedimentation to surface waters or other aquatic resources (including wetlands and waterbodies) and degraded aquatic habitat. However, with the implementation of the FERC Plan and Procedures, Texas Eastern and Pomelo's Spill Prevention Control and Countermeasure (SPCC) and Preparedness, Prevention, and Contingency (PPC) plans, and proposed construction best management practices, erosion and sedimentation would be minimal, and impacts to surface waters and aquatic resources would be negligible.

While detailed information regarding water resource and aquatic species impacts are not available for other past, present, and reasonably foreseeable future projects within the geographic scope of the Projects, it is anticipated that these projects (i.e., including TXDOT roadway maintenance/improvement projects, the Valley Crossing System, or the La Paloma Estates Subdivision Project) have implemented, will implement, or would implement similar avoidance, minimization, and mitigation measures as the Projects, such that impacts to surface waters (such as waterbodies and wetlands) and aquatic resources would be minimal. It is also anticipated that these Projects have proposed, or will or would incorporate best management practices to ensure that erosion and sedimentation during construction and potential impacts to surface waters or aquatic resources are minimized.

We conclude that cumulative impacts on wetlands, waterbodies, and aquatic species, when added to the impacts of other past, present, and reasonably foreseeable future actions within the Projects' geographic scope, would not be significant.

Vegetation and Wildlife, Special-Status Species

Any of the projects included in this analysis that involve ground clearing, including existing active or newly permitted oil or gas wells, would contribute

towards cumulative impacts on vegetation and wildlife. The construction activities associated with clearing, grading, removal of vegetation, and the potential for the establishment of invasive plant species occurring during the same geographic and temporal scope can result in cumulative impacts. In addition, changes in these environments can also cause alteration of wildlife habitat, displacement of wildlife.

In general, the potential loss of available habitat caused by the projects considered in this analysis that are located within the Projects' geographic scope for vegetation would be minimal, considering the existing intensively managed agricultural land uses in the area.

Impacts on wildlife resources are related to vegetation, as a loss of vegetation results in the alteration of available habitat and ecosystem structure, which results in the temporary or permanent displacement of wildlife. Impacts on wildlife resources as a result of the other projects considered in this analysis would be similar to those associated with the Projects, including temporary displacement and stress on individuals during construction and long-term impacts as a result of the permanent alteration of the landscape, and available habitat.

Given the scale of the projects considered and the minimal contribution of the STEP and Pomelo Project, we conclude that cumulative impacts on vegetation, wildlife, and special-status species would be less than significant.

Land Use, Visual Resources, and Recreation

The majority of the land in the vicinity of the Projects is flat, open, agricultural land with industrial uses interspersed throughout the area. Aboveground project components, such as buildings and aboveground facilities, would generally have greater long-term impacts on land uses than would the buried pipeline, where most land use activities would be allowed to resume following construction. Therefore, pipeline facilities typically have only temporary impacts on land use. The majority of long-term or permanent impacts on land use are associated with the prohibition of construction of new structures within the pipeline rights-of-way and the permanent change in land use at aboveground features (compressor and meter stations). Additionally, the oil and gas wells within the geographic scope have and will continue to affect the landscape.

Construction of the proposed Petronila Compressor Station, the Pomelo Pipeline, and Pomelo Compressor Station would have a minor temporary impact on agricultural vegetation and land uses. The conversion of 109.9 acres (including 20.9 acres for STEP and 89 acres for Pomelo) of agricultural land to industrial use would result in permanent impacts to agricultural farmland. However, considering the limited scale of the Projects compared to the large extent of existing

agricultural land use in the area, the Projects when added to other past, present, and reasonably foreseeable future projects (such as the TXDOT U.S. 77 Expansion Project and La Paloma Subdivision Project) would not contribute significantly to cumulative impacts on land use. The projects considered in this analysis would result in a net decrease in agricultural land, but these impacts are minor given the similarity of the majority of existing land uses within the geographic scope. Further, agricultural lands affected by the Pomelo Pipeline could continue supporting agricultural production following construction and restoration.

The proposed Petronila Compressor Station site (located 0.25 mile from the nearest occupied structure), and the Pomelo Compressor Station (located over 0.5 mile from the nearest occupied structure) would result in a permanent visual impact within the limits from which they can be viewed (viewshed) as would the La Paloma Subdivision Project, and the Agua Dulce Compressor Station for the Valley Crossing System. However, given the existing, similar industrial and residential uses surrounding these areas, it is not anticipated that sensitive viewers are present or significant visual impacts would occur. The proposed Pomelo Pipeline which would be located adjacent to the La Paloma Subdivision Project would not cumulatively contribute to permanent visual impacts as it would be located underground.

We conclude that the Projects and the other projects considered would impact land use, visual resources, and recreation within the defined geographic scope. However, the cumulative impact would not be significant due, largely, to the abundance of agricultural and open land in the surrounding areas.

Socioeconomics

The proposed Projects in conjunction with other projects located within the County (geographic scope) would not have significant direct or indirect socioeconomic impacts on population, housing, or employment, local government public services, and local economies. During construction of the Projects and other past, present, and reasonably foreseeable future projects, a small increase in population and spending may occur due to the increase in temporary construction employment and use of local services. We conclude that these impacts would not be significant.

Air Quality

AERMOD dispersion modeling was utilized to evaluate the cumulative air impacts of the proposed new Petronila Compressor Station, proposed new Pomelo Compressor Station, and the addition of a new compressor at the existing Blessing Compressor Station. The model calculated impacts at the proposed Projects'

facilities in combination with ambient air monitoring data, which was used to account for other nearby sources, and compared to the EPA's National Ambient Air Quality Standards (NAAQS). Results of the modeling indicate that the proposed construction and addition of the new compressors would not cause or contribute to violations of the NAAQS.

Texas Eastern submitted data responses on October 22, 2015 and May 23, 2017, that identified past, present, and reasonably foreseeable future projects within a 50-km radius of the Projects' facilities, documenting their location, distance from the proposed Projects, estimated or permitted emissions for each criteria pollutant in tons per year, and the potential incremental cumulative impacts of the Projects. (Docket CP15-499-000 – Accession # 20151207-5222 dated December 7, 2015 and Accession # 20170524-5015 dated May 23, 2017).

Pomelo submitted a data response on June 12, 2017 that includes quantitative modeling for past, present, and reasonable foreseeable future projects within a 10-km radius of the Pomelo Compressor Station in lieu of a 50-km radius. In accordance with EPA modeling guidance, performing a cumulative impacts analysis with quantitative modeling is more accurate and acceptable over a qualitative 50-km radius analysis. (Docket CP17-26-000 Accession # 20170612-5140 dated June 12, 2017) (EPA 2017)

Based on the data submitted, it was determined that the Stratton Ridge Expansion Project, the La Paloma Subdivision Project, and the Valley Crossing System's new Agua Dulce Compressor Station would fall within the Projects' construction and operational air resources geographic scope for air quality. However, these projects are not anticipated to cumulatively result in increased air quality impacts during construction and operation that would exceed NAAQS. Further, quantitative air dispersion modeling for sites within 10-km of the proposed Petronila and Pomelo Compressor Stations indicate cumulative impacts would not result in a significant impact to air quality.

The Stratton Ridge Expansion Project's adjacent electric motor-driven Angleton Compressor Station would result in a minor increase of VOC emissions, below 25 tpy, resulting in a minor increase in air emissions in Brazoria County that are in accordance with the Texas State Implementation Plan. The addition of the proposed clean burn technology components at the existing Texas Eastern compressor stations would decrease potential VOC, NOx, and CO emissions.

Minimal emissions are anticipated as a result of construction and operation of the La Paloma Subdivision Project. The Agua Dulce Compressor Station (Valley Crossing System Project) is seeking applicable air permits from the TCEQ, and would comply with applicable federal, state, and local air quality regulations.

With the exception of greenhouse gas (GHG) emissions, air quality impacts would be localized and confined primarily to the airshed in which the projects occur. 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. 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 occurring within a 50-km radius of the existing Blessing Compressor Station and proposed Petronila Compressor Station, and within a 10-km radius of the Pomelo Compressor Station, that the Projects would not add significantly to long-term cumulative impacts on air quality.

Noise

The Projects 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. A portion of the Valley Crossing System is located within the geographic scope for noise. Specifically, the Valley Crossing System's proposed Agua Dulce Compressor Station (located approximately 1,500 feet to the north of the proposed Pomelo Compressor Station) along with the Projects' Pomelo Compressor Station would overlap an identified NSA (residence) located approximately 1,500 feet to the west of the Pomelo Compressor Station. However, it is anticipated that the construction and operation of both compressor stations would maintain the 55 dBA ambient noise level within the area and cumulatively would result in less than 55 dBA ambient noise levels to the identified NSA. Therefore, no cumulative impacts are anticipated to noise sensitive areas due to the Projects in conjunction with the Valley Crossing System.

Projects located within the geographic scope including TXDOT projects and the La Paloma Subdivision Project, would likely result in temporary increases in noise as a result of construction activities. However, permanent noise impacts are not anticipated as a result of these projects. Therefore, it is anticipated that cumulative noise impacts would not be significant.

Cumulative Impact Conclusion

Overall, the cumulative impacts of the Projects are anticipated to be minimal due to the limited number of resource impacts identified within the Projects' geographic scope that could occur during the construction and operation of the Projects.

Given that the Projects would contribute minor and temporary impacts and due to the limited overlapping footprint of the other projects within the geographic

scope, we conclude that cumulative impacts of the Projects when combined with past, present, and reasonably foreseeable projects would have minimal cumulative effects on all other resources.

B.11. Related Facilities

As described previously (in Section A.9), the related, non-jurisdictional Valley Crossing System consists of approximately 167 miles of 48- and 42-inch-diameter natural gas transmission pipeline, two new compressor stations, numerous interconnects, and associated facilities in Nueces, Kleberg, Kenedy, Willacy, and Cameron Counties, Texas. Work began on this project in April 2017 and the project is expected to be placed into service in October 2018.

Although most of the Valley Crossing System is located outside the defined geographic scope for the cumulative environmental resource impact assessment for the STEP/Pomelo Project (as defined/listed in the cumulative impacts section, section B.10), our cumulative impacts analysis does include environmental impact information (as available) for the small portion of the project that is within the geographic scope of the STEP/Pomelo Project.

The Valley Crossing System will cross 105 waterbodies, 51 of which are classified as perennial, 16 as intermittent, and 38 as ephemeral. As stated previously, 15 miles of pipeline will be located offshore in the Gulf of Mexico. Named waterbodies include Pintas Creek, San Fernando, Gertrudis Creek, Jaboncillos Creek, Radicha Creek, Los Olmos Creek, Arroyo Colorado, Resaca De Los Fresnos, Resaca De Los Cuates, Rancho Viejo Floodway, San Martin Lake, Bahia Grande, Brazos Island Harbor Ship Channel, and South Bay. Also, eight waterbody crossings are designated as Section 10 Waters of the U.S. and regulated under the Rivers and Harbors Act of 1899, including Los Olmos Creek, Arroyo Colorado, inlet to San Martin Lake, inlet to Bahia Grande, Brazos Island Harbor Ship Channel, and two sections of South Bay. Waterbodies will be crossed using several techniques including HDD. To minimize impacts on waterbodies, Valley Crossing will implement measures described in its Erosion and Sediment Control Plan and its Spill Prevention, Containment, and Countermeasures Plan.

The Valley Crossing System will cross at least 120 wetlands with a total temporary impact of about 115 acres. During operations only a 10-foot-wide corridor centered over the pipeline will be regularly maintained in wetlands. Additionally, trees over 15 feet in height will not be permitted within 15 feet of the pipeline.

Not including the Gulf of Mexico, the Valley Crossing System will cross a variety of lands including approximately 600 acres of land characterized as

agricultural, 290 acres of grassland, 220 acres of scrub/shrub, and 150 acres of pasture/grazing land. Other lands include upland forest and coastal grasslands. According to Valley Crossing, the primary impact of the project will result from clearing and removing vegetation. Additionally, approximately 3 acres of forested uplands and 122 acres of scrub-shrub lands will be permanently maintained during operation of the project.

A variety of wildlife is known to occur on the lands affected by the Valley Crossing System. This wildlife includes raccoons (*Procyon lotor*), coyotes (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*); common bird species including various dove species, great tailed grackles (*Quiscalus mexicanus*), green jays (*Cyanocorax yncas*), red-winged blackbirds (*Agelaius phoeniceus*), northern cardinals (*Cardinalis cardinal*), Harris's hawks (*Parabuteo unicinctus*), turkey vulture (*Cathartes aura*), black vultures (*Coragyps atratus*), northern bobwhites (*Colinus virginianus*), greater roadrunner (*Geococcyx californianus*), various species of waterbirds and shorebirds including willets (*Tringa semipalmata*), black-necked stilts (*Himantopus mexicanus*), egrets, herons, and ibises; amphibians and reptiles such as cricket frogs (*Acris crepitans*), leopard frogs (*Lithobates sphenocephalus*), whiptail lizards (*Aspidoscelis* spp.), Texas rat snakes (*Pantherophis obsoletus*), and Texas tortoises (*Gopherus berlandieri*).

Essential Fish Habitat (EFH, designated pursuant to the Magnusen-Stevens Fishery Conservation and Management Act) for reef fishes, coastal migratory pelagic fishes, shrimp and various species of sharks will be crossed by the Valley Crossing System. Onshore EFH will be crossed via HDD and direct pipe crossing methods. Offshore seafloor and EFH will be crossed using a combination of HDD and jetting techniques which will result in a plume of suspended solids that could impact fishes. HDD will also be used to avoid impacts on oyster reefs. No corals reefs were identified along the offshore segment of the Valley Crossing System; however, the project will be located within 0.3 mile of the Port Isabel artificial reef.

The state-listed threatened opossum pipefish can be found in the Gulf of Mexico. This species prefers densely vegetated aquatic habitats. Valley Crossing proposes to avoid impacts on these habitat by crossing them using HDD.

More than 400 migratory bird species are known to occur in the five counties crossed by the Valley Crossing System. To avoid take of migratory birds, Valley Crossing stated that it will survey for nests prior to construction and a buffer of vegetation will remain around occupied nests found in the area until the young have fledged or the nest is abandoned.

Valley Crossing reviewed publicly available FWS and National Marine Fisheries Service (NMFS) information to determine the presence or absence of

federally-listed threatened and endangered species. Valley Crossing identified 17 federally-listed threatened and endangered species under the purview of the FWS that occur or may occur on lands affected by the Valley Crossing System. Valley Crossing also identified 13 federally-listed threatened and endangered species (whales, turtles, and corals) under the purview of the NMFS that occur or may occur in the waters of the Gulf of Mexico where the Valley Crossing System will be located. Whales generally occur in waters deeper than those affected by Valley Crossing's route and Valley Crossing concluded its project will have no effect on whales. To minimize impacts on federally-protected sea turtles, Valley Crossing will place biological monitors on the pipe lay barge and if turtles are observed, construction activities will be modified as specified in the Sea Turtle and Smalltooth Sawfish Construction Conditions. Based on Valley Crossing's evaluation of federally-listed threatened and endangered species which included a review of habitat requirements, temporal and spatial distributions, and surveys, Valley Crossing determined that its project would result in no effect on numerous species including all aquatic species. Valley Crossing also determined that its project may affect, but is not likely to adversely affect several terrestrial species including Gulf Coast jaguarundi (*Puma yagouaroundi cacomitli*), ocelot (*Leopardus parddalis*), northern aplomado falcon (*Falco femoralis septentrionalis*), black lace cactus (*Echinocereus reichenbachii* var. *albertii*), slender rush-pea (*Hoffmannseggia tenella*), South Texas ambrosia (*Ambrosia cheiranthifolia*), and Texas ayenia (*Ayenia limitaris*). As part of the permitting process for the Valley Crossing System, the USACE determined that the Valley Crossing System may affect, but is not likely to adversely affect the aforementioned species as well as the piping plover (Charadrius melodus), rufa red knot (Calidris canutus rufa), and black lace cactus (Echinocereus reichenbachii var. albertii). In a letter to the USACE dated June 19, 2017, the FWS concurred with these determinations. The FWS also stated in this letter that it does not provide concurrences for "no effect" determinations.

According to Valley Crossing, the Valley Crossing System is being constructed through a rural part of the state. Valley Crossing anticipates a work force greater than 2,000, of which at least half may come from outside the area. Constructing the Valley Crossing System will result in a temporary increase in the local population during the construction phase and a minor change during the operational phase. A majority of the workers would reside in temporary housing including short-term rental units (e.g., hotels, motels, bed and breakfasts, and apartments), trailers, recreational vehicles, and campgrounds. Valley Crossing has stated that the introduction of workers may increase the burden of existing public services and infrastructure.

Constructing and operating the new compressor stations will result in additional state and local tax revenues related to retail sales and payroll. These

revenues will likely result in short-term beneficial impacts on local businesses by generating additional revenues and contributing to the tax base. Additionally, Valley Crossing states it will pay *ad valorem* taxes based on the assessed value of the facilities. Other short-term beneficial financial impacts would result from purchases of equipment, fuel, and some construction materials, and from expenditures by nonlocal construction workers on housing, transportation, food, and entertainment.

Valley Crossing will access construction sites from interstate roadways, state and local highways, county roadways, and private roads. During construction, Valley Crossing expects short-term impacts will occur, including increased traffic along some roadways from the delivery of equipment and materials and the movement of workers.

A Phase I cultural resources survey and archaeological inventory of the Valley Crossing System was conducted. Valley Crossing's contractor applied a multistage approach to the onshore investigation. Pre-field research consisted of cartographic and archival reviews of data relevant to the areas under investigation to identify previously recorded cultural resources; development of a probability model for prehistoric resources; pedestrian survey and systematic shovel testing along the entire length and width of the proposed pipeline corridor and other impact areas; opportunistic metal detecting along approximately 5.6 miles of the route located in close proximity to Palo Alto Battlefield (i.e., MP 127.2-132.75) and, the recordation and preliminary assessment of all cultural resources identified during survey. This investigation also included recordation and assessment of all built resources located within or immediately adjacent to affected lands.

Four NRHP listed historic properties are traversed by the survey corridor including: King Ranch National Historic District, Palo Alto Battlefield, the Garcia Pasture Site, and the Brazos Santiago Depot. In addition to the NRHP-listed sites, two archeological sites are mapped in the survey corridor; the Loma Ochoa Indian Camp and a small Native American shell midden which was recorded in the Texas Archeological Sites Atlas as not eligible for listing in the NRHP. Additionally, the Valley Crossing System will cross four historic irrigation districts.

Offshore fieldwork began on September 16, 2016, and the Phase I-II offshore geophysical survey data collection operations were completed on October 18, 2016. Data collection for the Phase III geotechnical investigation began late in 2016. Processing and analysis of the geophysical survey data are underway.

As with any pipeline, the installation of the Valley Crossing System would result in air pollutant emissions. As described previously, these emissions would be criteria pollutants, VOCs, HAPs, GHGs, and fugitive dust. For a FERC-

regulated pipeline, we would request construction emissions from all activities broken down by year. In addition, we would list out construction emissions within any nonattainment areas. We did not receive this information, nor do we have the ability to compel Valley Crossing to provide this information for a case where the Commissions does not have jurisdiction. However, similar projects in the Texas and the southern United States that were jurisdictional to FERC have estimated a range construction emissions. We used these projects to provide a rough estimate of emissions from construction of the 165 miles of pipeline, as presented in Table 34.

Table 34. Estimated Range of Construction Emissions for Valley Crossing System Project

Tons (except where noted)[1]

NO_x	VOC	CO	SO_2	PM_{10}[3]	$PM_{2.5}$	CO_2e (metric tons)
190-270	20-170	75-1000[2]	0.5-2	550-840	80-160	47,000-80,000

Notes:
[1] Estimated from average other Texas and southern U.S. pipeline construction on a per-miles basis.
[2] High estimate only if open burning of brush/tress is conducted.
[3] High estimate likely for dryer, finer soils.

The compressor station operators have received air quality permits from the TCEQ for the Valley Crossing compressor stations located at Agua Dulce and Brownsville. We contacted the TCEQ and received the permit and emissions information, as presented in Table 35. Other sources of operational emissions, such as fugitive methane emissions, emissions from any line heaters, boilers, etc. were not provided.

Table 35. Valley Crossing System Project Estimated Compressor Station Operational Emissions

(tons per year)[1]

Compressor Station	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	HAPs
Agua Dulce (210,000 hp)	208.91	113.32	62.35	87.62	41.32	41.32	11.11
Brownsville (120,000 hp)	119.97	99.86	39.82	50.34	23.76	23.76	8.61

[1] Greenhouse Gas Emissions not provided.

The Valley Crossing System would have noise impacts from construction and operation of the project. Texas noise regulations are limited, however, pipeline and compressor station construction typically occurs only during daytime hours. Where Valley Crossing plans to conduct horizontal directional drilling, they may need to continue these operations at night. It is possible these nighttime activities may cause noise levels to be elevated, possibly above levels that would interfere with sleep. Operation of the compressor stations, and meter stations would also cause elevated noise levels in the vicinity.

SECTION C - ALTERNATIVES

In accordance with NEPA and Commission policy, we considered and evaluated alternatives to the proposed action, including the no-action alternative, system alternatives, facility alternatives, and alternative facility locations and pipeline alignments. These alternatives were evaluated using a specific set of criteria. The evaluation criteria applied to each alternative include a determination whether the alternative:

- meets the objective of the proposed Projects;
- is technically and economically feasible and practical; and
- offers a significant environmental advantage over the proposed Projects.

Through environmental comparison and application of our professional judgment, each alternative is considered to a point where it becomes clear if the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, geographic information system data, aerial imagery) and assume the same 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. Our evaluation also considers impacts on both the natural and human environments. The impacts associated with the Projects were described in detail in section B of this EA. Because the alternatives represent mostly alternative locations for natural gas facilities, the specific nature of these impacts on the natural and human environments would generally be similar to the impacts described in section B. In recognition of the competing interests and the different nature of impacts resulting from an alternative that sometimes exist (i.e. impacts on the natural environment versus impacts on the human environment), we also consider other factors that are relevant to a particular alternative and discount or eliminate factors that are not relevant or may have less weight or significance.

The alternatives were reviewed against the evaluation criteria in the sequence presented above. The first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the projects. An alternative that cannot achieve the purpose for the project cannot be considered as an acceptable replacement for the project. All of the alternatives considered here are able to meet the project purpose stated in section A.2 of this EA.

Many alternatives are technically and economically feasible. Technically practical alternatives, with exceptions, would generally require the use of common

construction methods. An alternative that would require the use of a new, unique or experimental construction method may not be technically practical because the required technology is not available or is unproven. Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. Generally, we do not consider the cost of an alternative as a critical factor unless the added cost to design, permit, and construct the alternative would render the project economically impractical.

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

One of the goals of an alternatives analysis is to identify alternatives that avoid significant impacts. In section B, we evaluated each environmental resource potentially affected by the Projects and concluded that constructing and operating the Projects would not significantly impact these resources. Consistent with our conclusions, the value gained by further reducing the (not significant) impacts of the Projects when considered against the cost of relocating the route/facility to a new set of landowners was also factored into our evaluation.

C.1. No Action Alternative

Implementing the No-Action Alternative would result in the proposed Projects not being constructed. Not constructing the Projects would avoid affecting the environment as described previously in this document. However, the objective of the Projects would not be met and the identified demand for natural gas would not be satisfied. If the Projects were not constructed, then the operators of the non-jurisdictional systems would find an alternative source of natural gas or alternative facilities. These alternatives would result in their own set of specific environmental impacts that could be equal to or greater than those described for the current proposals. As a result, other natural gas companies could propose projects to meet the demand for natural gas. Alternative proposals could require the construction of additional and/or new pipeline facilities in the same or other locations to transport the gas volumes proposed by the Projects. These projects would result in their own set of specific environmental impacts that could be equal

to or greater than those described for the current proposal. We conclude that the no-action alternative would not meet the objectives of the proposed Projects and may also not provide a significant environmental advantage over the Projects.

C.2. System Alternatives

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed natural gas systems that would meet the stated objective of the proposed Projects. The objective of identifying and evaluating system alternatives is to determine if potential environmental impacts could be avoided or reduced by using a different pipeline system or configuration. Due to substantial construction that would be required for other pipelines and facilities to service the volume or quality required for the Projects, this evaluation is limited to only STEP system alternatives:

STEP Transco System Alternative

In order to provide identical transportation service proposed by t Texas Eastern, we considered use of Transcontinental Gas Pipeline Company, LLC's (Transco) system. This alternative would require a north cross-over connection to deliver gas into Transco's transmission system and a south cross-over connection to re-deliver gas into Texas Eastern's transmission system. The north cross-over would require additional pipeline mileage including approximately 16.8 miles of 30-inch-diameter interconnecting pipeline from Texas Eastern near its facility near Vidor in Orange County, Texas to Transco's system in Jasper County, Texas, and a delivery measuring station to facilitate the custody transfer between Texas Eastern and Transco. Similarly, the proposed south cross-over would require about 10.3 miles of 30-inch-diameter interconnecting pipeline from Transco to Texas Eastern in Nueces County, and a re-delivery measuring station to facilitate gas delivery to Texas Eastern. When compared with the proposed Projects, these connecting facilities would not provide a significant environmental advantage and were eliminated from further consideration.

STEP Trunkline System Alternative

Similar to the Transco System Alternative, the proposed Trunkline System Alternative is situated further to the north of the Texas Eastern mainline transmission system. To transport the volume of natural gas proposed for the STEP, Texas Eastern would require building a north cross-over to deliver gas into Trunkline Gas Company, LLC's (Trunkline) transmission system and a south cross-over to re-deliver gas into Texas Eastern's transmission system. The proposed northern cross-over would require approximately 25 miles of 30-inch-diameter interconnecting pipeline from Texas Eastern's facility near Vidor in

Orange County to Trunkline's system in Jasper County, as well as a delivery measurement station at this location to facilitate the custody transfer between Texas Eastern and Trunkline. The proposed south cross-over would require about 22.5 miles of 30-inch-diameter interconnecting pipeline from Trunkline's system to Texas Eastern's system in Nueces County, as well as a re-delivery measuring station to facilitate gas delivery to Texas Eastern. When compared with the proposed Projects, these connecting facilities would not provide a significant environmental advantage and were eliminated from further consideration.

C.3. Facility Alternatives

In order to reduce impacts associated with the additional compression proposed by the Projects, we considered pipeline loops as an alternative to the compression facilities proposed at the Blessing and Petronila Compressor Stations for STEP. The "looping" alternative would increase the throughput capacity of the existing pipeline and would eliminate the need to replace or add compressor units as proposed at the existing Blessing Compressor Station and the proposed Petronila Compressor Station. In order to meet the objective of expanding capacity to accommodate up to 400,000 Dth/d and to replace the equivalent of 8,114 hp required at the Blessing Compressor Station and 8,400 hp required at the Petronila Compressor Station, the alternative would require the installation of two 36-inch diameter pipeline loop segments totaling approximately 135 miles. The alternative would require one loop segment totaling approximately 65.5 miles from the Mont Belvieu Compressor Station in Chambers County to the Blessing Compressor Station in Matagorda County, Texas. In addition, another loop segment would be required totaling 69.5 miles from the Blessing Compressor Station to the proposed location of the Petronila Compressor Station in Nueces County. Conservatively, assuming a 75-foot-wide construction right-of-way, this would result in an estimated 1,227 acres of land disturbance. Consequently, we conclude that this alternative would not provide a significant environmental advantage over the proposed action and do not consider it further.

A looping alternative for the Pomelo Compressor Station was considered, but determined to not meet the Projects' objective because it would increase additional capacity, but not provide the delivery pressure needed to deliver gas on a firm basis.

Electric Compression Alternative

The Electric Compression Alternative consists of using electric motor driven compressor units instead of the proposed gas-powered compressor units at the Blessing, Petronila, and Pomelo Compressor Stations. The Electric Compression Alternative would effectively use electricity delivered though the

Electric Reliability Council of Texas (ERCOT) transmission system for compression.

However, the energy needed to run the electric-driven compressors would be generated in the region, which includes a variety of power generation sources. We utilized the EPA's Emissions & Generation Resource Integrated Database (eGRID) to estimate the hypothetical regional SO_2, NO_x, and GHG emissions that would occur if electric-driven compressor units were installed rather than natural gas-fired compressor units. eGRID integrates many different federal data sources on power plants to allow for direct comparison of environmental attributes of electric generation within defined regions of the United States. The analysis found that for both Projects as a whole, the use of electric-driven compressors would result in a clear decrease of NO_x and GHGs emissions in the region. However, the use of electric-driven compressors would also result in a clear increase of SO_2 in the region.

Nonetheless, the use of electric-driven compressors would require a new 4-mile-long high voltage power line and new substation for service to the Blessing Compressor Station. The Petronila Compressor Station would require a 2-mile-long electric transmission line, as well as a new substation. The build-out of these two transmission lines would result in approximately 24 acres of disturbance at the Blessing Compressor Station and approximately 12 acres of disturbance at the Petronila Compressor Station, respectively. Lastly, the use of natural gas to power compressors is more reliable than electric service, which can be more readily interrupted by storms or extreme power demands. For these reasons we have determined that the use of electric-driven compressors does not offer a significant environmental advantage when compared to the use of natural gas-fired compressors.

C.4. Alternative Site Locations and Alignments

Route alternatives and aboveground location alternatives for the Projects were identified based on public comments, information provided by the applicant, agency consultations, and our independent review of the project area. The alternatives considered included an alternative compressor station location for the new Pomelo Compressor Station, and three route alternatives for the new Pomelo pipeline, as discussed below. We did not consider alternative locations for the proposed modifications to existing compressor stations for the STEP Project, because Texas Eastern proposes expansion of existing compressor stations and we did not identify alternative locations that could provide a significant environmental advantage. We also did not identify, and no stakeholders suggested, an alternative compressor station location for the STEP Petronila

Compressor Station and our analysis in Section B did not identify any environmental issues at the proposed site.

Because the conversion of prime farmland soils is required for the development of the proposed Projects' new compressor stations (Petronila and Pomelo Compressor Stations), we looked for alternative locations that did not have prime farmland soils or had less prime, unique, or farmland of statewide importance. Based on review of land use and soil survey maps for the Projects areas, minimal non-agricultural/farmland is available to site the new proposed compressor stations. Therefore, this alternative was eliminated from further consideration.

Alternative Compressor Station Location

We evaluated one alternative aboveground facility location for the new Pomelo Compressor Station. The factors considered for an aboveground facility are different than those considered for a pipeline route because an aboveground facility is a fixed location rather than a linear facility. Unlike a pipeline, an aboveground facility is also visible during operations and, in most cases, generates noise and air emissions. In evaluating these locations, we consider: amount of available land; current land use, as well as adjacent land use; location accessibility; engineering requirements; and impacts on the natural and human environments.

In order to further reduce impacts on environmental resources, we evaluated an alternative compressor station location for the proposed Pomelo Compressor Station, Figure C-1 shows the location of the alternative compressor station and the proposed Pomelo Compressor Station location. The alternative site evaluated for further consideration is located approximately 0.6 mile northeast of the proposed site, south of Farm to Market Road (FM) 2826, at MP 12.7 of the proposed Pomelo pipeline in Nueces County (Figure C-1). This site could be serviced by an existing American Electric Power distribution line, located about 0.02 mile to the north, adjacent to FM 2826. Similar to the proposed Pomelo Compressor Station location, no wetlands, waterbodies, sensitive biological habitat, or cultural resources were identified onsite. This alternative site is also within an area of attainment for all NAAQS pollutants. However, similar to the proposed Pomelo Compressor Station location, the alternative site also includes designated prime farmland soils, some of which is currently used for agricultural production which would convert more prime farmland soils than the proposed Pomelo Compressor Station location. In addition, this site would be located 0.28 mile (1,478 feet) west of an NSA (compared to approximately 1 mile or 5,300 feet for the proposed site), which was considered less favorable than the proposed location with regard to noise impact. This alternative site would also require the construction of a new


FM 666
FM 2826
Compressor Station Option A Site
13
12
0.21
0
13.56
Proposed Compressor Station Site
County Road 87
County Road 28A
Colorado
Kansas
Missouri
Oklahoma
New Mexico
Arkansas
Texas
Louisiana
Nueces County
Legend
Project Milepost
Proposed Pipeline
Pomelo Compressor Station Proposed Site
Pomelo Compressor Station Option A Site
TXDOT Roadways
N
0
1,000
2,000
Feet
Source: MOTT MACDONALD, 12/14/2016, JLM
Figure C-1
Pomelo Compressor Station
Site Alternatives
Nueces County, Texas.
Federal Energy Regulatory Commission
Date: 05/2017

permanent access road. For these reasons, we conclude that the alternative location would not provide a significant environmental advantage over the proposed location.

Alternative Pipeline Alignments

The proposed Pomelo Connector Pipeline length of approximately 14 miles (among the other alternatives presented below) was considered to be a "direct" pipeline segment, such that any major route alternatives would require longer pipeline length, increase land disturbance, and result in greater environmental resource and landowner impacts compared to the proposed pipeline. Therefore, this analysis focuses on minor route alternative alignments, and the avoidance and minimization measures that could be implemented to reduce potential environmental resource and landowner impacts. Figure C-2 shows a map of the minor route alternative alignments discussed below. Table 36 provides a summary comparing the potential impacts of each alternative alignment.

Alternative Alignment A

Alternative Alignment A was considered to see if it could reduce the environmental effects of the Pomelo Connector Pipeline. The alternative Pomelo alignment is generally the same (co-located for approximately 5.4 miles) with the exception of minor route refinements to the proposed alignment made to avoid residences and industrial facilities. When compared to the proposed Pomelo Connector Pipeline, Alternative Alignment A would require approximately 0.2 mile (approximately 1,109 feet) of additional pipeline length, would create an additional 4.3 miles of new right-of-way where it does not parallel other existing right-of-ways, and an additional 1.5 acres of land, resulting in greater land disturbance overall.

One landowner crossed by both the proposed route and Alignment A, preferred that a portion of the property be avoided to preserve valuable real estate frontage near the new off-ramp location. Additional concerns along Alternative Alignment A include an historic oil well field that occurs on the north and south sides of FM 2826 immediately west of U.S. 77. Specifically, the number of oil and gas wells and associated facilities, including underground piping that would be crossed (approximately 86 oil and gas wells within 0.5 mile of Alternative A pipeline alignment, and approximately 26 natural gas pipeline crossings required) would pose additional constructability, safety, and environmental concerns for this alignment. Overall, we conclude that the impacts are comparable and that the alternative does not provide a significant environmental advantage.

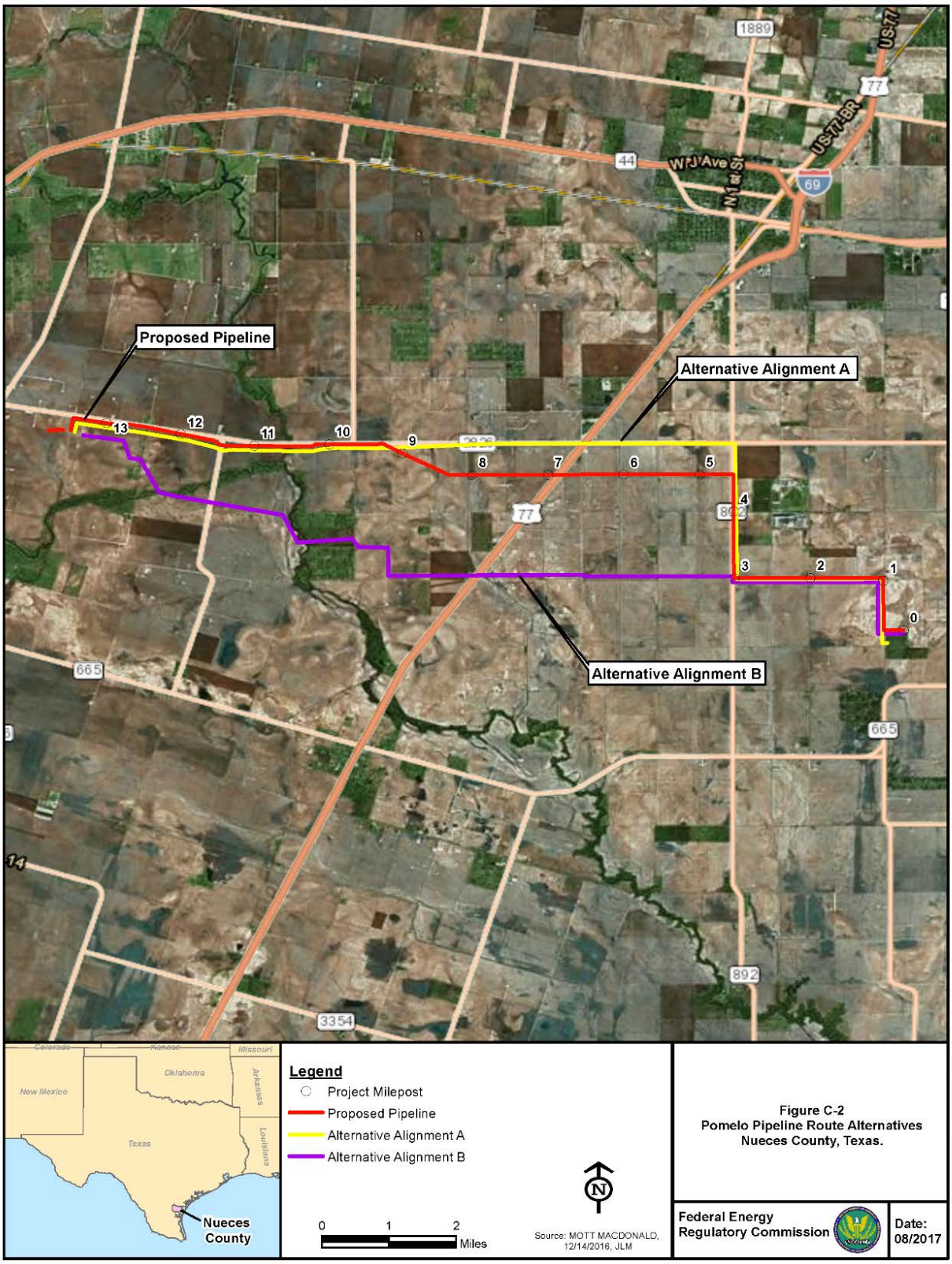
Proposed Pipeline
Alternative Alignment A
Alternative Alignment B
1889
77
US-77
US-77ER
44
W FJ Ave
69
802
665
892
3354
14
0
1
2
3
4
5
6
7
8
9
10
11
12
13
Colorado
Kansas
Missouri
Oklahoma
New Mexico
Arkansas
Texas
Louisiana
Nueces County
Legend
Project Milepost
Proposed Pipeline
Alternative Alignment A
Alternative Alignment B
0
1
2
Miles
Source: MOTT MACDONALD, 12/14/2016, JLM
Figure C-2
Pomelo Pipeline Route Alternatives
Nueces County, Texas.
Federal Energy Regulatory Commission
Date: 08/2017

Table 36. Comparison of Alternative Pipeline Alignments

Factor	Proposed Projects	Alternative A	Alternative B
Length of Route	13.6	13.8	13.4
Co-location Length (miles)	9.4	5.4	1.1
New Right-of-Way (miles)	4.4	8.7	12.5
Land Requirements Pipeline Construction (acres)	173.8	181.0	175.8
Land Requirements – Pipeline Operation (acres)	83.6	85.1	82.6
Wetlands Crossed (number)	2	2	4
Wetlands Crossed (acres)[1]	0.1	0.1	0.3
PFO wetland area in Permanent Right-of-Way	0.1	0.1	0.1
Waterbodies Crossed (number)	4	4	6
Agricultural Pasture and Cultivated Cropland (acres)	13.5	13.6	13.1
Forest and Woodland (acres)	0.08	0.08	0.3
Residences and Structures within 50 feet of workspace (number)	5	6	5
Oil & Gas Wells within 0.5 mile (number)	70	86	133
Natural Gas Pipelines Crossed (number)	20	26	21

Alternative Alignment B

Alternative Alignment B was considered to minimize impacts of the Pomelo Connector Pipeline on environmental resources. Under this Alternative, the pipeline would be co-located with existing pipelines/powerline facilities the least, when compared to the other alternatives. Specifically, Alternative Alignment B would be co-located for only 1.1 miles and would require an additional approximately 8.1 miles of new right-of-way; however, this pipeline would be 0.2 mile shorter than the proposed Pomelo Connector Pipeline, resulting in approximately 2.0 acre less of temporary land disturbance and 1.0 acre less of permanent land disturbance. When compared to the proposed Pomelo Connector Pipeline, this alternative would also require more wetland impacts (approximately 0.04 acre of palustrine emergent (PEM) wetland impact, 0.1 acre of palustrine unconsolidated bottom (PUB) wetland impact for the permanent right-of-way), and crossing of two additional waterbodies (including Pintas Creek). The new right-of-way associated with this alternative would have a greater impact on forested habitats and open lands, which tend to be the most utilized habitats in the area for wildlife. Ultimately, this alternative was dismissed as it would not offer a

significant environmental advantage over the proposed Pomelo Connector Pipeline alignment.

C.5. Conclusion

After reviewing the alternatives to Pomelo's and Texas Eastern's proposed projects, we concluded that none of the system alternatives, facility alternatives, alternative site locations, or alternative pipeline alignments would satisfy the evaluation criteria. In summary, we have determined that the proposed action, as modified by our recommended mitigation measures, is the preferred alternative that can meet the Projects' objectives.

SECTION D - STAFF'S CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Texas Eastern and Pomelo construct and operate the proposed facilities in accordance with its application and supplements, and the staff's recommended mitigation measures below, approval of the Projects 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 Texas Eastern and Pomelo.

Environmental Conditions for Texas Eastern regarding the STEP and for Pomelo regarding the Pomelo Project

1. Texas Eastern and Pomelo 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. Texas Eastern 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 the Office of Energy Projects (OEP) **before using that modification.**

2. The Director of OEP, or the Director's designee, has delegated authority to issue any decisions or authorizations pursuant to the conditions of the Order, and take whatever steps are necessary to ensure the protection of all environmental resources during construction and abandonment of the Project, which 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, operation, and abandonment.

3. **Prior to any construction**, Texas Eastern and Pomelo shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, Environmental Inspectors (EIs), and contractor personnel would be informed of the EI's authority and have been

or would be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

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

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

5. Texas Eastern and Pomelo shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, and 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 the OEP **before construction in or near that area**.

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

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

a. implementation of cultural resource mitigation measures;
b. implementation of endangered, threatened, or special concern species mitigation measures;
c. recommendations by state regulatory authorities; and
d. agreements with individual's 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**, Texas Eastern and Pomelo shall file an Implementation Plan with the Secretary for review and written approval by the Director of the OEP. Texas Eastern and Pomelo must file revisions to the plan as schedules change. The plan shall identify:

a. how Texas Eastern and Pomelo 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 Texas Eastern and Pomelo 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 Texas Eastern and Pomelo 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 Texas Eastern's and Pomelo's organizations having responsibility for compliance;
g. the procedures (including use of contract penalties) Texas Eastern and Pomelo 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. Texas Eastern and Pomelo shall employ at least one EI per Project. The EI(s) shall be:

    a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
    b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
    c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
    d. a full-time position, separate from all other activity inspectors;
    e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
    f. responsible for maintaining status reports.

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

    a. an update on Texas Eastern's and Pomelo's efforts to obtain the necessary federal authorizations;
    b. the construction status of the project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;

c. a listing of all problems encountered and each instance of noncompliance observed by the EI during the reporting period both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies;
d. a description of the corrective actions implemented in response to all instances of noncompliance, and their cost;
e. the effectiveness of all corrective actions implemented;
f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
g. copies of any correspondence received by Texas Eastern or Pomelo from other federal, state, or local permitting agencies concerning instances of noncompliance, and Texas Eastern's and/or Pomelo's response.

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

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

11. **Within 30 days of placing the authorized facilities in service**, Texas Eastern and Pomelo 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 Texas Eastern and Pomelo have complied with or would comply with. This statement shall also identify any areas affected by the Projects where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. **Prior to construction**, Texas Eastern and Pomelo shall file with the Secretary documentation of concurrence from the Texas General Land Office (GLO) that the Projects have been reviewed and are consistent with the Texas Coastal Management Program, or file documentation from the GLO that consistency review is not required.

13. Texas Eastern shall file a noise survey with the Secretary **no later than 60 days** after placing the proposed Petronila Compressor Station in service. If a full load condition noise survey is not possible, Texas Eastern 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 the equipment at the Petronila Compressor Station under interim or full horsepower load conditions exceeds an L_{dn} of 55 dBA at any nearby NSAs, Texas Eastern 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. Texas Eastern 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.

14. Texas Eastern shall file a noise survey with the Secretary **no later than 60 days** after placing authorized unit at the modified Blessing Compressor Station in service. If the noise attributable to the operation of the new unit at the modified Blessing Compressor at full load exceeds an L_{dn} of 55 dBA at any nearby NSAs, Texas Eastern shall install additional noise controls to meet that level **within 1 year** of the in-service date. Texas Eastern shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

15. Pomelo shall file a noise survey with the Secretary **no later than 60 days** after placing the new compressor at the Pomelo Compressor Station in service. If a full load condition noise survey is not possible, Pomelo should provide an interim survey at maximum possible horsepower load and provide a full load survey **within 6 months**. If the noise attributable to the operation of the equipment at the Pomelo Compressor Station under interim or full horsepower load conditions exceeds an L_{dn} of 55 dBA at any nearby NSAs, Pomelo 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. Pomelo 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.

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Appendix A
Summary of Cumulative Impacts

APPENDIX A – SUMMARY OF CUMULATIVE IMPACTS

Cumulative Action Name	Project Type	Distance from Projects Sites	Construction Year/Status	Construc-tion Footprint (acres)	Cumulative Resource Impacts							
					Water Resources & Water Quality	Vegetation & Wildlife, Special Status Species	Soils (acres)	Land Use, Recreation, & Visual Resources	Socio-economics	Air Quality	GHG Emissions (tpy)	Noise & Vibration
Projects (STEP & Pomelo)	Energy (13.8 miles of pipeline, two (2) new compressor stations; and compressor station modifications	N/A	Constr. Est. October 2017 w/ in-service date est. October 2018	229.6	5 Waterbodies Crossed	Minimal	Minimal; 41.7 (Prime Farmland)	Minimal	Minimal	Minimal	1,224 (Construction); 27,000 (Operation)	Minimal
American Electric Power Electric & Comm. Line (Project - Related Non-JD Facility)	Energy (1,200 ft. electric power and comm. line)	N/A	Constr. Est. October 2017 w/ in-service date est. October 2018	0.6	N/A	N/A	0.6	N/A	N/A	N/A	N/A	N/A
Enbridge/Apex Clean Energy – Chapman Ranch Wind Project	Energy (81 wind turbine project)	5 miles SE of STEP	Estimated completion in 2017	40.5	N/A	N/A	40.5	N/A	N/A	N/A	202 (Construction)	Minimal
Crest Resources Inc. – North Chapman Ranch Project	Energy (O&G well exploration drilling project in the Mobil David and Doughty Fields)	13.2 miles SE of STEP	Construction complete	1,280.0	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT – U.S. Route 77 Construction (Project ID: 010202095)	Transportation	N/A	Construction in phases (currently under constr.; est. to be fully revegetated by Projects construction start date)	N/A	N/A	N/A	Minimal	Minimal	N/A	Minimal	Minimal	Minimal
TxDOT- U.S. Route 77 Construction (Project ID: 010202096, 010202101, 010203083)	Transportation	N/A	estimated completion in June 2018	213.7	3 Waterbodies Crossed	N/A	Minimal; 202.9 (Prime Farmland)	N/A	N/A	Minimal	Minimal	Minimal

APPENDIX A – SUMMARY OF CUMULATIVE IMPACTS

Cumulative Action Name	Project Type	Distance from Projects Sites	Construction Year/Status	Construc-tion Footprint (acres)	Cumulative Resource Impacts							
					Water Resources & Water Quality	Vegetation & Wildlife, Special Status Species	Soils (acres)	Land Use, Recreation, & Visual Resources	Socio-economics	Air Quality	GHG Emissions (tpy)	Noise & Vibration
TxDOT Farm-to-Market Road 70 Construction (Project ID: 1158011021, 155803030, 155803031, 155803035)	Transportation	7.9 miles S	Finalizing for construction; bid date September 2019	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
Start Scientific, Inc. Palacios Field	Energy (1,500 acres of O&G well drill leases –including 30 wells on the structure; covers part of the Palacios Field.)	NW of Town of Palacios, Matagorda County	NA	1,500	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT – County Road Construction (Project ID: 091321047)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT State Highway 35 Construction (Project ID: 017907026)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT – Interstate 10 Construction (Project ID: 050802111)	Transportation	N/A	N/A	N/A	Approx. 5 Waterbodies Crossed	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT Interstate 10 Construction (Project ID: 050802113)	Transportation	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal	Minimal
TxDOT Farm-to-Market Rd. 43 Construction (Project ID: 155701041)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal

APPENDIX A – SUMMARY OF CUMULATIVE IMPACTS

Cumulative Action Name	Project Type	Distance from Projects Sites	Construction Year/Status	Construc-tion Footprint (acres)	Cumulative Resource Impacts							
					Water Resources & Water Quality	Vegetation & Wildlife, Special Status Species	Soils (acres)	Land Use, Recreation, & Visual Resources	Socio-economics	Air Quality	GHG Emissions (tpy)	Noise & Vibration
TxDOT State Highway 44 Construction (Project ID: 010201088, 010201106)	Transportation	N/A	Being finalized for Construction	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT Farm-to-Market Road 3180 (Project ID: 327101011)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT State Highway 361 Construction (Project ID: 226303024, 226302089)	Transportation	N/A	N/A	N/A	1 Waterbody Crossed	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT Farm-to-Market Road 565 Construction (Project ID: 102401042)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	- Minimal	-Minimal	-Minimal
TxDOT Farm-to-Market Road 565 Construction (Project ID: 102401074)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	- Minimal	-Minimal	-Minimal
TxDOT Farm to Market Road 665 Construction (Project ID: 105202080)	Transportation (13.1 miles of new passing lanes on existing roadway)	w/in Pomelo's HUC 12 region	N/A	65.8	3 Waterbodies Crossed	N/A	Minimal; 62.0 (Prime Farmland)	N/A	N/A	Minimal	Minimal	Minimal
TxDOT Farm-to-Market Road 666 Construction (Project ID: 105201076)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal

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					Water Resources & Water Quality	Vegetation & Wildlife, Special Status Species	Soils (acres)	Land Use, Recreation, & Visual Resources	Socio-economics	Air Quality	GHG Emissions (tpy)	Noise & Vibration
TxDOT State Hwy 288 Construction (Project ID: 059803058)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT Interstate 10 Construction (Project ID: 002811179)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TxDOT Interstate 10 Construction (Project ID: 002811199)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
TXDOT – U.S. 181 Construction (Project ID: 010106095)	Transportation	N/A	N/A	N/A	N/A	N/A	Minimal	N/A	N/A	Minimal	Minimal	Minimal
NET Mexico Pipeline Partners, LLC – NET Mexico Pipeline Project	Energy ([1] 100,000 hp compressor station)	12 miles W of Project site	Construction complete	40; N/A for assoc. intrastate pipeline	N/A	N/A	N/A	N/A	N/A	Minimal	Minimal	Minimal
Entergy Texas Inc. – Hartburgh-Chisholm Orange County Project	Energy (14.1 miles of 230 kV electric transmission powerlines)	N/A	Construction in December 2016; In-service May 2017	1,172	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gulf South Pipeline – Coastal Bend Header Project	Energy (3 new compressor stations including: (1) - 83,597 hp in Wharton County; (1) - 10,700 hp CS in Harris County; (1) -26,400 hp CS in Fort Bend County; and (1) modified	8 miles SW of Project site	Construction in Spring 2017; In service date Feb. 2018	1,172	N/A	N/A	N/A	N/A	N/A	Minimal	Minimal	Minimal

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	compressor station with 15,748 hp in Sabine County.											
Praxair, Inc. – Praxair Dual Pipeline System	Energy (49-mile dual pipeline project between Texas City and Freeport, TX.)	9.9 miles from STEP	Construction complete	600	N/A	N/A	Minimal	N/A	N/A	N/A	N/A	N/A
Seaway Crude Pipeline Company, LLC – Seaway Pipeline	Energy (500-mile pipeline and associated appurtenant facilities.)	1 mile W of Project site	Construction complete	N/A	N/A	N/A	Minimal	N/A	N/A	N/A	N/A	N/A
Dupont – Sabine Riverworks Expansion	Energy (expansion of existing facility that produces ethylene copolymers and materials for automotive, industrial, and consumer industries.)	13.2 miles E of STEP	Construction is ongoing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Chevron Phillips Chemical Company, LP - Old Ocean Facility Expansion	Energy (expansion of the Chevron Phillips facilities in Old Ocean, Texas [including two new polyethylene units])	21.7 miles SW of STEP	Construction is ongoing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Freeport LNG – Export Facility	Energy (development of liquefaction and LNG export facilities and expansion of the existing Freeport LNG facility)	22.8 miles N of Project	Construction begin in 2014; Unknown completion date	687	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kinder Morgan Tejas Pipeline, LLC – SK Freeport LNG Pipeline	Energy	7.3 miles SW of Project site	Construction scheduled for July 2018.	600.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Texas Eastern Stratton Ridge Expansion Project	Energy ([1] 12,500 hp compressor station)	N/A	Construction scheduled for April 2018; In-service date of	143.3	N/A	N/A	N/A	N/A	N/A	Minimal	Minimal	Minimal

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					Water Resources & Water Quality	Vegetation & Wildlife, Special Status Species	Soils (acres)	Land Use, Recreation, & Visual Resources	Socio-economics	Air Quality	GHG Emissions (tpy)	Noise & Vibration
			February 2019.									
Valley Crossing System	Energy (two [2] compressor stations and 165 miles of pipeline)	0.28 mile N of Project site	Construction dates N/A.	1,575.0	3 Waterbodies Crossed	N/A	Minimal; 149.0 (Prime Farmland)	Minimal	N/A	Minimal	Minimal	Minimal
La Paloma Estates #1 Subdivision	Residential (39-unit subdivision)	0 miles north of Pomelo pipeline MP 7.44 to 7.81	N/A	117.4	N/A	N/A	Minimal; 117.4 (Prime Farmland)	Minimal	N/A	Minimal	Minimal	Minimal

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LGI Homes Texas, LLC – Joseph's Cove MFR Development & Multi-Phase Constr. At existing Veranda WWTF	Residential (MFR development and construction of sanitary sewer facilities and lift station construction at the existing Veranda WWTF)	0.25 mile W of Mt. Belvieu CS	Construction in July 2016 (sewer facilities); Construction of MFR N/A.	93.5	N/A	N/A	N/A	Minimal	N/A	Minimal	N/A	N/A

Notes:
N/A – Cumulative Resource Impacts are presented as N/A for information that is not available or unknown and/or if determined not to be applicable based on the type of development proposed.
Minimal – Impacts are presented as minimal where temporary construction impacts are anticipated and/or where the type of development and operation of the project is anticipated not to result in significant or adverse effects.
CS – compressor station
hp – horsepower
MFR – multi-family residential
WWTF – wastewater treatment facility
N - north
S - south
E – east
W – west

Document Content(s)