



**Office of Energy
Projects**

February 2021

Transcontinental Gas Pipe Line Company, LLC

Docket No. CP20-507-000

VR-22 to Shore Abandonment Project

Environmental Assessment

Washington, DC 20426

**VR-22 TO SHORE ABANDONMENT PROJECT
ENVIRONMENTAL ASSESSMENT
TABLE OF CONTENTS**

SECTION A – PROPOSED ACTION.....1

A.1 Introduction.....1

A.2 Purpose and Need.....1

A.3 Proposed Facilities.....2

A.4 Public Review and Comment.....2

A.5 Land Requirements.....4

A.6 Abandonment Schedule.....4

A.7 Abandonment Procedures.....4

A.8 Permits and Approvals.....6

A.9 Non-Jurisdictional Facilities.....7

SECTION B – ENVIRONMENTAL ANALYSIS.....8

B.1 Geology.....8

B.2 Water Resources and Wetlands..... 10

B.3 Aquatic Wildlife and Fisheries.....12

B.4 Protected Species.....15

B.5 Land Use, Recreation, and Visual Resources..... 17

B.6 Cultural Resources..... 18

B.7 Air Quality and Noise..... 19

 B.7.1 Air Quality..... 19

 B.7.2 Noise..... 22

B.8 Reliability and Safety..... 22

B.9 Cumulative Impacts..... 23

SECTION C – ALTERNATIVES31

SECTION D – STAFF’S CONCLUSIONS AND RECOMMENDATIONS..... 34

SECTION E – REFERENCES..... 39

SECTION F – LIST OF PREPARERS 41

LIST OF TABLES

Table 1 Summary of Land Requirements.....4

Table 2 Permits and Approvals.....6

Table 3 Emissions..... 21

Table 4 Geographic Scope for Project.....25

LIST OF FIGURES

Figure 1 VR-22 to Shore Abandonment Project – Location Overview Map 3

TECHNICAL ABBREVIATIONS AND ACRONYMS

CAA	Clean Air Act
CEQ	Council on Environmental Quality
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
E2EM	estuarine emergent wetlands
EA	environmental assessment
EFH	Essential Fish Habitat
EI	environmental inspector
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
GHG	greenhouse gases
GOM	Gulf of Mexico
HAPs	hazardous air pollutants
IPac	Information, Planning, and Conservation System
L _{dn}	day-night equivalent sound level
L _{eq}	equivalent sound level
LDCRT	Louisiana Department of Culture, Recreation, and Tourism
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
MOU	Memorandum of Understanding
MSFCMA	Magnuson-Stevens Fisheries Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NAVD 88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act of 1969 (as amended)
NGA	Natural Gas Act
NMFS	National Marine Fisheries Service
NOI	<i>Notice of Intent to Prepare an Environmental Assessment for the VR-22 to Shore Abandonment Project</i>
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NRHP	National Register of Historic Places
NSA	noise sensitive area

NSR	New Source Review
OEP	Office of Energy Projects
Plan	<i>Upland Erosion Control, Revegetation, and Maintenance Plan</i>
PM ₁₀	particulate matter less than 10 microns in diameter
PM _{2.5}	particulate matter less than 2.5 microns in diameter
Procedures	<i>Wetland and Waterbody Construction and Mitigation Procedures</i>
Project	VR-22 to Shore Abandonment Project
SHPO	State Historic Preservation Office
SO ₂	sulfur dioxide
tpy	tons per year
Transco	Transcontinental Gas Pipe Line Company, LLC
UDCP	Unanticipated Discovery of Contamination Plan
USACE	United States Army Corps. of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
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 abandoning in-place and by removal certain natural gas transmission pipeline and associated facilities located in Vermilion Parish, Louisiana. Transcontinental Gas Pipe Line Company, LLC (Transco) filed an application on August 6, 2020 in Docket No. CP20-507-000, pursuant to section 7(b) of the Natural Gas Act (NGA), and Part 157 of the Commission’s regulations for an Order Approving Abandonment of the aforementioned natural gas transmission facilities. The VR-22 to Shore Abandonment Project (Project), would enable Transco to abandon a short segment of the pipeline and certain facilities that have not been utilized since 2019.

We² 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, Parts 1500-1508 [40 CFR 1500-1508])³; and the Commission’s regulations at 18 CFR 380. 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 and identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize project-related environmental impacts. The EA is an integral part of the Commission’s decision-making process in determining whether to authorize Transco’s proposal.

A.2 Purpose and Need

The purpose of the Project is to abandon a pipeline that has not been utilized since 2019 and is not expected to be used in the future. Additionally, the operator of the VR-22 (B) platform has informed Transco that it intends to remove the platform, further necessitating the abandonment of the proposed facilities. Lastly, Transco’s proposed abandonment by removal would accommodate a request by the Louisiana Office of State Lands and an existing private landowner agreement. Section 7(b) of the NGA specifies that no natural gas company shall abandon any portion of its facilities subject to the

² “We”, “us”, and “our” refer to the environmental staff of the Office of Energy Projects.

³ On July 16, 2020, CEQ issued a final rule, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020; however, the NEPA review of this project was in process at that time and was prepared pursuant to the 1978 regulations.

Commission's jurisdiction without the Commission first finding that the abandonment would not negatively affect the present or future public convenience and necessity.

A.3 Proposed Facilities

Transco proposes to abandon about 12.6 miles of 24-inch-diameter natural gas transmission pipeline in Vermilion Parish, Louisiana. This pipeline is located primarily in Louisiana State waters and Federal offshore waters. Of the 12.6 miles, approximately 9.9 miles would be abandoned in-place, and about 2.7 miles of pipeline including 133 feet of onshore pipeline, would be abandoned by removal. Additionally, Transco would remove equipment associated with meter station 2278 and meter station 4640, located on the Vermilion Block 39 Platform and the VR-22 B Platform offshore, respectively. The platforms would not be removed as part of this proposal due to third-party ownership and the presence of other active pipeline infrastructure/connections. However, as described further below, there are plans to remove these platforms in the future.

A.4 Public Review and Comment

On August 26, 2020, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the VR-22 to Shore Abandonment Project (NOI) and Request for Comments on Environmental Issues*. The NOI was published in the Federal Register 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 Project or issues that should be considered during the preparation of the EA. The public comment period was from August 26, 2020 to September 25, 2020. We received no comments on the Project.

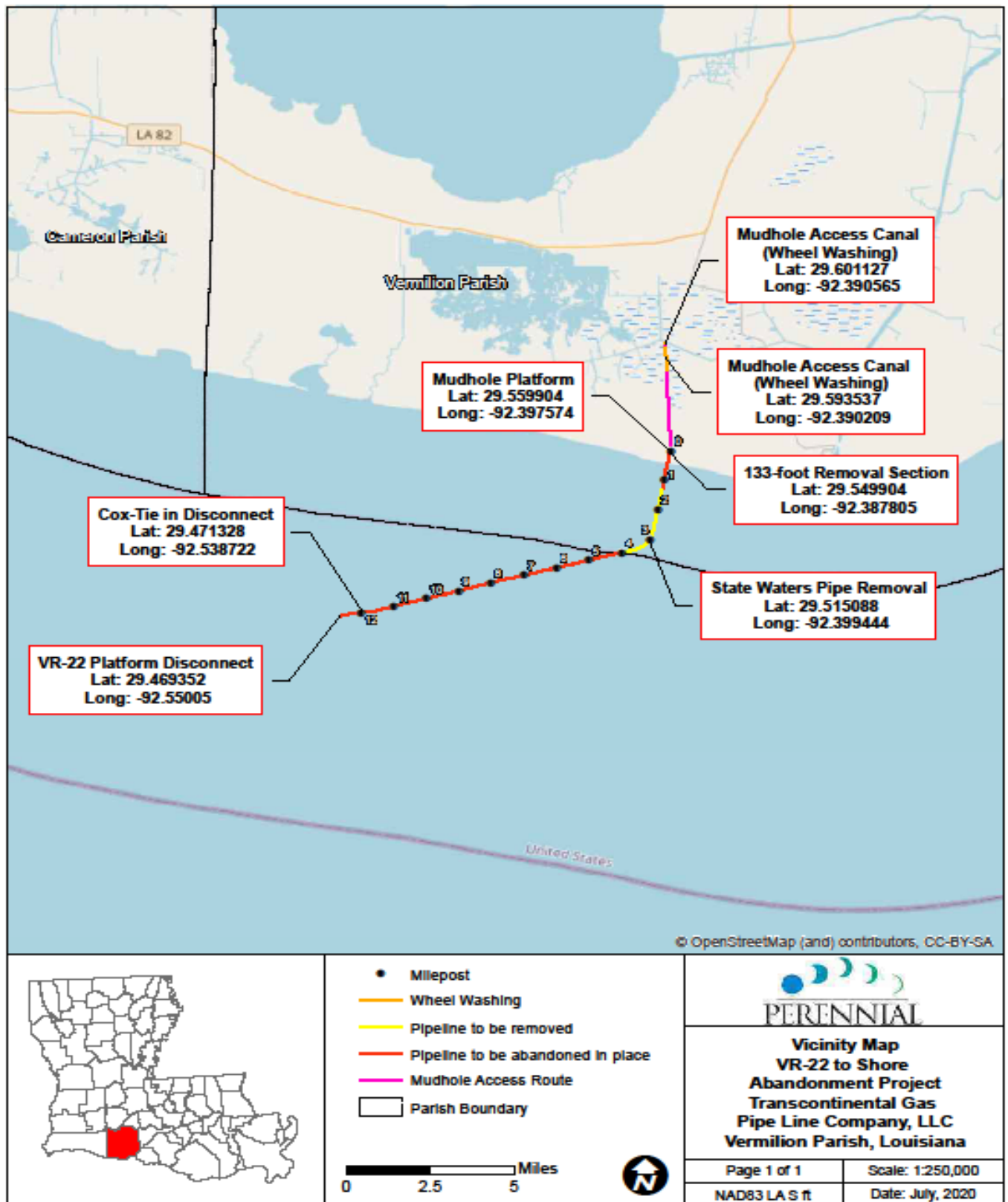


Figure 1. VR-22 to Shore Abandonment Project – Location Overview Map

A.5 Land Requirements

The Project would temporarily disturb about 46 acres of land and seafloor; the majority of which would occur within the boundaries of existing permanent easement. The existing permanent easement is 200 feet wide in federal waters, 100 feet wide in state waters, and varies from 10 to 50 feet wide onshore. No land would be affected by operations. A summary of the land requirements for the Project is presented in table 1.

Table 1 Summary of Land Requirements	
Project Component	Total Land Affected (acres)
Pipeline Abandonment	
Onshore Activities	1.3
State Waters Pipe Removal	32.6
Cox Tie-in Disconnect	5.7
VR-22 Platform Disconnect	3.5
Access	
Mudhole Access Canal (Wheel Washing)	2.9
Project Total	46.0

A.6 Abandonment Schedule

Transco proposes to initiate Project activities in May 2021. Abandonment activities would last approximately four months. Most Project activities would be conducted during the day; however, generators would be operated continuously during Project abandonment activities to support the crew's living quarters, located on the barges used to perform abandonment activities.

A.7 Abandonment Procedures

Transco would abandon the Project in accordance with the requirements of the U.S. Department of Transportation's (USDOT) regulations in Title 49 CFR, Part 192, *Transportation of Natural and Other Gas by Pipeline Minimum Federal Safety Standards*; by 18 CFR 380.15, *Siting and Maintenance Requirements*; and by other applicable federal and state regulations. The abandonment-related activities would follow industry-standard procedures for abandoning, modifying, replacing, or installing pipelines and associated facilities. Transco would implement the following guidelines for the Project:

- FERC's *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures)⁴;
- Construction Spill Prevention and Response Procedures for Oil and Hazardous Materials (Spill Plan); and
- Unanticipated Discovery of Contamination Plan (UDCP).

Transco anticipates utilizing up to 21 support vessels and approximately 104 crew members to perform Project activities. Crews would mobilize at the VR-22 B platform in the Gulf of Mexico (GOM) and at the Mudhole platform in Vermilion Parish, Louisiana. The Mudhole platform would be accessed via an existing canal. Portions of the canal have been silted in and would require wheel washing to achieve the necessary clearance for boats to traverse to and from work areas. Wheel washing generally refers to the displacement of sediments caused by currents from a ship's engines. The displacement of sediments behind the vessel increases the depth of the channel allowing for easier movement of towed barges. The valve at the Cox tie-in located approximately 1,800 feet east of the VR-22 B platform in Vermilion Block 22 would be closed, a blind flange installed, and a closing spool removed at the division of ownership to isolate the pipeline from the Cox tie-in.

As described previously, about 2.7 miles of pipeline would be abandoned by removal in Louisiana state waters. Prior to removing the pipeline segment, Transco would clean the pipeline with seawater and dispose of any liquids in accordance with state standards and permits. Barges would be positioned in state waters to conduct the pipeline removal process. At the intersection of the pipeline to be removed and the pipeline to be abandoned in place, the pipeline would be exposed by jetting, a 20 foot segment would be removed, and the pipeline to be abandoned in place would be capped or plugged and buried three feet below grade. According to Transco, if pulling the pipe is not feasible due to the volume of cover, the jetting barge would jet the overlying sediments to expose the pipeline to be removed. The pipeline would then be elevated, pinned, cut, and pulled onto the pipeline removal barge deck in approximate 40-foot joints until the entire removal length is retrieved. Retrieved pipe would be transferred from the retrieval barge to a secondary materials barge as needed. The remaining pipeline abandoned in-place within the State of Louisiana would be filled with nitrogen. The ends of the pipe would be capped, the trench would be backfilled, and contours would be restored. As with the disposal of the pipe removed from state waters, all recovered pipe would be taken to shore and disposed of in accordance with all applicable

⁴ The FERC Procedures are a set of construction and mitigation measures that were developed to minimize the potential environmental impact of natural gas facility construction in general. The FERC Procedures can be viewed on the FERC Internet website at <http://www.ferc.gov/industries/gas/enviro/procedures/pdf>. The entirety of the Project is located within open water and wetlands. No deviations from the Procedures are proposed.

state and federal laws and regulations.

A.8 Permits and Approvals

Table 2 lists the federal, state, and local environmental permits and approvals associated with the Project.

Table 2 Permits and Approvals		
Agency	Permit/Consultation	Status
Federal		
Federal Energy Regulatory Commission	Abandonment Authorization	Pending
National Oceanic and Atmospheric Administration, National Marine Fisheries Service	Section 7 of the Endangered Species Act, Threatened and Endangered Species Consultation	Concurrence issued October 28, 2020
	Essential Fish Habitat Consultation	Pending
U.S. Fish and Wildlife Service	Section 7 of the Endangered Species Act, Threaten and Endangered Species Consultation	Concurrence issued August 3, 2020
U.S. Army Corps of Engineers	Clean Water Act, Section 404 Permit (Permit Modification) ^A	Pending
Bureau of Safety and Environmental Enforcement (BSEE)	Pipeline Approved for Decommissioning and Right-of-way Relinquishment in Federal Waters	Issued August 2, 2017
State		
Louisiana Office of Coastal Management	Costal Use Permit	Pending
Louisiana Office of Cultural Development	Section 106 of the National Historic Preservation Act Consultation	Consultation complete August 17, 2020
Louisiana Department of Wildlife and Fisheries	State Threatened and Endangered Species Consultation	Concurrence issued July 23, 2020
Local		
Vermilion Parish Consolidated Government	Letter of No Objection	Issued May 21, 2019
Tribe		
Alabama-Coushatta Tribe of Texas	Coordination	Comment received August 17, 2020 indicating no interest in the Project area
Coushatta Tribe of Louisiana	Coordination	Additional information requested August 6, 2020 and provided August 14, 2020
Jena Band of Choctaw Indians	Coordination	Additional information request August 5, 2020 and provided August 6, 2020
Tunica Biloxi Tribe of Louisiana	Coordination	No Response
Chitimacha Tribe of Louisiana	Coordination	No Response

Table 2 Permits and Approvals		
Agency	Permit/Consultation	Status
Mississippi Band of Choctaw Indians	Coordination	No Response
^A In Louisiana, Section 401 Clean Water Act water quality certification is incorporated into the 404 permit. Transco applied for the modification on July 27, 2020.		

A.9 Non-Jurisdictional Facilities

Under Section 7 of the Natural Gas Act, the Commission is required to consider, as part of its decision to approve facilities under Commission jurisdiction, all factors bearing on the public convenience and necessity. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. These “non- jurisdictional” facilities may be integral to the need for the proposed facilities, or they may be merely associated as minor components of the jurisdictional facilities that would be constructed and operated as a result of authorization of the proposed facilities.

Non-jurisdictional facilities and activities associated with the Project include the planned removal of the VR-22 B platform and the Cox VR-39 platform (located in Vermilion Block 39) by their respective owners. Offshore platforms and associated activities including the removals of the VR-22 and Cox VR-39 platforms are regulated by the Bureau of Safety and Environmental Enforcement (BSEE). Platform removal activities would include the pulling of support piles, or if the support piles cannot be pulled, jetting and cutting or blasting the support piles up to 15 feet below the mudline. The platforms would be removed and disposed of in accordance with all applicable federal and state permits. The platforms would not be removed as part of this proposal and would be removed after the Project activities are complete. The VR-22 B platform is owned by Talos Energy, Inc and the operator on file with BSEE is Probe Resources US LTD. The Cox VR-39 platform is owned by Cox Operating, LLC and the operator on file with BSEE is EPL Oil & Gas, LLC.

Impacts associated with the two non-jurisdictional platform removals would be temporary and minor. Potential cumulative impacts associated with the non-jurisdictional activities are discussed in section B.9 of this EA.

SECTION B – ENVIRONMENTAL ANALYSIS

The proposed abandonment activities would have temporary and short-term impacts on the environment. As discussed throughout this EA, temporary impacts are defined as occurring only during the construction phase and short-term impacts are defined as lasting between two to five years. Based on our review of the Project, there would be no permanent adverse impacts on the environment.

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

B.1 Geology and Seafloor Sediments

Geologic Setting

The Project is within the West Gulf Coastal Plain section of the Coastal Plain physiographic province (U.S. Geological Survey [USGS], 2008). The West Gulf Coastal Plain section consists of Late Cretaceous to Holocene age deposits formed in a mostly marine environment and later uplifted and tilted seaward. The Project area crosses open water and a chenier plain,⁴ the result of the accumulation of sediment transported by longshore currents from a major delta complex. Surficial geology is comprised of gray to black clay and silts with moderate organic content (Geological Society of America, 2008; USGS, 1998a).

Topography and elevations within the onshore portion of the Project area are nearly level at approximately 3 feet above mean sea level. Based on Transco's water bottom surveys, the topography and elevation in the offshore portion graduates down a gently sloping bank from approximately -5 to -39 feet (North American Vertical Datum of 1988).

⁴ Characterized as a strand plain consisting of alternating long, narrow-wooded beach ridges and intervening marshy or swampy vegetated mudflats.

Mineral Resources and Geologic Hazards

The closest mineral extraction to the Project area (active or historic) is one plugged and abandoned natural gas well located 0.19 mile away (Louisiana Department of Natural Resources [LDNR], 2020; USGS, 2011, 2020a, 2003). Given the distance from the Project area to areas of mineral extraction, we conclude that the Project would not affect the availability of or access to mineral resources.

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically are seismic-related, including earthquakes, surface faulting, and soil liquefaction; landslides; or ground subsidence hazards such as karst. However, we have determined that the Project would not significantly impact or be significantly impacted by geologic hazards.

Seafloor Sediments

The seafloor in the Project area is comprised primarily of sandy to gravelly mud (OCM Partners, 2021). No contaminated sediments are known in the area. Abandoning the pipeline segment would directly disturb approximately 32.6 acres of seafloor. This disturbance would result primarily from jetting which would be used, as described previously, to expose the pipeline to be removed by pushing (displacing) sediments away from the pipeline (and subsequently into the water column). Anchors associated with the pipeline removal and jetting barges would also disturb seafloor sediments (see additional discussion below). Displacing sediments into the water column would result in a plume that would drift across a larger area. Eventually, sediments within the plumes would fall out and settle on adjacent seafloor (sediment deposition). Displaced sediments would also affect water quality and aquatic wildlife and fisheries. These resources are addressed later in this analysis.

Direct seafloor disturbance and indirect impacts on adjacent seafloor would be temporary, minor, and localized. Additionally, naturally occurring currents and wave action would redistribute deposited sediments. Therefore, based on the characteristics of the seafloor, the scope of the Project, and the dynamic nature of the environment, we conclude that abandonment activities would not significantly affect sediments in the Project area.

B.2 Water Resources and Wetlands

Groundwater Resources

The Project area is within the Coastal Lowlands Aquifer System. The Coastal Lowlands Aquifer System is a regional aquifer spanning from coastal Texas to Florida. The Chicot aquifer system is classified as a sole source aquifer, and is the principal source of fresh groundwater in southwestern Louisiana and the main source of fresh groundwater for Vermilion Parish; however, the Project area is within a portion of this system that does not contain freshwater (U.S. Environmental Protection Agency [EPA], 2020c; USGS, 2014). Additionally, no public or private water supply wells, springs, or state-designated wellhead protection areas were identified within 150 feet of the Project area (USGS, 2020b; LDNR, 2020; Moleri, 2020).

Due to the shallow depth of excavations associated with Project activities (up to 5 feet), and the lack of fresh groundwater underlying the Project area, as well as Transco's implementation of our Procedures, its Spill Plan, and UDCP, we conclude that the Project would not have a significant impact on groundwater resources.

Surface Water Resources

Except for 133 feet of pipeline in wetlands that would be abandoned by removal and the wheel washing of the Mudhole platform access canal, all Project-related activities would occur in state and federal waters within the GOM. Abandoning the pipeline would affect about 46 acres of state and federal waters within the GOM. According to the GOM Alliance, the United States portion of the GOM extends from the Florida Keys westward to the southern tip of Texas, following the coastline of five states. The combined coastline of these states totals over 47,000 miles. According to Transco, the shallow coastal waters of Louisiana are characterized by naturally turbid waters. Water quality ratings indicate that the water quality in the northern GOM region was lower than expected with poor conditions concentrated around Mississippi, the Coastal Bend region of Texas, and Louisiana. The water quality ratings were based on natural variations in turbidity levels, regional differences in light penetration due to algal blooms, and local water management plans. The Louisiana/Texas continental shelf is influenced by the freshwater discharge and nutrient load of the Mississippi River system, and the volume of freshwater discharge from the Mississippi River system effects residence time, stratification, turbidity, and nutrient dilution within the GOM. Additionally, high winds, storm events, and tides cause the clay sediments to easily become suspended, resulting in the muddy waters characteristic of the region. Furthermore, the National Marine Fisheries Service (NMFS) in correspondence with Transco representatives, indicated water depths in the Project area range from 3 to 40 feet with bottom substrates made up

of hard, soft, and sand/shell bottoms in open water and stated that no submerged aquatic vegetation or reefs are present within the Project area.

Abandonment activities would disturb the seafloor bottom and water column. Accumulated sediments would be resuspended into the water column (turbidity) resulting in sediment plumes which would vary in size depending on the abandonment activity. Dredging associated with pipeline removal would result in larger plumes when compared to the smaller plumes created by anchor drops/drags and other barge activities. Increased sediment into the water column would reduce water quality. Impacts on water quality would be temporary with the lowest water quality (highest concentration of sediment) being closest to the point(s) of disturbance, gradually improving with distance and time as sediments are deposited on adjacent seafloor.

As discussed previously, accessing the Mudhole platform would require disturbing (wheel washing) an existing canal. This disturbance is necessary to increase the depth of the canal to facilitate barge movement to the platform. Wheel washing displaces sediments as described previously in this document. As described above, resuspended sediments (turbidity) would decrease water quality. This impact to water quality would be substantial; however, it would be temporary and primarily contained within the canal.

In addition to impacts on water quality from seafloor/canal disturbance, the use of heavy equipment and barges to abandon the pipeline facilities would increase the potential for an inadvertent release of equipment-related fluids which could further impact water quality. To prevent an inadvertent release from occurring and to reduce any impacts should one occur, Transco would implement measures contained within its Spill Plan.

Based on the scope of the Project, the expected temporary impact on water quality, and the turbid nature of nearshore gulf waters, we conclude that the Project would not significantly affect surface water resources.

Wetlands

Transco would remove about 133 feet of onshore pipeline from estuarine emergent (E2EM) wetland, affecting a total of about 1.3 acres of E2EM wetland. E2EM wetlands are typical of the Louisiana coast and are generally defined as tidal areas influenced by freshwater inputs and GOM tides. E2EM wetlands consist of hydric soils. The Natural Resources Conservation Service identifies two soil types in this area: Creole muck and Mermentau clay. These soils are not classified as prime farmland, are not highly erodible by water or wind, and are not underlain by shallow bedrock (bedrock within 60 inches of the ground surface). However, soils are highly prone to compaction and rutting and have

poor revegetation potential. Excavation activities would primarily occur within previously disturbed areas within Transco's existing right-of-way, with other areas of soil disturbance associated with equipment access and spoil storage. Erosion and sedimentation barriers would be properly installed and maintained throughout construction to prevent disturbed soils and sediment from migrating into adjacent undisturbed wetland areas. Compaction of wetland soils and rutting within wetlands would be minimized by using low ground pressure equipment to the extent feasible and/or by temporary installation of timber equipment mats. In addition, all disturbed areas would be restored in accordance with the FERC Procedures and the LDNR Coastal Use Permit following the completion of Project activities.

Common wetland vegetation includes cattails, sedges, rushes, and cordgrass all of which provide habitat for a small variety of commonly occurring wildlife species including muskrat and nutria. Abandoning this pipeline segment would result in temporary impacts on E2EM wetlands, wetland soils and vegetation, and would result in the temporary displacement and avoidance of wildlife. However, based on the amount of pipeline to be abandoned, the amount of wetland affected, and the temporary nature of those effects, we conclude this impact would not be significant.

B.3 Aquatic Wildlife and Fisheries

The nearshore waters of the gulf consist of common seafloor dwelling (benthic) organisms, small aquatic organisms (microbiota), worms, mollusks, crustaceans, sea turtles, and marine birds, collectively referred to as aquatic wildlife. Aquatic wildlife would be affected by abandonment of the pipeline. The use of barges and the direct displacement of sediments necessary for removal of the pipeline could increase the rates of stress, injury, and mortality experienced by aquatic wildlife and would result in the temporary loss of aquatic habitat. The deposition of sediments onto adjacent seafloor resulting from sediment introduced into the water column could also increase the rates of stress, injury, and mortality experienced by aquatic wildlife. However, aquatic wildlife, due to the dynamic nature of the GOM (currents, wave/tidal action and existing vessel use) is acclimated to some disturbance and should only be temporarily affected by removal of the pipeline. Additionally, abandonment-related activities would not occur in waters where whales are known to frequently occur; therefore, we conclude that whales and other marine mammals (except as discussed below under Protected Species) would not be affected by the Project.

The GOM is a warmwater, saltwater fishery that supports numerous fisheries. Common fish in the area include striped mullet (*Mugil cephalus*), red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), speckled trout (*Cynosion nebulosus*), gulf flounder (*Paralichthys albigutta*), and Atlantic croaker (*Micropogonias undulates*). As

described in the previous section, abandoning the pipeline would temporarily increase turbidity and decrease water quality. Additionally, the use of barges and other equipment in the GOM would increase the potential for an inadvertent equipment fluid release. An inadvertent fluid release would lower water quality. Lower water quality could result in reduced fitness; avoidance, displacement, and increased predation which would result in higher rates of stress, injury, and mortality. However, because impacts on water quality would be temporary, and fish have become habituated to natural and human disturbance in the GOM, the resulting impacts on fish would be minimal.

Based on the scope of the Project and the temporary impacts on aquatic wildlife and fisheries, we conclude that installing and operating the pipeline would not significantly affect these resources.

Essential Fish Habitat

The Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) was established, along with other goals, to promote the protection of Essential Fish Habitat (EFH) during the review of projects to be conducted under federal permits and licenses or other authorities that affect or have the potential to affect such habitat. EFH is defined in the MSFCMA as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Federal agencies that authorize, fund, or undertake activities that may adversely affect EFH must consult with National Marine Fisheries Service.

Although absolute criteria have not been established for conducting EFH consultations, NMFS recommends consolidated EFH consultations with interagency coordination procedures required by other statutes, such as NEPA, the Fish and Wildlife Coordination Act, and the ESA, to reduce duplication and improve efficiency (50 CFR 600.920(e)). Generally, the EFH consultation process includes the following steps:

1. Notification – The action agency should clearly state the process being used for EFH consultations (e.g., incorporating EFH consultation into an EA or EIS).
2. EFH Assessment – The action agency should prepare an EFH Assessment that includes both identification of affected EFH and an assessment of impacts. Specifically, the EFH Assessment should include:
 - a description of the proposed action;
 - an analysis of the effects (including cumulative effects) of the proposed action on EFH, managed fish species, and major prey species;
 - the federal agency's views regarding the effects of the action on EFH;

- and
 - proposed mitigation, if applicable.
- 3. EFH Conservation Recommendations – After reviewing the EFH Assessment, NMFS should provide recommendations to the action agency regarding measures that can be taken by that agency to conserve EFH.
- 4. Agency Response – Within 30 days of receiving the recommendations, the action agency must respond to NMFS. The action agency may notify NMFS that a full response to the conservation recommendations would be provided by a specified completion date agreeable to all parties. The response must include a description of measures proposed by the agency to avoid, mitigate, or offset the impact of the activity on EFH. For any conservation recommendation that is not adopted, the action agency must explain its reason to NMFS for not following the recommendation.

Based on a review of the NMFS' EFH Mapper and publicly available EFH information published by NMFS, Transco determined that affected waters of the GOM are all considered EFH. We concur. Specifically, the Project area contains EFH for coastal migratory pelagics, reef fish, shrimp, and sharks. Transco, based on field surveys, aerial imagery, and its assessment of the Project⁵, concluded that EFH would be affected and that affected species would quickly return to the area following completion of the Project. Transco submitted a letter to the NMFS describing its analysis on July 15, 2020 and is awaiting a response from NMFS. Based on our review of the Project, it is the view of staff that abandoning the pipeline would temporarily affect EFH; nearshore hardbottom, nearshore softbottom, nearshore sand/shell bottom, and nearshore pelagic in the GOM. Effects on EFH would include temporary changes to seafloor (direct disturbance and sedimentation), decreased water quality due to increased turbidity, and the physical disturbance of the water column from ship movements and operations (anchors). Subsequently, coastal migratory pelagics, reef fish, shrimp, and shark dependent on affected EFH, during their many life stages (egg, larvae, neonate, juvenile, and adult) may experience increased rates of stress, injury, and mortality. However, as described in other relevant sections of this environmental analysis and based on the dynamic nature of nearshore gulf waters, it is our view that these affects would be highly localized, temporary, minor, and not significant. As required by the MSFCMA and because the Project would result in an adverse impact on EFH, we are notifying the NMFS. The information and analyses within this EA, primarily the EFH-specific analysis above should be considered as our EFH assessment. A Project description is included in section A and an analysis of the effects of the proposed action on EFH and

⁵ Transco provided an analysis of the Project's impacts on EFH in Resource Report 3 of its application (Accession No. 2020086-5072).

our views regarding these effects are included above. We request that the NMFS consult on this assessment and we will reply within 30 days to any conservation recommendations provided by NMFS.

B.4 Protected Species

The Commission is required by Section 7 of the Endangered Species Act to ensure that the Project would not jeopardize the continued existence of a federally listed threatened or endangered species or result in the destruction or adverse modification of the designated critical habitat of a federally listed species.

Based on a review of the U.S. Fish and Wildlife Services' (FWS) Information for Planning and Consultation (IPaC) tool performed by Transco representatives, the threatened West Indian manatee (*Trichechus manatus*) may be present in the Project area. Given the temporary impacts of the Project on the environment, the transitory behavior of this species, Transco's commitment to ensure that vessel operators implement its Wildlife and Vessel Strike Avoidance Plan⁶, and its implementation of general impact minimization measures including those addressing fuel storage, refueling, and inadvertent spills, it determined that the Project *is not likely to adversely affect* the West Indian manatee. In a letter dated August 3, 2020, the FWS concurred with this determination. We concur and consider this consultation complete.

⁶ Transco's Wildlife and Vessel Strike Avoidance Plan, included in Appendix 1B of its application (Accession No. 2020086-5072), addresses contractor awareness of manatees, laws and penalties concerning manatees, actions to be taken if manatees are observed, signage, and reporting requirements. This plan also addresses sea turtles and other marine mammals.

Based on a review of the NMFS' IPaC tool performed by Transco representatives, four federally listed threatened and endangered species were identified as potentially occurring in the Project area. These species are the fin whale (*Balaenoptera physalus*), GOM Bryde's whale (*Balaenoptera edeni*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), gulf sturgeon (*Acipenser oxyrinchus desotoi*), and oceanic whitetip shark (*Carcharhinus longimanus*). However, suitable habitat for these species is not present within the Project area; therefore, they would not be affected by the Project. NMFS also identified the hawksbill sea turtle (*Eretmochelys imbricate*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), and giant manta ray (*Manta birostris*) as potentially occurring within the Project area.

In a letter dated October 28, 2020, the NMFS responded to Transco representatives (acting as the Commission's representative for informal consultation with the NMFS) request for consultation and summarized the Project and consultation history. In its letter, NMFS also noted *construction conditions*: "To minimize any potential effects to ESA-listed species, the applicant would implement NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions. Additionally, all project-related vessels would adhere to NMFS's Vessel Strike Avoidance Measures and Reporting for Mariners. Transco would ensure that all project personnel are trained in the identification of threatened and endangered species potentially occurring within the project area. Vessel operators and crews would maintain vigilant watch for sea turtles and giant manta rays. If any of these species are sighted, vessel operators would maintain a distance of at least 50 yards while in transit." Transco agrees to implement the measures prescribed by NMFS. Furthermore, NMFS determined that the Project is *not likely to adversely affect* the hawksbill sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, green sea turtle, loggerhead sea turtle, and giant manta ray nor would it affect the primary constituent elements of the loggerhead turtle critical habitat present (LOGG-S-02) in the Project area. Lastly, NMFS concludes that consultation responsibilities under the ESA have been met and outlines circumstances that would necessitate reinitiating of consultation. We concur with NMFS' determinations and conclusions and consider consultation complete.

Regarding potential impacts on state-listed species, the Louisiana Department of Wildlife and Fisheries issued a letter on July 23, 2020 indicating that no impacts on state listed rare, threatened, or endangered species or critical habitats are anticipated to occur as a result of the Project. No additional state listed species consultation is required for the Project.

B.5 Land Use, Recreation, and Visual Resources

The area affected by the Project is generally used for recreational boating and fishing. In total, about 46 acres of seafloor and one acre of wetland would be disturbed by the Project. Use of the Project area would be temporarily affected by abandonment activities; however, accessibility would be restored following completion of Project-activities.

Louisiana's Coastal Zone boundary delineates the area regulated by the Department of Natural Resources' Office of Coastal Management under Louisiana's federally approved coastal zone management program. The Louisiana Coastal Zone boundary is established in Louisiana Revised Statutes Article 49, §214.24. The southern boundary is the state 3-mile line offshore. The inland boundary is based upon a wide variety of parameters, including but not limited to tidal influence, sheet flow, soils, salinity, vegetation, fish and wildlife, topography, geology, geography, economy and recreation. A Coastal Use Permit is required by the State of Louisiana which requires that activities affecting the Coastal Zone are performed in accordance to established Coastal Use guidelines. Transco has not yet obtained this permit; therefore, **we recommend that:**

- **Transco should not begin abandonment activities until it files with the Secretary of the Commission (Secretary) a copy of the determination of consistency with the Coastal Zone Management Plan issued by the Louisiana Department of Natural Resources Office of Coastal Management.**

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

The Project does not cross and is not located within 0.25 mile of any National Park System Units, which include national parks, monuments, preserves, historic sites, historical parks, memorials, battlefields, military parks, cemeteries, recreation areas, seashores, lakeshores, rivers, parkways, trails, and other designations. Additionally, the Project does not cross and is not located within 0.25 mile of any Indian reservations, National Wildlife Refuges, National Wilderness Areas, or registered National Landmarks. In addition, the Project is not located within 0.25 mile of any state park, forest, or wildlife management area.

Impacts on visual and/or aesthetic resources would primarily occur during

abandonment as a result of the presence of construction equipment. Most impacts on visual resources would be temporary. Consequently, permanent impacts on visual and/or aesthetic resources are not expected. Temporary minor amounts of artificial lighting would be necessary during construction. The localized nature of these lighting effects would result in negligible impacts on visual resources as a result of artificial lighting. Therefore, we conclude that the Project would not have a significant adverse impact on visual resources.

We conclude that the Project would not have a significant impact on land use, recreational areas, or other designated or special uses.

Contaminated Sites

Transco conducted a review of both the EPA and Louisiana Department of Environmental Quality's (LDEQ) online databases to identify recent or historic areas of contamination within 0.5 mile of the Project area (LDEQ, 2020a, 2020b; EPA, 2020a, 2020b). Based on this review, no contaminated sites were identified. If contaminated soil, groundwater, or sediments are encountered, Transco would adhere to its UDCP. Additionally, contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils, groundwater, and sediments. Transco's Spill Plan specifies measures to prevent spills or leaks of fuels, and lubricants, as well as cleanup procedures in the event of inadvertent spills during Project activities.

B.6 Cultural Resources

Section 106 of the National Historic Preservation Act, as amended, requires the FERC to take into account the effects of its undertakings on properties listed in or eligible for listing in the National Register of Historic Places (NRHP) and afford the Advisory Council on Historic Preservation an opportunity to comment on the undertaking. Transco, as a non-federal party, is assisting the Commission in meeting these obligations under Section 106 and the implementing regulations at 36 CFR 800 by preparing the necessary information, analyses, and recommendations, as authorized by 36 CFR Part 800.2(a)(3).

Transco conducted a literature and map review and desktop assessment for the proposed Project. Most of the Project activities would take place within Transco's existing right-of-way and are covered under Transco's blanket clearance/ categorical exemption with the Louisiana State Historic Preservation Office (SHPO) (renewed on November 25, 2019 for a period of 5 years). There are some temporary workspaces which would extend beyond the existing right-of-way and the desktop assessment was undertaken to evaluate the potential for undocumented cultural resources within these

areas. None of the documents reviewed identified any historic structures or cultural features within or adjacent to the Project area. Transco concluded that since the Project is located within utility corridors and artificial canals, lowland marshy areas and offshore areas that have been previously surveyed for submerged sites and shipwrecks, there is a low probability for undocumented cultural resources within the Project area. On August 17, 2020 the SHPO recommended that the Project would have no effect on properties listed in or eligible for listing in the NRHP. We concur.

On July 16, 2020 Transco wrote and emailed the Alabama-Coushatta Tribe of Texas, the Coushatta Tribe of Louisiana, the Jena Band of Choctaw Indians, the Tunica Biloxi Tribe of Louisiana, the Chitimacha Tribe of Louisiana, and the Mississippi Band of Choctaw Indians to request their comments on the Project. The Alabama-Coushatta Tribe of Texas responded that the Project is outside their area of interest. The Coushatta Tribe of Louisiana and the Jena Band of Choctaw Indians requested additional information which Transco has provided. The FERC sent its NOI to the same tribes to provide them an opportunity to comment on the Project. We have received no responses to our NOI to date.

Transco has prepared a plan in the event any unanticipated cultural resources or human remains were encountered during construction. We requested minor revisions to the plan. Transco made the requested revisions. We find the revised plan to be acceptable. Therefore, we have determined in consultation with the SHPO and interested Indian tribes that the Project as proposed would have no effect on any properties listed in or eligible for listing in the NRHP.

B.7 Air Quality and Noise

B.7.1 Air Quality

Federal and state air quality standards are designed to protect human health. The U.S. Environmental Protection Agency (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 (SO₂), and inhalable particulate matter (PM_{2.5} and PM₁₀). PM_{2.5} includes particles with an aerodynamic diameter less than or equal to 2.5 micrometers, and PM₁₀ 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) are regulated by EPA mostly to prevent the formation of ozone, a constituent of photochemical smog. Many VOCs form ground-level ozone by reacting with sources of oxygen molecules such as NO_x in the atmosphere in the presence of sunlight. NO_x and VOCs are referred to as ozone precursors. Hazardous air pollutants (HAP) are also emitted during fossil fuel

combustion. HAPs are chemicals known to cause cancer and other serious health impacts.

Greenhouse Gases (GHG) produced by fossil-fuel combustion are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). 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 (CAA). Increased atmospheric concentration of GHGs since the industrial age are the primary cause of warming of the climatic system.

If measured ambient air pollutant concentrations for a subject area remain below the NAAQS criteria, the area is in attainment with the NAAQS. The Project areas are in attainment for all NAAQS.

The CAA is the basic federal statute governing air pollution in the United States. We have reviewed the following federal requirements and determined that they are not applicable to the proposed Project:

- New Source Review;
- Title V;
- National Emissions Standards for Hazardous Air Pollutants;
- New Source Performance Standards;
- Greenhouse Gas Reporting Rule; and
- General Conformity of Federal Actions

Air quality impacts from removal and abandonment in-place of the pipeline would include combustion emissions from fossil-fueled vessels, barges, and equipment. All air quality impacts would generally be temporary and localized. Large equipment that is powered by diesel or gasoline engines are sources of combustion-related emissions including GHGs (as CO₂e), NO_x, CO, VOC, SO₂, PM₁₀, PM_{2.5}, and small amounts of HAPs such as formaldehyde. Construction emissions from the Project are shown in table 3 below.

Overall, air quality impacts associated with Project activities would be negligible due to the limited amount of heavy equipment required and the limited duration of Project activities. The results of the construction emission estimates demonstrate that the construction of the Project would not cause or contribute to an exceedance of the NAAQS.

Emissions would occur over the duration of 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. The potential impacts would be minimal.

Based on the short duration of activities and our review of the estimated emissions, we conclude that there would not be regionally significant impacts on air quality. There would be no additional operational emissions from this abandonment Project.

Table 3 Construction Emissions							
Source	NOX (tons)	CO (tons)	SO₂ (tons)	PM₁₀ (tons)	VOC (tons)	CO_{2e} (tons)	Total HAP (tons)
Tugboat	9	4.873	9.37E-03	0.28	0.9	973.8	2.26E-02
Tugboat Generator	0.9	0.637	7.77E-04	0.07	0.087	80.7	1.87E-03
Lift boat	0.2	0.198	3.80E-04	0.01	0.023	39.5	9.15E-04
Dive Support Vessel	2.3	1.25	2.40E-04	0.07	0.231	249.7	5.78E-03
Field Boat	0.01	0.011	2.07E-05	0.001	1.24E-03	2.1	4.97E-05
Crew Boat	0.2	0.165	3.17E-04	0.01	0.019	33.0	7.64E-04
Standard/Long Reach Excavator	0.2	0.142	2.74E-04	0.008	1.64E-02	28.5	6.59E-04
150-Ton Crane	0.7	0.588	1.13E-03	0.03	0.068	117.5	2.72E-03
Jet Pump	0.6	0.488	9.38E-04	0.03	5.60E-02	97.4	2.26E-03
Airboat - Aircraft Engine	0.06	0.054	1.03E-04	0.003	0.006	10.7	2.48E-04
Shallow Draft Deck Boat	0.2	0.163	3.14E-04	0.009	1.90E-02	32.6	7.56E-04
Generator for Living Quarters	0.8	0.979	1.32E-03	0.058	0.079	137.5	3.18E-03
Pickup Truck	0.01	0.012	2.35E-05	7.04E-04	1.00E-03	2.4	5.65E-05
Total	15.1	9.6	1.70E-02	0.59	1.5	1806	0.04

B.7.2 Noise

The noise environment would be affected by abandonment activities. 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 and/or sea conditions. 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_{eq} is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The L_{dn} is the L_{eq} plus 10 decibels on the A-weighted scale (dBA) added to account for people's greater sensitivity to nighttime sound levels during late evening and early morning hours (between the hours of 10:00 p.m. and 7:00 a.m.). 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 3 dBA; 6 dBA is clearly noticeable to the human ear, and 10 dBA is perceived as a doubling of noise.

Construction-equipment noise is highly variable. Many construction machines operate intermittently, and the types of machines in use at a site change with the project activity. Nighttime noise due to construction would be limited since construction generally occurs during daylight hours, Monday through Saturday.

Noise from construction equipment would be short-term in nature and mostly limited to daytime hours. However, generators would be operated continuously during Project abandonment activities to support the crew's living quarters. The increase in noise would only be noticeable within a short distance of the Project area and no impacts on residential or commercial areas are anticipated. Therefore, we do not expect any significant impacts from noise emitted during construction. There would be no increase in noise after abandonment.

B.8 Reliability and Safety

The USDOT is mandated to provide pipeline safety under Title 49 USC Chapter 601. The USDOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of pipeline

incidents. This work is shared with state agency partners and others at the federal, state, and local level.

The USDOT provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards. A state may also act as USDOT's agent to inspect interstate facilities within its boundaries; however, the USDOT is responsible for enforcement actions. The USDOT pipeline standards are published in Title 49 CFR Parts 190-199. Part 192 specifically addresses natural gas pipeline safety issues.

Under a *Memorandum of Understanding on Natural Gas Transportation Facilities* (Memorandum) dated January 15, 1993, between the USDOT and the FERC, the USDOT 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 would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate of Public Convenience and Necessity 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 USDOT 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 other than the USDOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert the USDOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

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

Transco's abandonment of the Project would represent a minimum increase in risk to the nearby public and we are confident that with implementation of the standard safety design criteria, that the Project would be constructed safely.

B.9 Cumulative Impacts

The CEQ regulations for implementing NEPA, at 40 CFR 1508.7, define cumulative impacts as: "impacts on the environment which result from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions..." In accordance with NEPA and Commission policies

(including relevant guidance from the CEQ), we evaluated the potential for cumulative impacts on the environment. Our cumulative impacts analysis considers actions that impact environmental resources affected by the proposed action, within all or part of the Project area affected by the proposed action, and within all or part of the time span of the impacts resulting from the proposed action.

The current environment of the Project area reflects a mixture of natural processes and human influences across a range of conditions. Current conditions have been affected by innumerable activities over thousands of years. The CEQ issued an interpretive memorandum on June 24, 2005, regarding analysis of past actions, which stated: “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” In order to understand the contribution of past actions to the cumulative effects of the proposed action, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects. In this analysis, we generally consider the impacts of past projects within the resource-specific geographic scopes as part of the affected environment (environmental baseline), which was described under the specific resources discussed throughout section B of this EA. However, this analysis does include the present effects of past actions that are relevant and useful. We also considered temporal relationships or a temporal scope when analyzing the Project’s potential cumulative impacts.

Geographic Scopes

To determine the appropriate geographic scopes for this analysis, focus was placed on resources affected by the Project including groundwater, surface water; wetlands; aquatic wildlife and fisheries; vegetation, protected species; land use, recreation, and visual resources; and air and noise quality. The Project would have no impact on socioeconomics, operating noise, or air quality from operations; therefore, cumulative impacts on these resources were not assessed. Additionally, because the Project would not have any operational impacts; cumulative impacts during operation are not addressed. In table 4 below, we identify and define the various geographic scopes.

Table 4 Geographic Scopes for Project		
Resource	Geographic Scope	Rationale
Water Resources and Wetlands, Vegetation, Aquatic Wildlife and Fisheries	Watershed Boundary (HUC 12)	The geographic scope used to assess cumulative impacts on water resources, wetlands, vegetation, and wildlife includes the HUC 12 watershed within which the Project facilities would be located and may be affected by the proposed Project activities.
Land Use, Recreation, and Visual Resources	1-mile radius	Impacts on land uses, recreation, and aesthetics generally occur within and adjacent to project work areas. Based on the proposed Project size and scope and the generally uniform character of the surrounding area, a 1-mile radius is anticipated to account for impacts on land uses, recreational areas, and viewsheds that would be experienced by people in the flat to gently undulating terrain in the Project vicinity.
Air Quality – Construction	0.25 mile (air quality – construction)	Due to the limited amount of emissions generated by construction equipment, the geographic scope used to assess potential cumulative impacts on air from construction activities was set at 0.25 miles.
Noise Construction	0.25 mile from pipeline and aboveground facilities.	Noise impacts are highly localized and attenuate quickly as the distance from the noise source increases. Noise impacts from aboveground facilities are evaluated at all noise sensitive areas within 0.25 mile.

After establishing the geographic scopes for resources affected by the Project, we did not identify other actions that would contribute impacts within these areas, except for the non-jurisdictional actions. Removing the VR-22 and Cox VR-39 platforms would result in impacts on the environment that are similar to those of the Project, primarily seafloor disturbance, increased turbidity and sedimentation, decreased water quality, and increased rates of stress, injury, and mortality experienced by aquatic wildlife and fisheries. These impacts when combined with the impacts of the Project could result in cumulative impacts on the environment. However, the timing for the platform removal is after completion of the Project. Consequently, transient impacts such as turbidity, would not be additive. Also, because the individual impacts of the Project and the platform removals are minor and would occur in a highly dynamic environment that experiences frequent natural disturbance, we conclude the resulting cumulative impacts would not be significant.

Climate Change

Climate change is the variation in climate (including temperature, precipitation, humidity, wind, and other meteorological variables) over time, whether due to natural variability, human activities, or a combination of both, and cannot be characterized by an individual event or anomalous weather pattern. For example, a severe drought or abnormally hot summer in a particular region is not a certain indication of climate

change. However, a series of severe droughts or hot summers that statistically alter the trend in average precipitation or temperature over decades may indicate climate change. Recent research has begun to attribute certain extreme weather events to climate change (U.S. Global Change Research Program [USGCRP], 2018).

The leading U.S. scientific body on climate change is the USGCRP, composed of representatives from 13 federal departments and agencies.⁶ The Global Change Research Act of 1990 requires the USGCRP to submit a report to the President and Congress no less than every four years that “1) integrates, evaluates, and interprets the findings of the USGCRP; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years.” These reports describe the state of the science relating to climate change and the effects of climate change on different regions of the United States and on various societal and environmental sectors, such as water resources, agriculture, energy use, and human health.

In 2017 and 2018, the USGCRP issued its *Climate Science Special Report: Fourth National Climate Assessment, Volumes I and II (Fourth Assessment Report)* (USGCRP, 2017; and USGCRP, 2018, respectively). The Fourth Assessment Report states that climate change has resulted in a wide range of impacts across every region of the country. Those impacts extend beyond atmospheric climate change alone and include changes to water resources, transportation, agriculture, ecosystems, and human health. The U.S. and the world are warming; global sea level is rising and acidifying; and certain weather events are becoming more frequent and more severe. These changes are driven by accumulation of GHG in the atmosphere through combustion of fossil fuels (coal, petroleum, and natural gas), combined with agriculture, clearing of forests, and other natural sources. These impacts have accelerated throughout the end of the 20th and into the 21st century (USGCRP, 2018).

GHGs were identified by the EPA as pollutants in the context of climate change. GHG emissions do not result in proportional local impacts; it is the combined concentration in the atmosphere that affects the global climate. These are fundamentally global impacts that feedback to local and regional climate change impacts. Thus, the geographic scope for cumulative analysis of GHG emissions is global rather than local or

⁶ The USGCRP member agencies are: Department of Agriculture, Department of Commerce, Department of Defense, Department of Energy, Department of Health and Human Services, Department of the Interior, Department of State, Department of Transportation, Environmental Protection Agency, National Aeronautics and Space Administration, National Science Foundation, Smithsonian Institution, and U.S. Agency for International Development.

regional. For example, a project 1 mile away emitting 1 ton of GHGs would contribute to climate change in a similar manner as a project 2,000 miles distant also emitting 1 ton of GHGs.

Climate change is a global phenomenon; however, for this analysis, we will focus on the existing and potential cumulative climate change impacts in the Project area. The USGCRP's Fourth Assessment Report notes the following observations of environmental impacts are attributed to climate change in Louisiana (USGCRP, 2017; USGCRP, 2018):

- temperatures cycled between warm and cool periods extending from 1920 to 1970. After 1970, annual average temperatures have warmed to levels above the 1930s; the decade of 2010 through 2017 has been warmer than any previous decade for average daily maximum and average daily minimum temperature;
- since 1960, there have been lower numbers of days above 95°F compared to the pre-1960 period but during the 2010's the number of nights above 75°F has been nearly double the average over 1901 – 1960. The length of the freeze free season was 1.5 weeks longer on average in the 2010s compared to any other historical period on record;
- number of days with 3 or more inches of rain has been historically high over the past 25 years. The 1990s, 2000s and 2010s rank first, third and second, respectively in number of events;
- summers have been either increasingly dry or extremely wet, depending on location;
- due to a combination of sea level rise and soil subsidence, approximately 2,006 square miles of land has been lost in Louisiana between 1932 and 2016, or about 23 square miles per year; and
- in southeast Louisiana, relative sea level is rising at a rate of 1 to 3 feet per 100 years.

The USGCRP's Fourth Assessment Report notes the following projections of climate change impacts in the Project region (Southeast United States) with a high or very high level of confidence⁷ (USGCRP, 2018):

⁷ The report authors assessed current scientific understanding of climate change based on available scientific literature. Each "Key Finding" listed in the report is accompanied by a confidence statement indicating the consistency of evidence or the consistency of model projections. A high level of confidence results from "moderate evidence (several sources, some consistency, methods vary and/or documentation limited, etc.), medium consensus." A *very* high level of confidence results from "strong evidence (established theory, multiple sources, consistent results, well documented and accepted methods, etc.), high consensus." <https://science2017.globalchange.gov/chapter/front-matter-guide/>

- climate models project nighttime temperatures above 75°F and daytime maximum temperatures above 95°F become the summer norm. Nights above 80°F and days above 100°F, which are now relatively rare, would become common;
- lowland coastal areas are expected to receive less rainfall on average but experience more frequent intense rainfall events followed by longer drought periods;
- coastal areas along the Gulf of Mexico are flat; therefore, expected sea level rises may cause inundation in certain low-lying areas;
- drought and sea level rise will create stressful conditions for coastal trees that are not adapted to higher salinity levels;
- other coastal species may also be stressed by sea level rise and warmer temperatures, prompting migration out of the area; and
- tropical storms and hurricanes may become more intense.

It should be noted that while the impacts described above taken individually may be manageable for certain communities, the impacts of compound extreme events (such as simultaneous heat and drought, wildfires associated with hot and dry conditions, or flooding associated with high precipitation on top of saturated soils) can be greater than the sum of the parts (USGCRP, 2018).

The GHG emissions associated with abandonment activities from the Project were identified and quantified in section B.7 of the EA. Abandonment activities would increase the atmospheric concentration of GHGs in combination with past, current, and future emissions from all other sources globally and contribute incrementally to future climate change impacts. In order to assess impacts on climate change associated with the Project, Commission staff considered whether it could identify discrete physical impacts resulting from the Project's GHG emissions or compare the Project's GHG emissions to established targets designed to combat climate change.

To date, Commission staff has not identified a methodology to attribute discrete, quantifiable, physical effects on the environment resulting from the Project's incremental contribution to GHGs. We have looked at atmospheric modeling used by the EPA, National Aeronautics and Space Administration, the Intergovernmental Panel on Climate Change, and others, and we found that these models are not reasonable for project-level analysis for a number of reasons. For example, these global models are not suited to determine the incremental impact of individual projects, due to both scale and overwhelming complexity. We also reviewed simpler models and mathematical techniques to determine global physical effects caused by GHG emissions, such as increases in global atmospheric CO₂ concentrations, atmospheric forcing, or ocean CO₂ absorption. We could not identify a reliable, less complex model for this task and thus

staff could not determine specific localized or regional physical impacts from GHG emissions from the Project. Without the ability to determine discrete resource impacts, Commission staff are unable to assess the Project's contribution to climate change through any objective analysis of physical impact.

Additionally, we have not been able to find any GHG emission reduction goals established at the federal level that we can use as comparative criteria for project level emissions.⁸ We note that there have been a series of recent administrative changes and we continue to evaluate their impact on our review process. For example, on January 20, 2021, President Biden issued the *Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* (EO 13990) and on January 27, 2021, the *Executive Order on Tackling the Climate Crisis at Home and Abroad* (EO 14008). Amongst other objectives, the Executive Orders call for a net-zero emission economy and a carbon-free electricity sector. In addition, on January 20, 2021, President Biden announced that the U.S. will rejoin the Paris Climate Agreement (Agreement), enabling the U.S. to be a party to the Agreement on February 19, 2021. The Agreement is a binding international agreement to reduce GHG emissions and impacts on climate change that was signed by 196 parties on December 12, 2015 and entered into force on November 4, 2016. The Agreement aims to limit global warming to well below 2 degrees Celsius, and preferably to 1.5 degrees Celsius, compared to pre-industrial levels.⁹ Prior to the U.S. withdrawal from the Agreement in November 2020, the U.S. initially proposed a 26 to 28 percent domestic reduction in GHG by 2025 compared to 2005.¹⁰ It is not yet clear if the U.S. would retain or modify these goals upon rejoining the Agreement.

The State of Louisiana enacted executive targets in 2020 to reduce net GHG emissions 26-28% by 2025 and 40-50% by 2030, compared to 2005 levels. The targets also aim for net zero GHG emissions by 2050.¹¹ As indicated in table 3 within section B.7.1 above, GHG emissions from abandonment activities would result in a onetime increase in CO_{2e} emissions of about 1,806 tons (1,638 metric tons); no operational GHG emissions would result from the Project. The temporary construction emissions would

⁸ The national emissions reduction targets expressed in the EPA's Clean Power Plan were repealed, *Greenhouse Gas Emissions From Existing Electric Utility Generating Units; Revisions to Emissions Guidelines Implementing Regulations*, 84 Fed. Reg. 32,250, 32,522-32, 532 (July 8, 2019), and the targets in the Paris Climate Accord were withdrawn (November 2020).

⁹ Additional information is available at <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

¹⁰ <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First%20NDC%20Submission.pdf>

¹¹ We reviewed the U.S. State Greenhouse Emission Targets site for individual state requirements at:

<https://www.c2es.org/document/greenhouse-gas-emissions-targets/>

represent 0.0010 percent and 0.0013 percent of Louisiana's 2025 and 2030 GHG reduction goal levels, respectively.¹²

¹² Based on data found at <https://www.eia.gov/environment/emissions/state/>.

SECTION C – ALTERNATIVES

In accordance with NEPA and Commission policy, we considered and evaluated alternatives to the proposed action. These alternatives were evaluated using a specific set of criteria. The evaluation criteria applied to each alternative include a determination of whether the alternative:

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

The alternatives were reviewed against the evaluation criteria in the sequence presented above. If the alternative would not meet the Project’s objective, or is not feasible, we did not compare environmental information to determine if the third evaluation criterion was satisfied.

The first consideration for including an alternative in our analysis is whether it could satisfy the stated purpose of the project. An alternative that cannot achieve the purpose for the Project cannot be considered as an acceptable replacement for the Project. Not all conceivable alternatives are technically and economically feasible and practical. Technically feasible alternatives, with exceptions, would generally involve the use of common pipeline abandonment methods. Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. An alternative that would involve the use of a new, unique, or experimental construction method(s) may be technically feasible, but not economically practical. 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.

To determine if an alternative would provide a significant environmental advantage over the proposed action, we compare the impacts of the alternative and the proposed action (e.g., number of wetlands/waterbodies affected by the alternative and number of wetlands/waterbodies affected by the proposed action). To ensure consistent environmental comparisons and to normalize the comparison of resources, we generally use “desktop” sources of information (e.g., publicly available data, aerial imagery) and assume the same construction and operation right-of-way widths and general workspace requirements. We evaluate data collected in the field if surveys were completed for both the proposed action and the corresponding alternative. Our environmental comparison uses common factors such as (but not limited to) total amount, length/distance, and acres affected of a resource. Furthermore, this analysis considers impacts on both the natural and human environments.

Where appropriate and available, we also use site-specific information. In comparing the impact between resources, we also consider the magnitude of the impact anticipated on each resource. As applicable, we assess impacts on resources that are not common to the alternative and the proposed action. Our determinations attempt to balance the overall impacts (and other relevant considerations) of the alternative(s) and the proposed action. Recognizing the often-competing interests driving alternatives and the differing nature of impacts resulting from an alternative (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 or discount or eliminate factors that are not relevant or may have less weight or significance. Ultimately, an alternative that is environmentally comparable or results in minor advantages in terms of environmental impact would not compel us to change the Project.

No Action Alternative

Implementing the no-action alternative would result in the proposed abandonment Project not occurring. The no-action alternative is a Commission decision to not authorize the proposal. The no-action alternative would avoid affecting the environment as described previously in this document. However, the objective of the Project would not be met.

Abandonment In-Place

Similar to the no-action alternative, abandoning the entire pipeline in-place would eliminate the impacts analyzed in this EA. However, the Louisiana Office of State Lands and a private landowner have requested that about 2.7 miles be removed. In considering the limited impacts associated with removing 2.7 miles and in accommodating the Louisiana Office of State Lands, we conclude that abandoning the entire pipeline in-place would not provide a significant environmental advantage and would not be practical.

Abandonment by Removal

We also considered abandonment by removal for the entire pipeline rather than the proposed combination of abandonment in-place and abandonment by removal. The removal of approximately 12.6 miles of pipeline would result in significantly greater environmental impacts when compared to the proposed action. The abandonment by removal alternative would have significantly greater impact than the proposed action and was not considered further.

Conclusion

After reviewing the alternatives to the proposed Project, we conclude that none of the alternatives 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 Project's objectives.

SECTION D – STAFF’S CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis in this EA, we have determined that if Transco abandons the facilities in accordance with its application and supplements, and the staff’s recommended mitigation measures below, approval of the Project would not constitute a major 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 Transco.

1. Transco shall follow the abandonment procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the environmental assessment (EA), unless modified by the Order. Transco must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;
 - b. justify each modification relative to site-specific conditions;
 - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
 - d. receive approval in writing from the Director of the Office of Energy Projects (OEP), or the Director’s designee, **before using that modification.**
2. The Director of OEP, or the Director’s designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during activities associated with the abandonment of the Project. This authority should allow:
 - a. the modification of conditions of the Order;
 - b. stop-work authority; and
 - c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project abandonment activities.
3. **Prior to any abandonment activities**, Transco 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 abandonment and restoration activities.

4. The authorized abandonment locations shall be as shown in the EA, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of abandonment activities**, Transco shall file with the Secretary any revised detailed survey maps/sheets at a scale not smaller than 1:6,000 with station positions for all abandonment activities 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.

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

5. Transco 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 should be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP, or the Director's designee, **before abandonment activities in or near that area**.

This requirement does not apply to extra workspaces allowed by the Commission's *Upland Erosion Control, Revegetation, and Maintenance 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 landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the Order and before abandonment by removal begins**, Transco shall file an Implementation Plan with the Secretary for review and written approval by the Director of the OEP, or the Director's designee. Transco must file revisions to the plan as schedules change. The plan shall identify:

- a. how Transco will implement the abandonment 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 Transco will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
- c. the number of EIs assigned, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
- d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
- e. the location and dates of the environmental compliance training and instruction Transco will 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 Transco's organizations having responsibility for compliance;
- g. the procedures (including use of contract penalties) Transco will follow if noncompliance occurs; and
- h. for each discrete facility, a Gantt or PERT chart (or similar Project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the environmental compliance training of onsite personnel;

- (3) the start of construction; and
- (4) the start and completion of restoration.

- 7. Transco shall employ at least one EI for the 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, Transco shall file updated status reports with the Secretary on a **monthly** basis until all abandonment activities 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 Transco'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 EIs during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
 - d. a description of the corrective actions implemented in response to all instances of noncompliance;
 - e. the effectiveness of all corrective actions implemented;
 - f. a description of any landowner/resident complaints which may relate

- to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
- g. copies of any correspondence received by Transco from other federal, state, or local permitting agencies concerning instances of noncompliance, and Transco's response.
 9. Transco must receive written authorization from the Director of OEP, or the Director's designee, **before commencing abandonment by removal of any Project facilities**. To obtain such authorization, Transco must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).
 10. **Within 5 days of receipt of a water quality certification issued by the Louisiana Department of Environmental Quality**, Transco shall file the complete certification, including all conditions, and all conditions attached to the water quality certification constitute mandatory conditions of this Authorization Order. **Prior to abandonment activities**, Transco shall file, for review and written approval by the Director of OEP, or the Director's designee, any revisions to its Project design necessary to comply with the water quality certification conditions.
 11. Transco **shall not begin** abandonment activities **until** it files with the Secretary a copy of the determination of consistency with the Coastal Zone Management Plan issued by the Louisiana Department of Natural Resources Office of Coastal Management.
 12. **Within 30 days of completing the authorized abandonment**, Transco shall file an affirmative statement with the Secretary, certified by a senior company official:
 - a. that the facilities have been abandoned in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
 - b. identifying which of the conditions in the Order Transco has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

SECTION E – REFERENCES

Geological Society of America. 2008. Geology of the Chenier Plain of Cameron Parish, southwestern Louisiana.

https://www.uh.edu/nsm/docs/geos/resources/Owen_Chenier%20plain%20SW%20LA.pdf. Accessed December 2020.

Louisiana Department of Environmental Quality [LDEQ]. 2020a. Underground Storage Tank Program – List of Leaking Underground Storage Tank Site.

<https://deq.louisiana.gov/page/underground-storage-tank>. Accessed June 2020.

LDEQ. 2020b. Superfund Sites.

<http://www1.deq.louisiana.gov/portal/DIVISIONS/UndergroundStorageTankandRemediationDivision/RemediationServices/SuperfundSitesinLouisiana.aspx>. Accessed June 2020.

LDEQ. 2011. Chicot Aquifer Summary, 2011 Aquifer Sampling and Assessment Program.

https://www.deq.louisiana.gov/assets/docs/Water/Triennial_reports/ASSET_2012_Aquifer_Summaries/10ChicotAquiferSummary12rev1.pdf. Accessed December 2020.

Louisiana Department of Natural Resources. 2020. Strategic Online Natural Resources Information System. <http://www.sonris.com/>. Accessed June 2020.

Molieri, Melinda. May 5, 2020. Access Sciences Public Records Technician Louisiana Department of Environmental Quality. Personal communication with Kaitlyn Cargol (Environmental Specialist, Perennial Environmental Services, LLC).

U.S. Environmental Protection Agency [EPA]. 2020a. Cleanups in My Community Map. https://ofmpub.epa.gov/apex/cimc/f?p=cimc:MAP:0:::71:P71_WELSEARCH:LA|State|LA||true|true|true|true|true|true|-1|sites|N|basic. Accessed June 2020.

EPA. 2020b. NEPAassist. <https://nepassisttool.epa.gov/nepassist/nepamap.aspx>. Accessed June 2020.

EPA. 2020c. Sole Source Aquifer Locations.

<https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b>. Accessed December 2020.

U.S. Geological Survey [USGS]. 2020a. Prospect- and mine-related features on USGS topographic maps. <https://mrdata.usgs.gov/usmin/>. Accessed June 2020.

USGS. 2020b. National Water Information System: Mapper. <https://maps.waterdata.usgs.gov/mapper>. Accessed June 2020.

USGS. 2014. Water Resources of Vermilion Parish, Louisiana. <https://pubs.usgs.gov/fs/2014/3080/pdf/fs2014-3080.pdf>. Accessed June 2020.

USGS. 2011. Mineral Resources Data System (MRDS). <https://mrdata.usgs.gov/mrds/>. Accessed June 2020.

USGS. 2008. Tapestry of Time and Terrain. https://pubs.usgs.gov/imap/i2720/i2720_pamphlet.pdf. Accessed December 2020.

USGS. 2003. Active mines and mineral plants in the US. <http://mrdata.usgs.gov/mineplant/>. Accessed June 2020.

USGS. 1998a. Digital Overlay of the Geologic Map of Louisiana: U.S. Geological Survey, Biological Resources Division, National Wetlands Research Center, Product Id USGS-NWRC 1984-02-0001. <https://mrdata.usgs.gov/geology/state/state.php?state=LA>. Accessed December 2020.

USGS. 1998b. Ground Water Atlas of the United States, Arkansas, Louisiana, Mississippi HA 730-F. https://pubs.usgs.gov/ha/ha730/ch_f/F-text3.html. Accessed December 2020.

U.S. Environmental Protection Agency. 2020a. Louisiana Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. <https://www3.epa.gov/airquality/greenbook/anayola.html>. Accessed October 2020.

U.S. Environmental Protection Agency. 2020b. Designation of Areas for Air Quality Planning Purposes. https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=de3d9928a537367b7310a8723d78e982&mc=true&n=pt40.18.81&r=PART&ty=HTML#se40.20.81_1319. Accessed October 2020.

U.S. Environmental Protection Agency. 2019a. NAAQS Table. Available at <https://www.epa.gov/criteria-air-pollutants/naaqs-table>. Accessed October 2020.

U.S. Environmental Protection Agency. 2019b. Air Quality Data. Available at <https://www.epa.gov/outdoor-air-quality-data>. Accessed October 2020.

SECTION F – LIST OF PREPARERS

Jeudy, Harry –Environmental Project Manager – Land Use, Recreation and Visual Resources, Air Quality, Noise, Reliability & Safety, Alternatives and Cumulative Impacts

B.S., Mechanical Engineering, 2000, The Pennsylvania State University

Peconom, John – Deputy Environmental Project Manager - Vegetation, Fisheries, and Wildlife; Threatened, Endangered, and Special Status Species

B.S., Environmental Biology & Management, 2000, University of California – Davis

Jensen, Andrea – Geology, Soils, Groundwater Resources

B.S., Environmental Geology, 2012, College of William and Mary

Armbruster, Ellen – Cultural Resources

M.A., Anthropology, 1986, University of Pennsylvania

B.A., Anthropology, 1979, Bryn Mawr College