



**Federal Energy Regulatory Commission**  
 Office of Energy Projects  
 888 First Street, NE, Washington, DC 20426

**FERC/FEIS-0290F**

**April 2019**

# **Gulf LNG Liquefaction Project**

## *Final Environmental Impact Statement*



**Gulf LNG Liquefaction Company, LLC; Gulf LNG Energy, LLC; and Gulf LNG Pipeline, LLC**  
 FERC Docket No.: CP15-521-000

**Cooperating Agencies:**



**U.S.  
Department of  
Energy**



**U.S. Army  
Corps of  
Engineers**



**Pipeline  
Hazardous  
Materials Safety  
Administration**



**U.S.  
Environmental  
Protection  
Agency**



**U.S. Coast  
Guard**



**U.S. Fish &  
Wildlife Service**



**National Oceanic  
and Atmospheric  
Administration &  
National Marine  
Fisheries Service**



**Mississippi Office  
of the Secretary  
of State**

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:

OEP/DG2E/Gas 1  
Gulf LNG Liquefaction Company, LLC  
Gulf LNG Energy, LLC  
Gulf LNG Pipeline, LLC  
Gulf LNG Liquefaction Project  
Docket No. CP15-521-00

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared a final environmental impact statement (EIS) for the Gulf LNG Liquefaction Project proposed by Gulf LNG Liquefaction Company, LLC; Gulf LNG Energy, LLC; and Gulf LNG Pipeline, LLC (GLP) (collectively referred to as Gulf LNG) in the above-referenced docket. Gulf LNG requests authorization pursuant to Section 3(a) of the *Natural Gas Act* (NGA) to construct and operate onshore liquefied natural gas (LNG) liquefaction and associated facilities to allow export of LNG. Pursuant to Part 157.203 of Commission regulations, Gulf LNG intends to construct, own, operate, and maintain new interconnection and metering facilities for the existing Gulf LNG Pipeline in Jackson County, Mississippi. The proposed actions are referred to as the Gulf LNG Liquefaction Project (Project) and consist of the Gulf LNG Terminal Expansion (Terminal Expansion) and the GLP Pipeline Modifications.

The final EIS assesses the potential environmental effects of construction and operation of the Project in accordance with the requirements of the *National Environmental Policy Act* (NEPA). The FERC staff concludes that approval of the proposed Project, with the mitigation measures recommended in the EIS, would have some adverse environmental impacts; however, these impacts would be avoided or reduced to less-than-significant levels.

The U.S. Army Corps of Engineers; U.S. Coast Guard; U.S. Department of Energy, Office of Fossil Energy; the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration; U.S. Fish and Wildlife Service; National Oceanic and Atmospheric Administration, National Marine Fisheries Service; and U.S. Environmental Protection Agency participated as cooperating agencies in the preparation of the EIS. In addition, the Mississippi Office of the Secretary of State has jurisdiction over the wetland mitigation property and, therefore, is assisting us as a cooperating agency. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposal and participated in the NEPA analysis. Although the cooperating agencies provided input to the conclusions and

recommendations presented in the final EIS, the agencies will present their own conclusions and recommendations in their respective Records of Decision for the Project.

The final EIS addresses the potential environmental effects of the construction and operation of the following proposed facilities:

- feed gas pre-treatment facilities, including a mercury removal system, an acid gas removal system (to remove carbon dioxide and hydrogen sulfide), a molecular sieve dehydration system (to remove water), and a heavy hydrocarbon removal system (to remove natural gas liquids);
- two separate propane precooled mixed refrigerant liquefaction trains that liquefy natural gas, each with a nominal liquefaction capacity of 5 million tonnes per annum (mtpa) and a maximum capacity of more than 5.4 mtpa of LNG;
- liquefaction facility utilities and associated systems, including two gas-fired turbine compressors per liquefaction train;
- storage facilities for condensate, ammonia and refrigerants;
- utilities systems, including instrument, plant air, and nitrogen;
- a truck loading/unloading facility to unload refrigerants and to load condensate produced during the gas liquefaction process;
- four flares (including one spare flare) in a single flare tower to incinerate excess gases associated with maintenance, startup/shutdown, and upset conditions during an emergency;
- two supply docks (North and South Supply Docks) designed to receive barges transporting materials and large equipment during construction, with one dock retained for use during operation;
- new in-tank LNG loading pumps in the existing LNG storage tanks to transfer LNG through the existing transfer lines to LNG marine carriers;
- new spill impoundment systems designed to contain LNG, refrigerants and other hazardous fluids;
- minor changes to piping at the existing berthing facility to permit bi-directional flow;
- a new concrete storm surge protection wall that connects to the existing storm surge protection wall near the southwest corner of the Terminal

Expansion site and extends along the southern border of the Terminal Expansion site;

- a new earthen berm extending from the northeastern to the southeastern boundaries of the Terminal Expansion site, between the Terminal Expansion and the Bayou Casotte Dredged Material Management Site, and connecting to the new segments of the storm surge protection wall;
- six off-site construction support areas for use as staging and laydown areas, contractor yards, and parking;
- modifications to the existing metering stations at the existing Gulfstream Pipeline Company and Destin Pipeline Company interconnection facilities<sup>1</sup>; and
- modifications to the existing Gulf LNG Pipeline at the existing Terminal to provide a connection to the inlet of the LNG liquefaction pre-treatment facilities.

The Commission mailed a copy of the *Notice of Availability* to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the Project area. The final EIS is only available in electronic format. It may be viewed and downloaded from the FERC's website ([www.ferc.gov](http://www.ferc.gov)), on the Environmental Documents page (<https://www.ferc.gov/industries/gas/enviro/eis.asp>). In addition, the final EIS may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (<https://www.ferc.gov/docs-filing/elibrary.asp>), click on General Search, and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e. CP15-521). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at [FercOnlineSupport@ferc.gov](mailto:FercOnlineSupport@ferc.gov) or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

Additional information about the Project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website ([www.ferc.gov](http://www.ferc.gov)) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

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<sup>1</sup> Additionally, Transcontinental Gas Pipe Line Company, LLC (Transco) would construct modifications to the existing Transco/Florida Gas Transmission Company, LLC Interconnect. FERC would review this project under Transco's blanket certificate.

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

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- G**     ***Gulf LNG Spill Prevention, Control, and Countermeasure (SPCC) Plan***
- H**     ***Gulf LNG Plan for Unanticipated Discovery of Hazardous Materials***
- I**     ***Gulf LNG Storm Water Pollution Prevention Plan***
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## ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
AERMOD	American Meteorological Society/EPA Regulatory Model
AIChE	American Institute of Chemical Engineers
amsl	above mean sea level
APCI	Air Products and Chemicals Inc.
APE	Area of Potential Effect
API	American Petroleum Institute
AQCR	Air Quality Control Region
ASME	American Society of Mechanical Engineers
AVO	Audio Visual and Olfactory
BA	Biological Assessment
BACT	Best Available Control Technology
BCC	Birds of Conservation Concern
BCDMMS	Bayou Casotte Dredge Material Management Site
bcf/yr	billion cubic feet per year
bcfd	billion cubic feet per day
BCHCIP	Bayou Casotte Harbor Channel Improvement Project
BCR	Bird Conservation Region
BGEPA	<i>Bald and Golden Eagle Protection Act of 1940</i>
bgs	below ground surface
BLEVE	boiling liquid expanding vapor explosion
BMP	best management practice
BOG	boil-off gas
BPVC	Boiler and Pressure Vessel Code
Btu/ft <sup>2</sup> -hr	British thermal units per square foot per hour
BU	Beneficial Use
CAA	<i>Clean Air Act of 1963</i>
CCPS	Center for Chemical Process Safety
CEQ	Council on Environmental Quality
CF	Conservation Fund
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH <sub>4</sub>	methane
CI	Compression Ignition
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2e</sub>	carbon dioxide equivalent (red are subscripts)
COE	U.S. Army Corps of Engineers
Commission	Federal Energy Regulatory Commission
COPT	Captain of the Port
CPT	cone penetration test
CPTu	cone penetration test with pore pressure measurement
CSA	construction support area
CWA	<i>Clean Water Act of 1972</i>
cy	cubic yards

## ACRONYMS AND ABBREVIATIONS (CONTINUED)

CZMA	<i>Coastal Zone Management Act of 1972</i>
CZMP	Coastal Zone Management Program
DAP	diammonium phosphate
dB	decibels
dBA	A-weighted sound level
DCS	Distributed Control System
DDT	dichlorodiphenyltrichloroethane
Destin	Destin Pipeline Company, LLC
DHS	Department of Homeland Security
DOD	Department of Defense
DOE/FE	U.S. Department of Energy Office of Fossil Energy
DOT	U.S. Department of Transportation
EEM	estuarine emergent
EFH	essential fish habitat
EI	environmental inspector
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EPAct 2005	<i>Energy Policy Act of 2005</i>
ERL	Effects Range Low
ERP	<i>Emergency Response Plan</i>
ESA	<i>Endangered Species Act of 1973</i>
ESD	Emergency Shut-down
FEED	front-end-engineering-design
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
<i>FERC Plan</i>	<i>FERC's Upland Erosion Control, Revegetation, and Maintenance Plan</i>
<i>FERC Procedures</i>	<i>FERC's Wetland and Waterbody Construction and Mitigation Procedures</i>
FGT	Florida Gas Transmission Company, LLC
FLAG	Federal Land Manager's Air Quality Related Values Workgroup
FRA	Federal Railroad Administration
FS	U.S. Forest Service
FSA	Facility Security Assessment
FSP	<i>Facility Security Plan</i>
ft <sup>3</sup>	cubic feet
FTA	free trade agreement
FWS	U.S. Fish and Wildlife Service
g	gravity
gal	gallons
GHG	greenhouse gases
GLE	Gulf LNG Energy, LLC
GLP	Gulf LNG Pipeline
GMD	geomagnetic disturbance
GMFMC	Gulf of Mexico Fisheries Management Council

## ACRONYMS AND ABBREVIATIONS (CONTINUED)

Grand Bay NERR	Grand Bay National Estuarine Research Reserve
Grand Bay NWR	Grand Bay National Wildlife Refuge
Gulf LLC	Gulf LNG Liquefaction, LLC
<i>Gulf LNG Plan</i>	Gulf LNG's project-specific <i>Upland Erosion Control, Revegetation, and Maintenance Plan</i>
<i>Gulf LNG Procedures</i>	Gulf LNG's project-specific <i>Wetland and Waterbody Construction and Mitigation Procedures</i>
Gulfstream	Gulfstream Natural Gas System, LLC
H <sub>2</sub> S	hydrogen sulfide
H <sub>2</sub> SO <sub>4</sub>	sulfuric acid mist
HAP	Hazardous Air Pollutant
HAZOP	hazard and operability review
HGM	hydrogeomorphic
HIFLD	<i>Homeland Infrastructure, Foundation-Level data</i>
HMB	heat and material balance
HUC	hydrologic unit code
HWY	Highway
IBC	International Building Code
ICE	Internal Combustion Engines
IMO	International Maritime Organization
ISA	International Society for Automation
JCPA	Jackson County Port Authority
km	kilometer
kPA	kilopascals
kV	kilovolt
lb	pound
L <sub>d</sub>	daytime sound level
LDAR	Leak Detection and Repair
L <sub>dn</sub>	day-night sound level
L <sub>eq(24)</sub>	24-hour equivalent sound level
L <sub>max</sub>	maximum sound level
L <sub>n</sub>	nighttime sound level
LNG	liquefied natural gas
LOD	Letter of Determination
LOI	Letter of Intent
LOR	Letter of Recommendation
LOR-A	Letter of Recommendation-Analysis
LOS	level of service
LPG	liquefied petroleum gas
m <sup>3</sup>	cubic meters
MACT	Maximum Achievable Control Technology
MARAD	DOT's Marine Administration
MBTA	<i>Migratory Bird Treaty Act of 1918</i>
MDAH	Mississippi Department of Archives and History

## ACRONYMS AND ABBREVIATIONS (CONTINUED)

MDEQ	Mississippi Department of Environmental Quality
MDMR	Mississippi Department of Marine Resources
MDOT	Mississippi Department of Transportation
MDWFP	Mississippi Department of Wildlife, Fish, and Parks
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
MEOW	maximum envelope of water
mg/kg	milligrams per kilogram
Migratory Bird Plan	<i>Migratory Bird Impact Assessment and Conservation Plan</i>
M <sub>L</sub>	magnitude
MLLW	mean lower low water
MMBtu/hr	million British thermal units per hour
MMNS	Mississippi Museum of Natural Science
MMPA	<i>Marine Mammal Protection Act of 1972</i>
MMS	Minerals Management Service
MOU	Memorandum of Understanding
MPC	Mississippi Power Company
MR	mixed refrigerant
MSA	<i>Magnuson-Stevens Fishery Conservation and Management Act of 1976</i>
MsCIP	Mississippi Coastal Improvement Program
msl	mean sea level
mtpa	metric tonnes per annum
MTSA	<i>Maritime Transportation Security Act</i>
mtyp	million metric tons per year
MW	megawatts
N <sub>2</sub> O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAVD	North America Vertical Datum of 1988
NBSIR	National Bureau of Standards and Information Report
NCDC	National Climatic Data Center
NEHRP	National Earthquake Hazards Reduction Program
NEPA	<i>National Environmental Policy Act of 1969</i>
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NGA	<i>Natural Gas Act of 1938</i>
NGL	natural gas liquids
NGO	non-governmental organization
NHPA	<i>National Historic Preservation Act of 1966</i>
NMFS	National Marine Fisheries Service
NNSR	Nonattainment New Source Review
NO <sub>2</sub>	nitrogen dioxide
NOA	<i>Notice of Availability</i>
NOAA	National Oceanic and Atmospheric Administration

## ACRONYMS AND ABBREVIATIONS (CONTINUED)

NOI	<i>Notice of Intent to Prepare an Environmental Document for the Planned Gulf LNG Liquefaction Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meeting</i>
NO <sub>x</sub>	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise-sensitive area
NSPS	New Source Performance Standards
nT	nano-Tesla
ntu	Nephelometric Turbidity Units
NWI	National Wetland Inventory
O <sub>3</sub>	ozone
OBE	operating basis earthquake
ODMDS	Ocean Dredged Material Disposal Sites
°F	degrees Fahrenheit
P&ID	pipng and instrumentation diagram
Pb	lead
PEM	palustrine emergent
PFD	process flow diagram
PFO	palustrine forested
PGA	peak ground acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration
PHR	process hazard review
PM	particulate matter
PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to 10 microns
PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
ppb	parts per billion
ppm	parts per million
Project	Gulf LNG Liquefaction Project
PSD	Prevention of Significant Deterioration
PTE	potential-to-emit
PWS	public water system
RICE	Reciprocating Internal Combustion Engines
RMP	Risk Management Program
RMS	root mean square
RV	recreational vehicle
SAFE	<i>Security and Accountability For Every Port Act</i>
SAV	submerged aquatic vegetation
SCPT	seismic cone penetration tests
SCPTu	seismic cone penetration test with pore pressure measurement
SCR	Selective Catalytic Control

## ACRONYMS AND ABBREVIATIONS (CONTINUED)

SEL	sound exposure level
SH	State Highway
SHPO	State Historic Preservation Office
SIL	significant impact level
SIP	State Implementation Plan
SIS	safety instrument system
SLOSH	Sea, Lake, and Overland Surge from Hurricanes
SO <sub>2</sub>	sulfur dioxide
SPCC Plan	<i>Spill Prevention, Control, and Countermeasure Plan</i>
SPL	sound pressure level
SPT	Standard Penetration Test
SSE	safe shutdown earthquake
SSURGO	Soil Survey Geographic
SWAP	Source Water Assessment Program
SWEL	standing water elevation
SWPA	Source Water Protection Area
SWPPP	<i>Stormwater Pollution Prevention Plan</i>
TDS	total dissolved solids
TIGER	DOT's <i>Transportation Investment Generating Economic Recovery</i>
tpy	tons per year
Transco	Transcontinental Gas Pipe Line Company, LLC
TWIC	Transportation Worker Identification Credential
USC	United States Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
VdB	vibration velocity decibels
VOCs	volatile organic compounds
V <sub>s</sub>	shear wave velocity
WSA	Water Sustainability Assessment
µg	microgram
µPa	micropascal

## EXECUTIVE SUMMARY

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this final Environmental Impact Statement (EIS) to assess the environmental impacts associated with the construction and operation of facilities proposed by Gulf LNG Liquefaction Company, LLC (Gulf LLC), Gulf LNG Energy, LLC (GLE), and Gulf LNG Pipeline, LLC (GLP). The combined Gulf LLC, GLE, and GLP actions and facilities are referred to herein as the Gulf LNG Liquefaction Project (Project), and the applicants are collectively referred to as Gulf LNG.

On June 19, 2015, Gulf LNG filed an application with the FERC in Docket No. CP15-521-000 pursuant to Section 3(a) of the *Natural Gas Act of 1938* (NGA), as amended, and part 153 of the Commission's regulations. The proposed actions consist of the Gulf LNG Terminal Expansion (Terminal Expansion) and the GLP Pipeline Modifications.

Gulf LNG proposes to construct and operate onshore liquefied natural gas (LNG) liquefaction and associated facilities at its existing LNG Import Terminal (existing Terminal) to allow the export of LNG, and to construct, own, operate, and maintain new interconnection and metering facilities for the existing Gulf LNG Pipeline. All proposed facilities would be in Jackson County, Mississippi.

The EIS was prepared in accordance with the requirements of the *National Environmental Policy Act of 1969* (NEPA) and the Commission's implementing regulations under Title 18 of the Code of Federal Regulations, Part 380 (18 CFR 380). The purpose of the EIS is to inform the FERC decision-makers, the public, and the permitting agencies about the potential adverse and beneficial environmental impacts of the proposed Project and its alternatives, and recommend mitigation measures that would reduce adverse impacts to the extent practicable. We<sup>1</sup> prepared this analysis based on information provided by Gulf LNG and further developed from data requests, field investigations, interagency meetings, technical meetings, Project scoping, literature research, and contacts with or comments from federal, state, and local agencies, Native American tribes, and individual members of the public.

The FERC is the lead federal agency for the preparation of this EIS in compliance with the requirements of NEPA. The U.S. Army Corps of Engineers (COE); U.S. Coast Guard (USCG); U.S. Department of Energy, Office of Fossil Energy; U.S. Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration; U.S. Fish and Wildlife Service (FWS); National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS); and U.S. Environmental Protection Agency are cooperating agencies in the development of this EIS, consistent with 40 CFR 1501.6(b). In addition, the Mississippi Office of the Secretary of State has jurisdiction over the wetland mitigation property and, therefore, is assisting us as a cooperating agency. A cooperating agency has jurisdiction by law or has special expertise with respect to environmental resource issues associated with the Project.

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<sup>1</sup> "We," "us," and "our" refer to the environmental and engineering staff of the FERC's Office of Energy Projects.

## PROPOSED ACTION

According to Gulf LNG, the Project would convert domestic natural gas into LNG for export to free trade agreement (FTA) nations and, if approved, non-FTA nations and deliver competitively-priced LNG to foreign markets.

Gulf LNG designed its Project to meet each of the following purposes:

- enable bi-directional flow of natural gas along the Gulf LNG Pipeline system and allow natural gas to be received from three pipeline interconnections;
- allow natural gas to be received by pipeline at the Terminal Expansion that would be treated, liquefied, stored, and loaded from LNG storage tanks into vessels berthed at the existing Terminal's marine facility; and
- preserve the import and re-gasification capabilities of the existing Terminal.

### Terminal Expansion

Gulf LNG would construct the Terminal Expansion on a 46-acre site adjacent to the existing Terminal near the south end of State Highway 611, southeast of Pascagoula, Mississippi. The proposed site is north and east of and partially within the existing Terminal's boundaries in Jackson County, Mississippi. The Terminal Expansion would include the following key facilities:

- feed gas pre-treatment facilities, including a mercury removal system, an acid gas removal system (to remove carbon dioxide and hydrogen sulfide), a molecular sieve dehydration system (to remove water), and a heavy hydrocarbon removal system (to remove natural gas liquids);
- two separate propane precooled mixed refrigerant liquefaction trains that liquefy natural gas, each with a nominal liquefaction capacity of 5 million tonnes per annum (mtpa) and a maximum capacity of more than 5.4 mtpa of LNG;
- liquefaction facility utilities and associated systems, including two gas-fired turbine compressors per liquefaction train;
- storage facilities for condensate, ammonia, and refrigerants;
- utilities systems including instrument, plant air, and nitrogen;
- a truck loading/unloading facility to unload refrigerants and to load condensate produced during the gas liquefaction process;
- four flares (including one spare flare) in a single flare tower to incinerate excess gases associated with maintenance, startup/shutdown, and upset conditions during an emergency;
- two supply docks (North and South Supply Docks) designed to receive barges transporting materials and large equipment during construction, with one dock retained for use during operation;
- new in-tank LNG loading pumps in the existing LNG storage tanks to transfer LNG through the existing transfer lines to LNG marine carriers;
- new spill impoundment systems designed to contain LNG, refrigerants, and other hazardous fluids;
- minor changes to the existing berthing facility piping to permit bi-directional flow;



- a new concrete storm surge protection wall that connects to the existing storm surge protection wall near the southwest corner of the Terminal Expansion site and extends along the southern border of the Terminal Expansion site;
- a new earthen berm extending from the northeastern to the southeastern boundaries of the Terminal Expansion site, between the Terminal Expansion and the Bayou Casotte Dredged Material Management Site, and connecting to the new segments of the storm surge protection wall; and
- six off-site construction support areas (CSAs) for use as staging and laydown areas, contractor yards, and parking. CSA-3, which is currently owned by Gulf LNG, would continue its present use during operation of the Project.

## Pipeline Modifications

Gulf LNG proposes to modify its existing pipeline system to provide bi-directional flow along the Gulf LNG Pipeline system, allowing gas to flow to or from the expanded Terminal and its existing intra- and interstate pipeline interconnections.<sup>2</sup> The Pipeline Modifications would consist of the following:

- modifications to the existing Gulf LNG Pipeline metering station at its interconnection with the Destin Pipeline Company, LLC Pipeline to permit bi-directional flow;
- modifications to the existing Gulf LNG Pipeline metering station at its interconnection with the Gulfstream Natural Gas System, LLC Pipeline to permit bi-directional flow; and
- modifications to the existing Gulf LNG Pipeline at the existing Terminal to provide a connection to the inlet of the LNG pre-treatment facilities.

## PUBLIC INVOLVEMENT

On May 21, 2014, the FERC staff approved Gulf LNG's request to use the Pre-filing Process for the Project. FERC assigned the Project Pre-Filing Docket No. PF13-4-000. The Pre-filing Process provides opportunities for interested stakeholders to become involved early in project planning before a formal application is filed, facilitates interagency cooperation, and assists in the identification and resolution of issues prior to a formal application being filed with the FERC.

On June 26, 2014, Gulf LNG held a public open house in Moss Point, Mississippi. The purpose of the open house was to provide affected landowners, government and agency officials, and the general public with information about the Project and to give them an opportunity to ask questions and express their concerns. We participated in the open house and provided information regarding the Commission's environmental review process to interested stakeholders.

On July 31, 2014, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Planned Gulf LNG Liquefaction Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meeting* (NOI). This notice was sent to 218 interested parties including federal, state, and local officials; agency representatives; conservation organizations; Native American tribes; local libraries and newspapers in the Project area; and property owners in the vicinity of Project facilities. The NOI announced a public scoping meeting and established a 30-day scoping period, ending on September 1, 2014, for the submission of comments, concerns, and issues related to the

<sup>2</sup> Additionally, Transcontinental Gas Pipe Line Company, LLC (Transco) would construct modifications to the existing Transco/Florida Gas Transmission Company, LLC Interconnect. FERC would review this project under Transco's blanket certificate.

environmental aspects of the Project. However, the FERC determined that some of those on the environmental mailing list were not provided timely copies of the NOI, and on August 27, 2014, issued a notice extending the scoping period to September 15, 2014. On August 18, 2014, we held a public scoping meeting at the Pelican Landing Convention Center in Moss Point, Mississippi. The FERC received six comment letters and comment forms from federal and state agencies, non-governmental organizations, and individuals during the scoping period. In addition, three individuals provided verbal comments at the scoping meeting.

We issued a *Notice of Availability of the Draft Environmental Impact Statement* (NOA) on November 15, 2018. Copies of the NOA were mailed to 253 stakeholders. The draft EIS was filed with the EPA and a formal notice of availability was issued in the Federal Register on November 23, 2018, which established a 45-day comment period on the draft EIS that ended on January 7, 2019. We held one public comment session on December 18, 2018 in Moss Point, Mississippi, to solicit and receive comments on the draft EIS. The session provided the public an opportunity to present oral comments to a court reporter on the environmental analysis described in the draft EIS. A total of about 20 individuals attended this public session, including four who provided oral comments. On February 7, 2019, the Commission reopened the comment period until February 25, 2019, because of a funding lapse at certain federal agencies between December 22, 2018 and January 25, 2019. We received eight comment letters from federal agencies, companies/organizations, and individuals in response to the draft EIS.

All comments received in response to the draft EIS are included in our response to comments contained in appendix L. Substantive environmental issues identified through this public review process are addressed in this EIS.<sup>3</sup>

## **PROJECT IMPACTS**

We evaluated the potential impacts of construction and operation of the Project on geology; soils; water use and quality; wetlands; vegetation; wildlife, aquatic resources and Essential Fish Habitat (EFH); threatened, endangered, and special status species; land use, recreation, and visual resources; socioeconomics and environmental justice; cultural resources; air quality and noise; reliability and safety; cumulative impacts; and alternatives. Where necessary, we recommended additional mitigation to minimize or avoid these impacts. Section 5 of the EIS contains a compilation of our recommendations.

Overall, construction of Project facilities would temporarily disturb about 230.8 acres for construction, including 97.2 acres within the existing Terminal and Bayou Casotte Dredged Material Management Site, 16.7 acres for the supply docks, 19.0 acres for access roads, 3.6 acres for the Pipeline Modifications, and 94.4 acres for six CSAs that would be used for temporary storage, staging, and parking. Operation of the Terminal Expansion would result in permanent impacts on about 172.1 acres of open land, industrial/commercial land, non-forested wetlands, and open water. Gulf LNG would remove the Project's South Supply Dock and allow the land affected by the temporary facility to return to pre-construction conditions and uses. Gulf LNG would also return the CSAs, except for CSA-3 which it owns, to pre-construction conditions or as requested by the landowners. CSA-3 would be maintained during operation of the Project for warehousing and equipment storage. All of the Pipeline Modifications would be constructed on industrial land within the fence lines of the existing meter stations (or associated pipeline right-of-way) or interconnection facility, and Gulf LNG would restore the land affected by construction to pre-construction conditions.

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<sup>3</sup> Transcripts of the public scoping and draft EIS comment sessions and all written comments are part of the FERC's public record for the Project and are available for viewing in eLibrary under the Docket Nos. PF13-4-000 and CP15-521-000, available on the FERC website at <http://ferc.gov/docs-filing/elibrary.asp>.

Based on our analysis, Project scoping, agency consultations, and public comments, the main Project construction and operational impacts would be on wetlands, EFH, federally listed species, socioeconomics (onshore traffic), air quality and noise, reliability and safety, and cumulative impacts.

## **Wetlands**

Construction and operation of the Terminal Expansion would affect about 31.1 acres of coastal marsh and about 7.6 acres of freshwater wetland at CSA-5. Gulf LNG would permanently fill all 38.7 acres of wetlands as part of construction of the Terminal Expansion; however, Gulf LNG would offset impacts on COE-jurisdictional wetlands by mitigation measures proposed by Gulf LNG as modified and included in the COE and Mississippi Department of Marine Resource (MDMR) permits, expected to be issued to Gulf LNG after issuance of the final EIS for the Project. The proposed mitigation measures include creation of a 50-acre tidal salt marsh, and expanding the existing COE-created wetland mitigation site into the Mississippi Sound just south of the existing Terminal. To further minimize impacts on wetlands, Gulf LNG would comply with all conditions of the COE Section 404 and Section 10 permits.

Based on Gulf LNG's proposed permanent filling of the wetlands at CSA-5, and our experience with natural gas facility construction, we have determined that Gulf LNG has not adequately justified permanently filling the wetlands at CSA-5. Therefore, we recommend that Gulf LNG commit to restore the wetlands at CSA-5 to pre-construction conditions following construction in accordance with the Commission's *Wetland and Waterbody Construction and Mitigation Procedures*. Construction of the Pipeline Modifications and use of the five other CSAs would not affect wetlands.

## **Essential Fish Habitat**

Based on the results of consultation with NMFS, we determined that the proposed supply docks are within EFH, as defined by the *Magnuson-Stevens Fishery Conservation and Management Act of 1976*, as amended. Although construction of the North Supply Dock would involve permanent conversion of EFH estuarine sub-tidal water bottom habitat to deep water habitat, the deep water habitat would recolonize with soft-bottom benthic organisms between periods of dredging and would continue to provide a prey base for EFH species. After construction is complete, the South Supply Dock would be removed and maintenance dredging would cease, allowing sedimentation to continue undisturbed within the previously dredged area. To minimize impacts from dredging and construction on EFH and EFH species, Gulf LNG proposes to install and maintain turbidity curtains around the area being excavated to limit the transport of turbid water beyond the vicinity of the dredging operations, and adhere to measures contained in its *Upland Erosion Control, Revegetation, and Maintenance Plan; Wetland and Waterbody Construction and Mitigation Procedures*; the *Spill Prevention, Control, and Countermeasure Plan*; and existing and future federal and state permit requirements. Based on a review of the EFH species' habitats and life histories and implementation of Gulf LNG's conservation measures, we conclude that no substantial adverse impacts on EFH or EFH species would occur during construction or operation of the Terminal Expansion, as impacts would primarily be localized, temporary, and minor. Where impacts on coastal marsh and shallow estuarine EFH would be permanent, Gulf LNG would provide adequate compensation, as required by the COE for wetland impacts, through the successful completion of the wetland compensatory mitigation site. On December 10, 2018 the NMFS agreed with our determination that the Project would not adversely affect EFH.

## **Threatened and Endangered Species**

Based on Gulf LNG's species-specific surveys and consultations with the FWS and NMFS, 19 federally listed species, and 3 species that are under federal review, potentially occur in the general Project area. We anticipate that construction and operation of the proposed Project *is not likely to adversely affect* the Alabama red-bellied turtle, rufa red knot, piping plover, wood stork, least tern,

interior least tern, West Indian manatee, blue whale, sperm whale, fin whale, humpback whale, sei whale, gulf sturgeon, smalltooth sawfish, Kemp's ridley sea turtle, green sea turtle, loggerhead sea turtle, leatherback sea turtle, and hawksbill sea turtle. We expect that Project-related construction and operation would not contribute to a trend toward federal listing for the Bryde's whale, saltmarsh topminnow, or eastern black rail. As part of the *Endangered Species Act* Section 7 consultation process, we prepared a Biological Assessment, which is summarized in section 4.7.1 and provided in appendix B of this EIS.

Based on adherence to the FWS' and NMFS' avoidance and minimization recommendations, Gulf LNG's proposed construction procedures and mitigation measures described in its application, and compliance with federal permit conditions, the Project is not likely to adversely affect federally listed species. With the draft EIS, we requested that the FWS and NMFS concur with our determinations of effect on these protected species and complete Section 7 consultation. On February 22, 2019 the FWS agreed with our determinations of effect for those species under their jurisdiction. Because consultation with the NMFS is ongoing, we recommend that *Endangered Species Act* consultation with NMFS should be completed prior to construction.

Based on consultations with the Mississippi Department of Wildlife, Fish, and Parks (MDWFP) and Gulf LNG's species-specific surveys, three state-listed bird species (snowy plover, peregrine falcon, and brown pelican), one plant species of state concern (Carolina grasswort), and one state special status species (bald eagle) could be affected by the Project. We anticipate that impacts from the Project would not be significant for the snowy plover, peregrine falcon, brown pelican, or bald eagle. A small population of Carolina grasswort is at the proposed Terminal Expansion. We recommend that Gulf LNG transplant the Carolina grasswort population to a similar habitat using protocols determined in consultation with the Mississippi Museum of Natural Science. With implementation of our recommendation, we expect that Project-related impacts on the population of Carolina grasswort would not be significant.

### **Coastal Zone Management Program**

A determination from the MDMR that the Project is consistent with the Mississippi Coastal Zone Management Program (CZMP) has not yet been obtained by Gulf LNG. Therefore, we recommend Gulf LNG be required to file documentation of concurrence from the MDMR that the Project is consistent with the Mississippi CZMP prior to construction.

### **Socioeconomics**

Gulf LNG would minimize traffic into and out of the Terminal Expansion site by having parking areas off-site. In response to our recommendation in the draft EIS, Gulf LNG provided an updated *Traffic Impact Analysis*. Gulf LNG's updated analysis predicted poor levels of service at traffic intersections near CSA-6 and high volumes of traffic near residential areas. To mitigate traffic impacts at the Bayou Casotte Parkway and Orchard Road intersection, Gulf LNG is proposing to add signage to clearly identify lane movements, add raised pavement markers within the intersection, and restripe the intersection. These measures would help improve the functionality of the intersection and improve safety for drivers that are unfamiliar with driving in the area. Gulf LNG would implement these measures prior to starting construction.

To further improve traffic flow into and out of the parking area at CSA-6, Gulf LNG would prohibit parking along Bayou Casotte Parkway adjacent to the parking area and it would stripe the three driveways that access the parking area to ensure the entry lane would be a minimum of 14 feet wide. While residents from the area to the west of CSA-6 could access their residences and schools along Bayou Casotte Parkway, it is more likely that they would use other, more direct routes, such as Martin Street and Ingalls Avenue. With the mitigation measures outlined by Gulf LNG and the availability of

other routes for local residents, we conclude that construction of the Project would have a temporary and minor impact on traffic in the area of the Project.

The primary effect of barge traffic on marine transportation would occur during the 2-month period when Gulf LNG constructs the supply docks. Effects on marine transportation would decline to a minor impact for the rest of the construction period. During operation of the Project, there would not be an impact on marine traffic beyond the previously authorized LNG marine vessel traffic.

## **Air Quality and Noise**

Construction of the Project would result in temporary impacts on air quality caused by emissions from fossil-fueled construction equipment and fugitive dust. Gulf LNG would incorporate dust control measures during construction to minimize fugitive dust, and we conclude the impact of construction on air quality would be minor.

Long-term impacts on air quality would be caused during operation of the Terminal Expansion. However, Gulf LNG would minimize potential impacts on air quality associated with operation of the Terminal Expansion by adhering to applicable federal and state regulations, including installation of Best Available Control Technology to minimize emissions, as required by the Prevention of Significant Deterioration air quality permit pending issuance by the Mississippi Department of Environmental Quality.

Construction activities and the associated noise would vary depending on the phase of construction in progress at any one time. The most prevalent sound generating equipment during site construction of the Terminal Expansion would be internal combustion engines of construction equipment. The sound levels experienced at the nearby noise sensitive areas (NSAs) would depend on the type of equipment used, the mode of operation of the equipment, the length of time the equipment is in use, the amount of equipment used simultaneously, and the distance between the sound generation source and the receptor. However, based on the distance to the NSAs, construction noise from this typical construction equipment is not anticipated to exceed the Commission's noise criterion. Gulf LNG proposes to ensure the Commission's noise criterion of 55 A-weighted decibels (dBA) is met by construction of sound barriers or installation of residential grade exhaust mufflers on equipment as necessary.

Dredging of the supply docks and for material barge access to the wetland mitigation area, as well as, pile driving during onshore construction of the Terminal Expansion and during offshore construction of the supply docks, would produce peak sound levels that would be perceptible above the prevalent sound levels during construction. However, the resulting noise is less than the Commission's noise criterion, and would not be expected to result in significant impacts on the NSAs.

Operation of the Terminal Expansion would generate sound levels that would occur throughout the life of the Project. Based on preliminary operational noise levels for anticipated equipment, the increase in noise levels would be below the "barely detectable" noise level increase of 3 dBA and would result in minor impacts on the nearest NSA. In addition, the noise level would be below the FERC limit of a day-night sound level ( $L_{dn}$ ) of 55 dBA. We recommend, however, that Gulf LNG file a full-load noise survey no later than 60 days after each liquefaction train is put in service for the first and second liquefaction trains. If noise levels attributable to operation of the Terminal Expansion exceed the FERC limit of an  $L_{dn}$  of 55 dBA, Gulf LNG would be required to install additional mitigation to reduce the Terminal's noise contribution to ensure that the noise level is no higher than the FERC requirement. We also recommend that Gulf LNG file a full-load noise survey no later than 60 days after placing all the Terminal Expansion facilities in service.

Noise impacts would also occur from flare operation on an intermittent basis during startup, shutdown, or commissioning of the liquefaction facility, and infrequently in the event of a malfunction de-pressuring event. We anticipate that noise attributable to planned flare events would achieve 55 dBA  $L_{dn}$  or less once detailed design is completed, the flare design/vendor is selected, and final emergency flare rates are known. Unplanned flare events would produce more noise, with an estimated  $L_{dn}$  of 56 to 61 dBA at the nearest NSAs; however, because of the infrequent occurrence and expected operation of flares during these events, we conclude that the resulting noise would not result in a significant impact on the NSAs.

### **Reliability and Safety**

As part of the NEPA review, Commission staff assesses the potential impact to the human environment in terms of safety and assesses whether the proposed facilities would be able to operate safely, reliably, and securely.

As a cooperating agency, the DOT assists the FERC by determining whether Gulf LNG's proposed design would meet the DOT's 49 CFR 193 Subpart B siting requirements. On March 15, 2019, the DOT issued a Letter of Determination (LOD) to the FERC on the 49 CFR 193 Subpart B regulatory requirements.<sup>4</sup> The LOD provides the DOT, Pipeline and Hazardous Materials Safety Administration's analysis and conclusions regarding 49 CFR 193 Subpart B regulatory requirements for the Commission's consideration in its decision on the Project application. If the Terminal Expansion is authorized, constructed, and operated, the facility would be subject to the DOT's inspection and enforcement program and final determination of whether the facility is in compliance with the requirements of 49 CFR 193 would be made by the DOT staff.

As a cooperating agency, the USCG also assisted the Commission by reviewing the Terminal Expansion and the associated LNG marine vessel traffic. The USCG reviewed a Water Suitability Assessment (WSA) submitted by Gulf LNG that focused on the navigation safety and maritime security aspects of LNG marine vessel transits along the affected waterway. On May 4, 2016, the USCG issued a Letter of Recommendation indicating the Bayou Casotte turning basin, Bayou Casotte Channel, Lower Pascagoula Channel, Horn Island Pass Channel, and Pascagoula Bar Channel would be considered suitable for accommodating the type and frequency of LNG marine traffic associated with the Project, based on the WSA and in accordance with the guidance in the USCG's Navigation and Vessel Inspection Circular 01-11. If the Project is authorized, constructed, and operated, the facilities would be subject to the USCG's inspection and enforcement program to ensure compliance with the requirements of 33 CFR 105 and 33 CFR 127.

We conducted a preliminary engineering and technical review of the Gulf LNG design, including potential external impacts based on the site location. Based on our review, we recommend a number of mitigation measures and continuous oversight prior to initial site preparation, prior to construction of final design, prior to commissioning, prior to introduction of hazardous fluids, prior to commencement of service, and throughout the life of the facility to enhance the reliability and safety of the facility and to mitigate the risk of impact on the public. With the incorporation of these mitigation measures and oversight, we conclude that the Terminal Expansion design would include acceptable layers of protection or safeguards that would reduce the risk of a potentially hazardous scenario from developing into an event that could impact the off-site public.

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<sup>4</sup> March 15, 2019 letter "Re: Gulf LNG Liquefaction Project FERC Docket CP15-521-000 49 CFR 193, Subpart B, Siting – Letter of Determination". FERC eLibrary accession number 20190315-3072.

## Cumulative Impacts

We conclude that the potential impacts of the Project, when combined with the impacts from the other projects considered in the geographic scope, would not result in a significant impact on resources. However, concurrent construction of the proposed Project and other projects north of the Terminal Expansion site would result in increased workers in the area, periods of substantial traffic impact on portions of Highway 611 south of Interstate 90, and impacts on public services. Gulf LNG's proposed measures would minimize these construction traffic impacts in the Project area.

Based upon Gulf LNG's proposed mitigation measures for impacts on wetlands and land transportation, we further conclude that the Project's contribution to cumulative impacts on the affected resources would not be significant.

## ALTERNATIVES CONSIDERED

The range of alternatives analyzed included the No-Action Alternative, system alternatives, alternative Terminal Expansion sites, alternative plot plans for the Terminal Expansion, supply dock alternatives, alternative CSA sites, alternative Pipeline Modification sites, an alternative power source for the refrigeration compressors, and an alternative power source for the Terminal Expansion. Based on our assessment of alternatives that could achieve the Project objectives, none of the alternatives evaluated would provide a significant environmental advantage over the proposed action.

## CONCLUSIONS

We conclude that construction and operation of the Project, in accordance with Gulf LNG's proposed mitigation and our recommendations presented in section 5.2 of this EIS, would ensure that impacts of the Project would be avoided or minimized and would not be significant. The principal reasons for our decision include the following:

- the Terminal Expansion facilities would be an expansion of an existing, operating LNG Import Terminal with existing LNG storage tanks and berthing and loading/unloading facilities;
- we have included a recommended condition that Gulf LNG restore the wetlands at CSA-5 following construction. Gulf LNG's compensatory wetland mitigation plan, as required by the COE, would adequately address additional impacts on wetlands;
- the siting requirements of DOT for the Project, the Letter of Recommendation issued by the USCG for the LNG marine traffic associated with the Project, FERC staff's preliminary engineering review and recommendations for the Project, and the regulatory requirements for the pipeline system and Project would avoid a significant increase in public safety risks;
- Gulf LNG would implement its Project-specific *Upland Erosion Control, Revegetation, and Maintenance Plan* and its Project-specific *Wetland and Waterbody Construction and Mitigation Procedures* to minimize construction impacts on soils, wetlands, and waterbodies;
- the Project is not likely to adversely affect any species listed under the Endangered Species Act, would not contribute to a trend toward federal listing for any federally or state-listed threatened or endangered species, or have a substantial adverse impact on EFH;
- the Project would have no effect on cultural resources;
- all appropriate consultations with the FWS, NMFS, the MDWFP, and the MDMR would be completed before construction is allowed to start; and

- the FERC’s environmental and engineering inspection and mitigation monitoring program for the Project would ensure compliance with all mitigation measures and conditions of any FERC Authorization.

In addition, we developed site-specific mitigation measures that Gulf LNG should implement to reduce the environmental impacts that would otherwise result from construction and operation of the Project. We recommend that these mitigation measures, presented in section 5.2 of this EIS, be attached as conditions to any authorization issued by the Commission for the Project.



## 1.0 INTRODUCTION

On June 19, 2015, Gulf LNG Liquefaction Company, LLC (Gulf LLC),<sup>1</sup> Gulf LNG Energy, LLC (GLE), and Gulf LNG Pipeline, LLC (GLP) filed an application with the Federal Energy Regulatory Commission (Commission or FERC). Pursuant to Section 3 of the *Natural Gas Act of 1938*, as amended (NGA), Gulf LLC and GLE requested authorization to site, construct, and operate liquefied natural gas (LNG) liquefaction and export facilities adjacent to and integrated with the existing GLE LNG Import Terminal (existing Terminal) in Jackson County, Mississippi. The proposed action is called the Terminal Expansion in this Environmental Impact Statement (EIS). The combined Gulf LLC, GLE, and GLP actions and facilities are referred to herein as the Gulf LNG Liquefaction Project (Project), and the applicants are collectively referred to as Gulf LNG.

Pursuant to Part 157.203 of Commission regulations, Gulf LNG also provided notice that it intends to make minor modifications to the existing GLP Pipeline in Jackson County, Mississippi.<sup>2</sup> The proposed GLP modifications, termed the Pipeline Modifications in this EIS, would add bi-directional flow capability to the existing GLP pipeline system (called the Gulf LNG Pipeline in this EIS), allowing the pipeline to transport natural gas from various existing interstate pipeline interconnections to the Terminal Expansion for liquefaction and export, or alternatively, to send out regasified (vaporized) LNG from the existing Terminal to the same pipeline interconnections. The Project would allow Gulf LNG to liquefy domestic natural gas supplies for the export of up to 10.85 million tonnes per annum (mtpa) of LNG during the life of the facility.

As part of the Commission's consideration of these applications, we<sup>3</sup> prepared this final EIS to assess the potential environmental impacts resulting from construction and operation of the proposed Project in accordance with the requirements of the *National Environmental Policy Act of 1969*, as amended (NEPA). The distribution list for the *Notice of Availability* of the final EIS is presented in appendix A.

The vertical line in the margin identifies text that is new or modified in this final EIS and differs materially from the corresponding text in the draft EIS. Changes were made to address comments from cooperating agencies and other stakeholders on the draft EIS, incorporate modifications to the Project after publication of the draft EIS, update information included in the draft EIS, and incorporate information filed by Gulf LNG in response to recommendations in the draft EIS and in response to our post-draft EIS environmental information requests.

The existing Terminal is southeast of the City of Pascagoula in Jackson County, Mississippi, at the south end of State Highway 611 (SH-611) on land leased from the Port of Pascagoula. It is on the Mississippi Sound, adjacent to the federally maintained Bayou Casotte Navigation Channel. Currently, the existing Terminal is authorized to receive LNG by marine vessel shipment (LNG carriers) for regasification and transport by pipeline to interconnections with interstate and intrastate pipelines that provide access to markets throughout the United States. The Terminal Expansion would allow the export of domestic natural gas in the form of LNG from the existing Terminal. Gulf LNG requested that the maximum size of LNG carriers authorized to use the berthing facility be increased from 170,000 cubic

<sup>1</sup> Gulf LNG Liquefaction Company, LLC is a Kinder Morgan operated company.

<sup>2</sup> Gulf LNG Pipeline, LLC would conduct these modifications under its existing blanket certificate, issued in CP06-14-000.

<sup>3</sup> "We," "us," and "our" refer to the environmental and engineering staff of the FERC's Office of Energy Projects.

meters (m<sup>3</sup>) to 208,000 m<sup>3</sup>. However, Gulf LNG did not request changes to the currently authorized annual number of LNG carrier transits to the existing Terminal (about 150 LNG carriers per year).

In addition to liquefying natural gas and exporting LNG, the expanded Terminal would continue to have the capability to regasify imported LNG. However, the proposed design of the facility would not allow concurrent liquefaction, regasification, and transfer of LNG to and from an LNG carrier. As a result, at any point in time, the expanded Terminal would operate exclusively as a liquefaction and export facility or exclusively as an import and regasification facility.

If Gulf LNG receives FERC authorization for the Terminal Expansion and all other permits, authorizations, and approvals for the Project, it anticipates initiating export of LNG from the first liquefaction train<sup>4</sup> in the third quarter of 2024, with in service of the second liquefaction train in the second quarter of 2025. The Terminal Expansion would include the following key facilities:

- feed gas pre-treatment facilities, including a mercury removal system, an acid gas removal system (to remove carbon dioxide and hydrogen sulfide), a molecular sieve dehydration system (to remove water), and a heavy hydrocarbon removal system (to remove benzene and heavy components such as C5+ from feed gas also known as natural gas liquids [NGLs]);
- two separate propane pre-cooled mixed refrigerant liquefaction trains that liquefy natural gas, each with a nominal liquefaction capacity of 5 mtpa and a maximum capacity of more than 5.4 mtpa of LNG;
- liquefaction facility utilities and associated systems, including two gas-fired turbine compressors per liquefaction train;
- storage facilities for condensate, ammonia, and refrigerants;
- utilities systems, including instrument, plant air, and nitrogen;
- a truck loading/unloading facility to unload refrigerants and to load condensate produced during the gas liquefaction process;
- four flares (including one spare flare) in a single flare tower to incinerate excess gases associated with maintenance, startup/shutdown, and upset conditions during an emergency;
- two supply docks designed to receive barges transporting materials and large equipment during construction, with one dock retained for use during operation<sup>5</sup>;
- new in-tank LNG loading pumps in the existing LNG storage tanks to transfer LNG through the existing transfer lines to LNG carriers;
- new spill impoundment systems designed to contain LNG, refrigerants, and other hazardous fluids;
- minor changes to piping at the existing berthing facility to permit bi-directional flow;
- a new concrete storm surge protection wall that connects to the existing storm surge protection wall near the southwest corner of the Terminal Expansion site and extends along the southern border of the Terminal Expansion site;
- a new earthen berm extending from the northeastern to the southeastern boundaries of the Terminal Expansion site, between the Terminal Expansion and the Bayou Casotte Dredged

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<sup>4</sup> The term “train” is used to describe the series of process steps used to convert feed gas to LNG.

<sup>5</sup> Ownership of the North Supply Dock would be transferred to the Jackson County Port Authority.

Material Management Site (BCDMMS), and connecting to the new segments of the storm surge protection wall; and

- six off-site construction support areas (CSAs) for use as staging and laydown areas, contractor yards, and parking.

The existing Terminal receives natural gas only by LNG carriers. The proposed Pipeline Modifications would provide bi-directional flow along the existing Gulf LNG pipeline system, allowing gas to flow to or from the expanded Terminal and the pipeline interconnections described below.<sup>6</sup>

The Pipeline Modifications would consist of the following:

- modifications to the existing Gulf LNG Pipeline metering station at its interconnection with the Destin Pipeline Company, LLC (Destin) Pipeline to permit bi-directional flow;
- modifications to the existing Gulf LNG Pipeline metering station at its interconnection with the Gulfstream Natural Gas System, LLC (Gulfstream) Pipeline to permit bi-directional flow; and
- modifications to the existing Gulf LNG Pipeline at the existing Terminal to provide a connection to the inlet of the LNG liquefaction pre-treatment facilities.

Gulf LNG anticipates that construction of the Pipeline Modifications would occur concurrent with the Terminal Expansion, with service available prior to completion of the first liquefaction train.

Under Section 3 of the NGA, the Commission considers all factors bearing on the public interest as part of its decision to authorize natural gas facilities. Specifically, regarding whether or not to authorize natural gas facilities used for importation or exportation, the Commission shall authorize the proposal unless it finds that the proposed facilities will not be consistent with the public interest.

## **1.1 PROJECT PURPOSE AND NEED**

Gulf LNG states its purpose and need for the proposed Project is to convert domestic natural gas at the Terminal Expansion into LNG for export to free trade agreement (FTA) nations and, if approved, non-FTA nations, and deliver affordably priced LNG to foreign markets. Specific Project objectives are to:

- enable bi-directional flow of natural gas along the GLP pipeline system and allow domestic natural gas to be received by the system;
- transport natural gas by pipeline to the expanded Terminal, and treat, liquefy, store, and load LNG from the LNG storage tanks into LNG carriers berthed at the Terminal's existing marine facility; and
- preserve the import and regasification capabilities of the existing Terminal.

When global market conditions are favorable, Gulf LNG would be able to export LNG. Conversely, when global market conditions favor imports, Gulf LNG may elect to receive cargoes of LNG and distribute regasified LNG to markets in the United States through existing interconnections.

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<sup>6</sup> Additionally, Transcontinental Gas Pipe Line Company, LLC (Transco) would construct modifications to the existing Transco/Florida Gas Transmission Company, LLC Interconnect. FERC would review this project under Transco's blanket certificate.

Gulf LNG stated that the need for the Project is primarily in response to demand from overseas markets resulting from the substantially increased and affordably priced natural gas resource base in the United States.

## 1.2 PURPOSE AND SCOPE OF THIS EIS

The principal purposes in preparing an EIS are to:

- identify and assess potential impacts on the human environment that would result from implementation of the proposed action;
- identify and assess reasonable alternatives to the proposed action that would avoid or minimize adverse effects on the human environment;
- facilitate public involvement in identifying significant environmental impacts; and
- identify and recommend specific mitigation measures to avoid or minimize environmental impacts.

This EIS focuses on the facilities that are under the FERC's jurisdiction (i.e., the proposed Terminal Expansion and Pipeline Modification facilities). The topics addressed in this EIS include geology; soils and sediments; water use and quality; wetlands; vegetation; wildlife; aquatic resources and essential fish habitat (EFH); threatened, endangered, and special status species; land use, recreation, and visual resources; socioeconomics and environmental justice; cultural resources; air quality; noise; reliability and safety; cumulative impacts; and alternatives. The EIS describes the affected environment as it currently exists, discusses the potential environmental consequences of the Project, compares the Project's potential impacts to those of alternatives, and presents our conclusions and recommended mitigation measures.

The *Energy Policy Act of 2005*, as amended (EPAAct 2005) states that the FERC shall act as the lead agency for coordinating all applicable authorizations related to jurisdictional natural gas facilities and for purposes of complying with NEPA. The FERC, as the "lead federal agency," is responsible for preparation of this EIS. This effort was undertaken with the participation and assistance of eight "cooperating agencies." As defined by NEPA, cooperating agencies have jurisdiction by law or special expertise with respect to environmental impacts involved with a proposal. The participating cooperating agencies consist of the U.S. Army Corps of Engineers (COE); the U.S. Coast Guard (USCG); the U.S. Department of Energy, Office of Fossil Energy (DOE/FE); the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (DOT); the U.S. Fish and Wildlife Service (FWS); the National Oceanographic and Atmospheric Administration (NOAA) - National Marine Fisheries Service (NMFS); and the U.S. Environmental Protection Agency (EPA). In addition, the Mississippi Office of the Secretary of State has jurisdiction over the wetland mitigation property and, therefore, is assisting us as a cooperating agency. The roles of the FERC and the cooperating agencies in the Project review process are described below.

The EIS provides a basis for coordinated federal decision making in a single document, avoiding duplication among federal agencies in the NEPA environmental review processes. In addition to the FERC and cooperating agencies, other federal, state, and local agencies may use this EIS in approving or issuing permits for all or part of the proposed Project. Federal, state, and local permits, approvals, and consultations for the Project are addressed in section 1.5.

### **1.2.1 Federal Energy Regulatory Commission**

Based on its authority under the NGA, the FERC is the lead agency for the preparation of this EIS in compliance with the requirements of NEPA, the Council on Environmental Quality (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations, Parts 1500 through 1508 [40 CFR 1500 through 1508]), and FERC regulations implementing NEPA (18 CFR 380).

As the lead federal agency for the environmental review of the Project, the FERC is required to comply with Section 7 of the *Endangered Species Act of 1973* (ESA), as amended, the *Magnuson-Stevens Fishery Conservation and Management Act of 1976*, as amended (MSA), Section 106 of the *National Historic Preservation Act of 1966*, as amended (NHPA), and Section 307 of the *Coastal Zone Management Act of 1972*, as amended (CZMA). Each of these statutes has been taken into account in the preparation of this EIS. The FERC will use this document to consider the environmental, safety, and reliability impacts that could result if it issues an authorization to Gulf LNG under Section 3 of the NGA.

In accordance with Section 3A(e) of the NGA (added by Section 311 of the EPAct 2005), the act stipulates that in any order authorizing an LNG terminal, the Commission must require the LNG terminal operator to develop an *Emergency Response Plan* (ERP) in consultation with the USCG and state and local agencies. Gulf LNG has provided a preliminary draft of an ERP. The final ERP would need to be evaluated by appropriate emergency response personnel and officials. Section 3A(e) of the NGA as amended by EPAct 2005 also requires that the ERP include a Cost-Sharing Plan that contains a description of any direct cost reimbursements the applicant agrees to provide to any state and local agencies with responsibility for security and safety at the LNG terminal and in proximity to LNG marine carriers that serve the facility.

### **1.2.2 U.S. Army Corps of Engineers**

The COE has jurisdictional authority pursuant to Section 404 of the *Clean Water Act of 1972*, as amended (CWA) (Title 33 of the United States Code [USC], Section 1344 [33 USC 1344]), which governs the discharge of dredged or fill material into waters of the U.S., and Section 10 of the *Rivers and Harbors Act of 1899*, as amended (33 USC 403), which regulates any work or structures that potentially affect the navigable capacity of a waterbody. Because the COE would need to evaluate and approve several aspects of the Project and must comply with the requirements of NEPA before issuing permits under the above statutes, it has elected to participate as a cooperating agency in the preparation of this EIS. The COE would adopt the EIS in compliance with 40 CFR 1506.3 if, after an independent review of the document, it concludes that the EIS satisfies the COE's comments and suggestions. The Project is under the jurisdiction of the COE Mobile District. Staff from this district participated in the NEPA review and will evaluate COE authorizations, as applicable.

As an element of its review, the COE must consider whether a proposed project avoids, minimizes, and compensates for impacts on existing aquatic resources, including wetlands, to strive to achieve a goal of no overall net loss of values and functions. The COE will issue a Record of Decision to formally document its decisions on the proposed action, including Section 404(b)(1) analyses and required environmental mitigation commitments, if permits are issued for the Project.

### **1.2.3 U.S. Coast Guard**

The USCG has authority over the safety of an LNG terminal's marine transfer area and LNG marine traffic, as well as over security plans for the entire LNG terminal and LNG marine traffic. The USCG also exercises regulatory authority over LNG facilities that affect the safety and security of port areas and navigable waterways under Executive Order 10173; the *Magnuson Action of 1950* (50 USC 191); the *Ports and Waterways Safety Act of 1972*, as amended (33 USC 1221, et seq.), and the *Maritime*

*Transportation Security Act of 2002* (46 USC 701). The USCG is responsible for matters related to navigation safety, vessel engineering and safety standards, and all matters pertaining to the safety of facilities or equipment in or adjacent to navigable waters up to the last valve immediately before the receiving tanks. As a cooperating agency, the USCG assists the FERC staff in evaluating whether an applicant's proposed waterway would be suitable for LNG marine traffic and whether the terminal facilities would be in accordance with 33 CFR 105 and 127. If the facilities are constructed and become operational, the facilities would be subject to the USCG inspection program. Final determination of whether the facilities are in compliance with the requirements of 33 CFR 105 and 127 would be made by the USCG.

As required by its regulations, the USCG is responsible for issuing a Letter of Recommendation (LOR) as to the suitability of the waterway for LNG marine traffic following a review of a Waterway Suitability Assessment (WSA). On December 11, 2012, Gulf LNG initiated consultation with the USCG regarding the proposed Project. Gulf LNG did not request changes to the currently authorized annual number of LNG carrier transits to the existing Terminal, but did request that the maximum size of LNG carriers authorized to use the berthing facility be increased from 170,000 m<sup>3</sup> to 208,000 m<sup>3</sup>. In a letter dated June 17, 2015, the USCG stated that both the existing LOR and WSA were valid and no revisions were needed. In that letter, the USCG also stated that Gulf LNG would be required to update the existing Terminal's *Operations Manual, Emergency Manual, and Facility Security Plan* (FSP), as necessary. However, in October 2015, the USCG determined that the navigation portion of the original WSA did not account for larger LNG carriers. The USCG prepared an updated draft LOR and Letter of Recommendation-Analysis (LOR-A), which was provided to the FERC in January 2016. The USCG prepared the final LOR and LOR-A dated May 4, 2016 which was provided to the FERC on August 9, 2017. Additional discussion of the WSA can be found in section 4.12.1.2.

#### **1.2.4 U.S. Department of Energy**

The DOE/FE must meet its obligations under Section 3 of the NGA to authorize the import and/or export of natural gas, including LNG, unless it finds that the import and/or export would not be consistent with the public interest.

Section 3(c) of the NGA, as amended by section 201 of the *Energy Policy Act of 1992* (Public Law 102-486), requires that applications to DOE requesting authorization of the import and/or export of natural gas, including LNG, from or to a nation with which there is in effect an FTA requiring national treatment for trade in natural gas, be deemed consistent with the public interest and granted without modification or delay. On May 2, 2012, Gulf LNG filed an application with DOE/FE (DOE/FE Docket No. 12-47-LNG) seeking authorization to export up to the equivalent of approximately 547.5 billion cubic feet per year (bcf/yr) of natural gas (1.5 billion cubic feet per day [bcfd]) to countries with which the United States now or in the future has in effect an FTA for a term of 25 years, commencing on the earlier of the date of first export or 10 years from the date of issuance of the authorization. On June 15, 2012, DOE/FE issued Order No. 3104 granting this authorization.

In the case of applications to export LNG to non-FTA countries, Section 3(a) of the NGA requires DOE/FE to conduct a public interest review and grant authorization unless DOE/FE finds that the proposed exports will not be consistent with the public interest. Additionally, NEPA requires DOE/FE to consider the environmental impacts of its decisions regarding applications to export natural gas to non-FTA nations. On August 31, 2012, Gulf LNG filed an application with DOE/FE (DOE/FE Docket No. 12-101-LNG) seeking authorization to export up to the equivalent of approximately 547.5 bcf/yr of natural gas (1.5 bcfd) to countries with which the United States does not have an FTA requiring national treatment for trade in natural gas (non-FTA countries), for a term of 20 years, commencing on the earlier of the date of first export or 10 years from the date of issuance of the authorization. DOE/FE has not yet granted Gulf LNG export authority to countries without an FTA. In accordance with 40 CFR 1506.3,

after an independent review of the EIS, DOE/FE may adopt the document prior to issuing a Record of Decision on the Gulf LNG application for authority to export LNG to non-FTA countries.

### **1.2.5 U.S. Department of Transportation**

The DOT has prescribed the minimum federal safety standards for LNG facilities in compliance with 49 USC 60101. Those standards are codified in 49 CFR 193 and apply to the siting, design, construction, operation, maintenance, and security of LNG facilities. The National Fire Protection Association (NFPA) Standard 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas* (2001 ed.), is incorporated into Part 193 by reference, with regulatory preemption in the event of conflict. In February 2004, the USCG, the DOT, and the FERC entered into an Interagency Agreement to ensure greater coordination among these three agencies in addressing the full range of safety and security issues at LNG terminals, including terminal facilities and tanker operations, and maximizing the exchange of information related to the safety and security aspects of the LNG facilities and related marine operations. Under the Interagency Agreement, the FERC is the lead federal agency responsible for the preparation of the analysis required under NEPA for impacts associated with terminal construction and operation. The DOT and the USCG participate as cooperating agencies, but remain responsible for enforcing their regulations covering LNG facility design, construction, and operation.

On August 31, 2018, the DOT and the FERC signed a Memorandum of Understanding (MOU) to coordinate the siting and safety review of FERC-jurisdictional LNG facilities. The MOU establishes a framework for coordination between the FERC and the DOT to process LNG applications in a timely and expeditious manner while ensuring decision-makers are fully informed on public safety impacts. Under the 2018 MOU, the DOT will issue a Letter of Determination (LOD), which FERC will rely upon in determining whether a proposed LNG facility will be capable of complying with Part 193, Subpart B, Siting. On March 15, 2019, the DOT issued an LOD, which provides the Pipeline Hazardous Materials Safety Administration (PHMSA) analysis and conclusions regarding 49 CFR 193, Subpart B regulatory requirements for the Commission's consideration in its decision to authorize, with or without modification or conditions, or deny an application.<sup>7</sup>

### **1.2.6 U.S. Fish and Wildlife Service**

The FWS is responsible for ensuring compliance with the ESA. Section 7 of the ESA, as amended, states that any project authorized, funded, or conducted by any federal agencies should not "...jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical..." (16 USC 1536[a][2]). The FWS also reviews project plans and provides comments regarding protection of fish and wildlife resources under the provisions of the *Fish and Wildlife Coordination Act of 1938*, as amended (16 USC 661 et seq.). The FWS is responsible for the implementation of the provisions of the *Migratory Bird Treaty Act of 1918*, as amended (MBTA) (16 USC 703) and the *Bald and Golden Eagle Protection Act of 1940*, as amended (BGEPA) (16 USC 688).

Section 7 of the ESA requires identification of and consultation on aspects of any federal action that may have effects on federally listed species, species proposed for federal listing, and their habitat. The ultimate responsibility for compliance with Section 7 remains with the lead federal agency. As the lead federal agency for the Project, the FERC staff consulted with the FWS pursuant to Section 7 of the ESA to determine whether federally listed endangered or threatened species or designated critical habitat occur in the vicinity of the Project and to evaluate the proposed action's potential effects on those species

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<sup>7</sup> March 15, 2019 letter "Re: Gulf LNG Liquefaction Project FERC Docket CP15-521-000 49 CFR 193, Subpart B, Siting – Letter of Determination". FERC eLibrary accession number 20190315-3072.

or critical habitats. We also consulted with the FWS regarding the BGEPA, the MBTA, the *Fish and Wildlife Coordination Act*, and NEPA. The FWS elected to cooperate in preparing this EIS because it has special expertise with respect to environmental impacts associated with the Gulf LNG proposal. As part of the consultation process, we prepared a biological assessment (BA), which is summarized in section 4.7.1 and provided in appendix B. On November 21, 2018 we requested the FWS accept the BA, which was provided in the draft EIS, and concur with our determinations of effect for the Project. On February 22, 2019 the FWS agreed with our determinations of effect for those species under their jurisdiction.<sup>8</sup>

### **1.2.7 National Marine Fisheries Service**

The NMFS has the responsibility for protecting marine mammals and threatened/endangered marine life and works to conserve, protect, and recover species listed under the ESA and the *Marine Mammal Protection Act of 1972*, as amended (MMPA). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. Congress amended the MMPA in 1994 to provide for certain exceptions to the take prohibitions, including a program to authorize and control the taking of marine mammals incidental to commercial fishing operations; preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; and studies of pinniped-fishery interactions.<sup>9</sup>

The MSA, as amended by the *Sustainable Fisheries Act of 1996* (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a federal fisheries management plan. The MSA also requires that federal agencies consult with the NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH (MSA §305(b)(2)). Although absolute criteria have not been established for conducting EFH consultations, the NMFS recommends consolidated EFH consultations with interagency coordination procedures required by other statutes, such as NEPA, the *Fish and Wildlife Coordination Act*, or the ESA, to reduce duplication and improve efficiency (50 CFR 600.920(f)). The FERC staff consulted with the NMFS as recommended. As part of the consultation process, we requested the NMFS accept the EFH Assessment and the BA, which were provided in the draft EIS, and concur with our determinations of effect for the Project. On December 10, 2018 the NMFS agreed with our determination that the Project would not adversely affect EFH.<sup>10</sup> A response from the NMFS regarding the BA has not been received. Because ESA consultation with NMFS is not complete, we recommend that Gulf LNG should not begin any project construction until FERC staff completes ESA consultation with NMFS for the Project. The EFH Assessment, is summarized in section 4.6.3 and provided in appendix C and the BA is summarized in section 4.7.1 and provided in appendix B.

### **1.2.8 U.S. Environmental Protection Agency**

The EPA has delegated water quality certification (Section 401 of the CWA) to the jurisdiction of individual state agencies (in this case, Mississippi Department of Environmental Quality [MDEQ]), but the EPA may assume this authority if no state program exists, if the state program is not functioning adequately, or at the request of a state. Water used for hydrostatic testing of pipelines that is point-source discharged into waterbodies requires a National Pollutant Discharge Elimination System (NPDES) permit (Section 402 of the CWA) issued by the state with oversight by the EPA. In addition, the EPA has the authority to review and veto the COE decisions on Section 404 permits.

<sup>8</sup> See accession number 20190314-5045.

<sup>9</sup> Pinnipeds are marine mammals that include front and rear fins. This includes walruses, seals, and sea lions.

<sup>10</sup> See accession number 20181211-5001.



The EPA also has jurisdictional authority to control air pollution under the *Clean Air Act of 1963*, as amended (CAA) (42 USC Chapter 85) by developing and enforcing rules and regulations for all entities that emit toxic substances into the air. Under this authority, the EPA has developed regulations for major sources of air pollution. The EPA has delegated the authority to implement these regulations to state and local agencies, while state and local agencies are allowed to develop their own regulations for non-major sources. The EPA also establishes general conformity applicability thresholds, with which a federal agency can determine whether a specific action requires a general conformity assessment. In addition to its permitting responsibilities, the EPA is responsible for implementing certain procedural provisions of NEPA (e.g., publishing the Notices of Availability [NOA] of the draft and final EISs in the Federal Register) to establish statutory timeframes for the environmental review process.

### **1.3 PUBLIC REVIEW AND COMMENT**

#### **1.3.1 Pre-filing Process and Scoping**

Gulf LNG initially filed a request with the FERC to use our pre-filing process on December 5, 2012. FERC staff issued a follow-up letter to Gulf LNG on December 14, 2012 stating that it would consider Gulf LNG's December 5, 2012 pre-filing request upon full compliance with the procedures described in the Commission's regulations at 18 CFR 157.21. At that time, the FERC assigned the Project to Pre-Filing Docket No. PF13-4-000. On May 9, 2014, Gulf LNG filed a second request with the FERC to use the pre-filing review process, along with supplemental information on the Project. The FERC approved the use of the pre-filing process for the Project in its May 21, 2014 letter to Gulf LNG, stating that the FERC had determined that Gulf LNG had complied with the procedures in 18 CFR 157.21.

At that time, Gulf LNG was in the preliminary design stage of the Project and no formal applications had been filed with the FERC. Information filed by Gulf LNG, related documents issued by the FERC, and information on the Project from other sources were filed into the public record under Docket No. PF13-4-000. The pre-filing review process provides opportunities for interested stakeholders to become involved early in project planning, facilitates interagency cooperation, and assists in the identification and resolution of issues prior to a formal application being filed with the FERC.

On June 26, 2014, Gulf LNG held a public open house in Moss Point, Mississippi. FERC staff participated in this meeting to describe the FERC process and provide those attending with information on the FERC's environmental review process and how to file comments with the FERC. In addition, during the day of June 26, 2014, FERC staff visited existing wetland mitigation and restoration areas, the existing Terminal, the Terminal Expansion site, the sites of the Pipeline Modifications, and CSA-3.

On July 31, 2014, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Planned Gulf LNG Liquefaction Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meeting* (NOI). This notice was sent to 218 interested parties including federal, state, and local officials; agency representatives; conservation organizations; Native American tribes; local libraries and newspapers in the Project area; and property owners in the vicinity of Project facilities. The NOI indicated that the Project was in the FERC pre-filing process, that a scoping meeting would be held on August 18, 2014, and established a 30-day scoping period, ending on September 1, 2014, for the submission of comments, concerns, and issues related to the environmental aspects of the Project. However, the FERC determined that some of those on the environmental mailing list were not provided timely copies of the NOI, and on August 27, 2014, issued a notice extending the scoping period to September 15, 2014.

On August 18, 2014, we held a public scoping meeting at the Pelican Landing Convention Center in Moss Point, Mississippi. The meeting was designed to provide interested parties with more detailed

information on the Project and an opportunity to provide comments on environmental issues to be addressed in the EIS. Gulf LNG representatives presented information on the Project, provided maps, and answered Project-related questions. We accepted verbal and written comments at the meeting, provided information on the FERC environmental review process, and described procedures for providing written comments. The meeting was transcribed to ensure that verbal comments were accurately recorded, and placed into the public record.<sup>11</sup>

The FERC received six comment letters and comment forms from federal and state agencies, non-governmental organizations (NGOs), and individuals during the scoping period. In addition, three individuals provided verbal comments at the scoping meeting.

On August 19, 2014, we held an interagency coordination meeting and conference call for the Project. Participants included representatives of the COE; DOE/FE; USCG; FWS; NOAA-NMFS; Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP); Mississippi Department of Marine Resources (MDMR); Mississippi Department of Archives and History (MDAH);<sup>12</sup> MDEQ; and Gulf LNG. During the meeting, the participants discussed impacts on wetlands, EFH, migratory birds, threatened and endangered species, coordination of agency reviews, permit requirements and status, and each agency's interest in participating in our environmental review as a cooperating agency. In addition, Gulf LNG hosted a visit of the existing Terminal and the sites of the Terminal Expansion and associated facilities.

On August 20, 2014, we held a geotechnical meeting and conference call for the Project. Participants included representatives from FERC LNG Engineering, Gulf LNG, and its consultants. Gulf LNG provided an overview of its planned geotechnical program and seismic hazard analysis.

Additional interagency coordination conference calls were held on January 15, 2015; January 21, 2015; February 24, 2015; April 9, 2015; October 6, 2015; October 29, 2015; August 23, 2016; November 14, 2017; and December 13, 2017 primarily to address and resolve issues related to the evolution of Gulf LNG's proposed wetland mitigation plan (see section 4.4 for further information on this plan).

On March 23, 2015, FERC staff also participated in an interagency meeting at Gulf LNG's existing Terminal facility to discuss the range of potential wetland mitigation plans, Gulf LNG's sediment sampling and analysis plan, and also to conduct a site visit of the originally proposed wetland mitigation site at the former International Paper aeration sedimentation basin. Additionally, on March 23, 2015, FERC staff participated in a meeting held by Gulf LNG to address community concerns. Participants at this meeting included the Steps Coalition, a non-profit community support organization; Cherokee Concerned Citizens, a group of citizens representing the Cherokee Subdivision, a community several miles north of the existing Terminal; the EPA; and MDEQ.

The FERC staff had conference calls with the FWS, NMFS, and NOAA on December 10, 2014; June 29, 2015; and September 23, 2015 to discuss the BA and EFH Assessment. The FERC staff also had two conference calls, August 7, 2015 and September 18, 2015, with the cooperating agencies to discuss Gulf LNG's FERC and COE applications and identify any outstanding issues.

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<sup>11</sup> Transcript of the August 18, 2014 FERC Public Scoping Meeting held in Moss Point, Mississippi re Gulf LNG Liquefaction Company, LLC et al. under PF13-4-000. Accession Number 20140818-4008.

<sup>12</sup> The Historic Preservation Division of MDAH administers the duties of the State Historic Preservation Office (SHPO).

### 1.3.2 Public Review of the Draft EIS

The draft EIS was issued for public review on November 15, 2018, and an NOA for the draft EIS was published in the Federal Register on November 23, 2018. The NOA included notice of a public comment meeting in Moss Point, Mississippi. Copies of the NOA were sent to agencies, elected officials, media organizations, Native American tribes, private landowners, and other interested parties.

We held one public comment session on December 18, 2018 in Moss Point, Mississippi, in the Gulf LNG Project area to solicit and receive comments on the draft EIS. The session provided the public an opportunity to present oral comments to a court reporter on the environmental analysis described in the draft EIS. A total of about 20 individuals attended this public session, including four who provided oral comments. On February 7, 2019, the Commission reopened the comment period until February 25, 2019, because of a funding lapse at certain federal agencies between December 22, 2018 and January 25, 2019. We received eight comment letters from federal agencies, companies/organizations, and individuals in response to the draft EIS. All comments received in response to the draft EIS are included in our response to comments contained in appendix L. Transcripts from the public session, as well as the written comment letters, were entered into the public record and are available for viewing on the FERC's eLibrary website ([www.ferc.gov](http://www.ferc.gov)).

Environmental issues identified during and after the open house, the public scoping process, the draft EIS public session, and the interagency meetings and conference calls are summarized in table 1.3-1 along with a listing of the EIS sections that address the comments. The most frequently received comments relate to air quality, dredging, and cumulative impacts. Topics addressed in public comments that are not considered environmental issues or are outside the scope of the EIS process are summarized in table 1.3-2 and are not addressed further in this EIS.

The Commission mailed a copy of the *Notice of Availability of the Final Environmental Impact Statement for the Gulf LNG Liquefaction Project* to agencies, elected officials, media organizations, Native American tribes, private landowners, and other interested parties as identified in the distribution list provided in appendix A. Additionally, the final EIS was filed with the EPA for issuance of the NOA in the Federal Register.

In accordance with the CEQ regulations implementing NEPA, no agency decision on a proposed action may be made until 30 days after the EPA publishes a NOA of the final EIS in the Federal Register. However, the CEQ regulations provide an exception to this rule when an agency decision is subject to a formal internal appeal process that allows other agencies or the public to make their views known. In such cases, the agency decision may be made at the same time the notice of the final EIS is published, allowing both periods to run concurrently. The Commission decision for this proposed action is subject to a 30-day rehearing period.

TABLE 1.3-1

**Issues Identified and Comments Received During the Public Scoping Process  
for the Gulf LNG Liquefaction Project**

Issue/Specific Comment	EIS Section Addressing Comment
<b>General</b>	
Describe outreach conducted with communities that could be affected by the Project.	1.3
<b>Alternatives</b>	
If jurisdictional waters of the U.S. are determined to be on the Project site, assess alternatives that would not affect such waters.	3.3
If dredged or fill material would be discharged into waters of the U.S., discuss alternatives to avoid those discharges.	3.3
Identify alternatives to the Project to reduce environmental impacts.	3.3
<b>Soils and Sediments</b>	
Implement measures that will prevent suspended silt and contaminants from leaving the site in stormwater run-off.	4.2, 5.2
Identify impacts on water quality from dredging, construction of in-water facilities, and ship transits.	4.3
<b>Water Resources</b>	
Identify current groundwater conditions in the Project area, potential impacts on groundwater quality and quantity associated with the proposed Project construction and operation, and mitigation measures to prevent or reduce adverse impacts on groundwater quality and their effectiveness.	4.3
Minimize drainage impacts, including restoring original drainage patterns in the Project locale.	4.3.2
Identify impacts on surface water quality from discharges and stormwater pollution, including an analysis of potential effects of discharges on designated beneficial uses of affected waters.	4.3.2
Disclose dredging impacts, including impacts on aquatic environment from contaminated sediments.	4.3.2
If jurisdictional waters of the U.S. are determined to be on the Project site, include a final determination of the extent of such waters and the measures Gulf LNG would implement to avoid or minimize affects to such waters and to compensate for any unavoidable impacts.	4.4, 5.2
Identify any CWA Section 303(d) impaired waters in the Project area and any mitigation measures that will be implemented to avoid further degradation of impaired waters.	4.3.2
Document the Project's consistency with applicable stormwater permitting requirements.	4.3.2
<b>Wetlands</b>	
Identify impacts of wetland/marsh disturbance and fill and the provision of in-kind mitigation, including marsh restoration for marsh impacts.	4.4, 5.2
Include a jurisdictional delineation for all waters of the U.S., including ephemeral drainages.	4.4

TABLE 1.3-1

**Issues Identified and Comments Received During the Public Scoping Process  
for the Gulf LNG Liquefaction Project**

Issue/Specific Comment	EIS Section Addressing Comment
<b>Wildlife and Aquatic Resources</b>	
Incorporate mitigation, monitoring, and reporting measures that result from consultation with the FWS or NMFS that incorporate guidance to avoid and minimize adverse effects on sensitive biological resources and consider the potential for habitat fragmentation and obstructions for wildlife movement from the Project.	4.6, 5.2
<b>Threatened and Endangered Species</b>	
Identify impacts on federally and state-listed threatened and endangered species, species of special concern, and critical habitat affected.	4.7
If compensation lands are to be acquired, provide the locations and management plans for the lands, and include information on the compensatory mitigation proposals.	4.4
Consult with the FWS, NMFS, and MDEQ to ensure that current and consistent surveying, monitoring, and reporting protocols are applied in protection and mitigation efforts.	4.7
<b>Socioeconomics</b>	
Determine whether there are environmental justice populations within the geographic scope of the Project, and if such populations exist, address the potential for disproportionate adverse impacts on minority and low-income populations, the approaches used to foster public participation by these populations, and potential mitigation measures.	4.9
Identify impacts on communities in the vicinity of the Project.	4.9
Updated traffic analysis.	4.9
<b>Cultural Resources</b>	
Describe the process and outcome of government-to-government consultation between the FERC and tribal governments within the Project area, issues that were raised, and how those issues were addressed.	4.10
Within cultural and historic resources, include Indian sacred sites, a summary of all coordination with Tribes and the State Historic Preservation Office (SHPO), identification of all National Register of Historic Places listed or eligible sites, and a <i>Cultural Resource Management Plan</i> .	4.10
<b>Air Quality and Noise</b>	
Estimate emissions from construction, operation, and maintenance of the Project as well as proposed mitigation measures to minimize those emissions.	4.11.1
Provide ambient air conditions, National Ambient Air Quality Standards (NAAQS) and non-NAAQS pollutants, criteria pollutant nonattainment areas, and potential air quality impacts of the proposed Project.	4.11.1
Provide estimates of the greenhouse gas (GHG) emissions associated with construction of the Project, and annual emissions from the operation of the liquefaction facility.	4.11.1
Address reasonably foreseeable climate change that may affect the Project over its lifetime in the "affected environment" section: e.g., sea level rise.	4.11.1

TABLE 1.3-1	
Issues Identified and Comments Received During the Public Scoping Process for the Gulf LNG Liquefaction Project	
Issue/Specific Comment	EIS Section Addressing Comment
Coordinate with the MDEQ to determine if a GHG Prevention of Significant Deterioration (PSD) permit under the CAA is necessary.	4.11.1
Identify air quality impacts on the Cherokee residential subdivision and install air monitoring station.	4.11.1
<b>Reliability and Safety</b>	
Address the potential impacts of hazardous waste from construction and operation of the Project, including anticipated waste types and volumes, and expected storage, disposal, and management plans, the applicability of federal and state hazardous waste requirements, and identify appropriate mitigation measures, including measures to minimize the generation of hazardous waste.	4.12
<b>Cumulative Impacts</b>	
Address cumulative impacts of wetland/marsh disturbance.	4.13.2
Include cumulative impacts of industrial development on residential land use.	4.13.2
Identify cumulative impact on health and safety due to industrial development.	4.13.2

TABLE 1.3-2	
Issues Identified and Comments Received that are Outside the Scope of the EIS Process	
Issue/Specific Comment	
<p>Prepare a national programmatic EIS that considers the environmental and human health/quality of life implications of increasing infrastructure for natural gas, including the cumulative effects of natural gas drilling on water quality and quantity, air quality, forest fragmentation, wildlife, public lands, recreation, property values, wastewater disposal, and radiation from hydraulic fracturing. <u>a/</u></p> <p>Prepare regional EISs for the shale basins that are targeted for extraction.</p> <p>Provide estimates of GHG emissions associated with the production, transport, and combustion of the natural gas proposed to be exported by the Project.</p> <p>Do not export energy from the United States.</p> <p>Evaluate the difference in prices if the energy that is produced in the United States can only be used for domestic consumption versus selling to a worldwide demand.</p>	
a	The development of natural gas in shale plays by hydraulic fracturing is not the scope of this EIS nor is the issue directly related to the proposed Project. Production and gathering activities, and the pipelines and facilities used for these activities, are not regulated by the FERC, but are overseen by the affected region's state and local agencies with jurisdiction over the management and extraction of the shale gas resource. Determining the well and gathering line locations and their environmental impact is not feasible as the market and gas availability at any given time would determine the source of the natural gas. Therefore, it is outside of the scope of this EIS.

## 1.4 NON-JURISDICTIONAL FACILITIES

Four non-jurisdictional actions were identified in association with the proposed Project: (1) a new electric transmission line that would provide electrical power to the Project, (2) transport of NGLs by truck outside of the Terminal Expansion site boundaries, (3) the North Supply Dock Maintenance Dredging and Operation, and (4) maintenance and extension of the earthen berm. These facilities are addressed below and are also addressed in the cumulative impacts analysis in section 4.13 of this EIS.

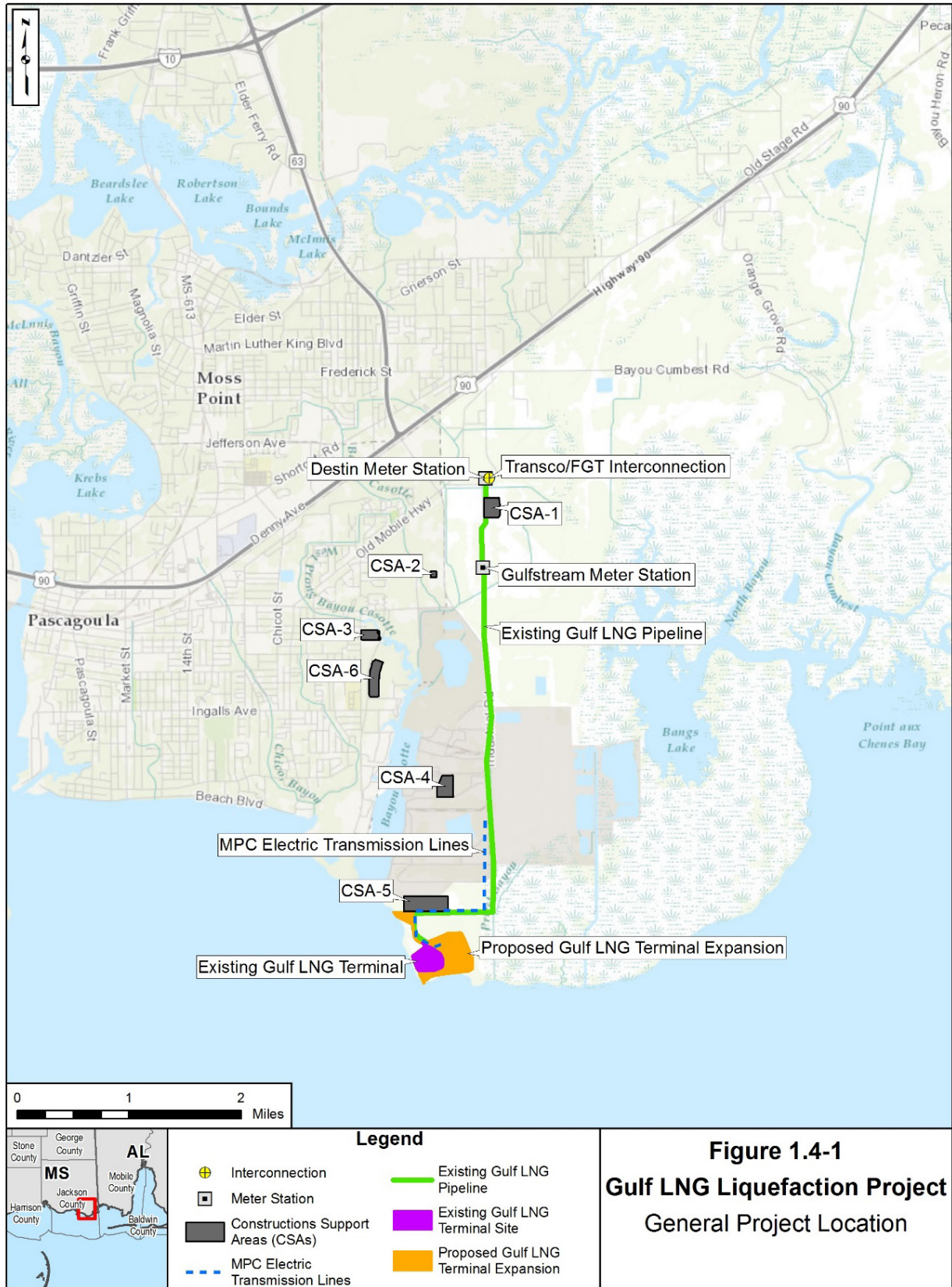
### 1.4.1 Electric Transmission Lines

Operation of the Terminal Expansion would require 100 megawatts (MW) of electrical power in addition to the electrical power supply of the existing Terminal. The Mississippi Power Company (MPC) would provide this power. Facilities required to provide the power would include two new, 1.5-mile-long, 115-kilovolt (kV) transmission lines as well as a new substation within the Terminal Expansion site. Figure 1.4-1 depicts the transmission line route, which would extend from the existing MPC transmission lines adjacent to the Chevron Cogeneration Facility to the Terminal Expansion site. The right-of-way of the route would be 100 feet wide. MPC would require additional information and survey results to establish a final design for the system; however, the electrical transmission support structures would most likely consist of 16 concrete poles and/or concrete H-Frame structures. Installation of the support structures is anticipated to result in a permanent impact on less than 0.1 acre of jurisdictional wetland. During the installation of the structures, temporary wetland impacts would occur from the use of matting to support the installation equipment.

MPC may also need to upgrade some of its existing transmission system in the area, but no other new structures in the immediate area are anticipated. The new 115-kV substation would be constructed on a 250-foot-by-250-foot site adjacent to Gulf LNG's new electric service facilities within the Terminal Expansion boundaries. Construction and operation of the substation on the Terminal Expansion site is jurisdictional and is analyzed throughout this EIS.

MPC would be responsible for all permits and approvals associated with the power upgrades outside of the Terminal Expansion boundaries. Gulf LNG anticipates that MPC would require the following permits:

- Section 404 of the CWA from the COE (due to wetland impacts);
- Section 401 of the CWA from MDEQ (water quality certification); and
- coastal zone consistency determination from MDMR.





### **1.4.2 Truck Transport of Natural Gas Liquids**

The Project would require trucking of NGLs or condensate generated as part of the liquefaction process, and makeup refrigerants including ethane, propane, and nitrogen used in the liquefaction process and amine solution used in the acid gas removal system. Ethane and propane would be delivered by truck and unloaded into storage facilities. In the worst case of very rich feed gas (expected less than 10 days per year), the amount of condensate removed from the plant would be 16.5 trucks per day. For the rich case, an average of 3.2 trucks per day would be removed from the plant. During normal operation with average feed gas, approximately five trucks per month of condensate would be removed from the plant. Ethane would be trucked into the facility up to two times each month. Propane would be trucked into the facility up to four times each month. Additionally, amine associated with the acid gas removal system would be trucked in one time per year for makeup and re-inventory of the amine systems after removal of the spent amine during major scheduled maintenance activities. Liquid nitrogen would be delivered by truck twice per year for makeup refrigerant.

Construction and operation of the truck loading/unloading facility at the Terminal Expansion is jurisdictional and is analyzed throughout this EIS. However, the loaded NGL tanker trucks would be non-jurisdictional once they leave the Terminal Expansion site. After leaving the Terminal Expansion site, NGL trucking is regulated by DOT's Federal Motor Carrier Safety Administration. Gulf LNG anticipates negotiating agreements for the purchase of NGLs by processing facilities near the Terminal Expansion. After leaving the Terminal Expansion site, the trucks would use Industrial Road and SH-611 to transport the NGLs to nearby processing plants, or if Gulf LNG has more distant customers for the NGLs, they would transit Industrial Road, SH-611, and SH-63 to reach Highway 90 (HWY-90) and I-10, the area's main highways. According to Gulf LNG, the Hazardous Waste Branch of the MDEQ does not have a requirement for a hazardous materials route analysis.

The DOT would require tanker trucks to comply with its requirements for the transportation of hazardous materials. Based on an average composition of feed gas, we conclude that the estimated truck traffic of 11 trucks per month would not have any significant impacts on roadway traffic.<sup>13</sup> No other impacts are expected as a result of shipping NGLs from the Terminal Expansion.

### **1.4.3 North Supply Dock Maintenance Dredging and Operation**

After construction of the Project is completed, ownership of the North Supply Dock would be transferred to the Jackson County Port Authority (JCPA). A letter from the JCPA-Port of Pascagoula confirming that they would accept dock ownership was provided to Gulf LNG on May 28, 2015. In addition to use of the North Supply Dock by barges and support vessels associated with operation of the Project, the dock may also be used by the JCPA as a berthing facility for barges waiting for a berth at one of the private or public terminals in the Bayou Casotte Harbor or for temporary berthing of other vessels not associated with the Project.

Maintenance dredging, to maintain a depth of 12 feet below mean sea level (msl), would be accomplished as needed and agreed to by Gulf LNG, the Port of Pascagoula, and the JCPA. The COE Mobile District is responsible for the routine maintenance of the Bayou Casotte Navigation Channel. The Port of Pascagoula and the COE typically bid out dredging operations concurrently, and to be cost efficient, often the same contractor conducts dredging for both entities. In some instances, the Port of Pascagoula enters into an agreement with the COE to have the COE contractor dredge at port facilities

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<sup>13</sup> As discussed in section 4.9.6, according to Gulf LNG's *Traffic Impact Analysis*, 2013 daily traffic volumes were estimated to be 11,000 trips on the north end of SH-611 and 5,000 trips on the south end. The addition of 11 trucks per month would not be significant.

instead of conducting separate dredging activities. Dredging occurs irregularly every 24 to 48 months at port facilities, with the timing dependent on sedimentation within the areas used by marine vessels. Dredged material from maintenance dredging is placed in the BCDMMS or at an MDMR-approved Beneficial Use site or an alternate approved site. Any dredged sediment planned for disposal into an MDMR-approved Beneficial Use site would require testing under the protocols established by MDEQ and adopted by MDMR for Beneficial Use sites. Gulf LNG, the Port of Pascagoula, and the JCPA would coordinate sediment testing with the COE prior to initiation of dredging and disposal.

Based on the observed annual increase in sediment material at the existing marine berth, depth comparisons, and other variables, about 10,000 cubic yards (cy) of material would be deposited within the North Supply Dock berthing area per year.<sup>14</sup> However, as noted above, dredging would not be required annually.

As owner of the North Supply Dock, the JCPA would be responsible for obtaining permits and clearances for dredging operations and for issuing notifications to agencies and Port of Pascagoula users regarding dredging activities. Maintenance dredging of the North Supply Dock would require a Section 404/Section 10 permit from the COE, which would be issued after review and approval by MDMR and MDEQ. The conditions of the permit typically include directives and guidance for material testing. The type and extent of testing and agency approval would be dependent on the selected disposal location (i.e., the BCDMMS or an MDMR-Beneficial Use site). The JCPA would also have to obtain the following permits and approvals:

- a Section 401 permit (state water quality certification) from MDEQ;
- an MDMR permit for coastal development projects/dredge disposal;
- a permit for ocean disposal of dredged material from the COE in compliance with the *Marine Protection, Research, and Sanctuaries Act of 1972*, as amended;
- compliance with the ESA, MMPA, the *Fish and Wildlife Coordination Act*, and the MSA through consultation with the FWS and NMFS;
- an MDMR consistency determination for the Coastal Zone Management Program; and
- SHPO concurrence that the dredging is in compliance with the NHPA.

The Port of Pascagoula has an existing maintenance dredging permit for the existing Terminal's marine berthing facility (SAM-2010-01074-PAH) and would request modification to that permit to include maintenance dredging of the North Supply Dock. The existing maintenance dredging permit allows for dredged material to be placed within the adjacent BCDMMS or an MDMR-approved Beneficial Use Site if one is available. The permit modification request would include a provision to allow mechanical dredging, which would allow the Port of Pascagoula to place dredged material in hopper barges and transfer it to approved open water sites if appropriate and approved by the COE. The modification of the existing permit would be coordinated among JCPA, the Port of Pascagoula, and the COE, MDEQ, and MDMR prior to receipt of the modification and commencement of any work.

Maintenance dredging of the North Supply Dock is expected to result in impacts that would be similar to or the same as the impacts discussed in this EIS for the initial dredging of the dock.

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<sup>14</sup> Dredging volumes were estimated from shoaling rates observed at the existing LNG carrier berth. The existing LNG carrier berth is about 1,500,000 ft<sup>2</sup>. About 30,000 cy every 6 years (50,000 cy per year) are removed from the existing LNG carrier berth. The North Supply Dock berthing area would be about 300,000 ft<sup>2</sup> therefore the annual deposition of material should be 300,000 ft<sup>2</sup>/1,500,000 ft<sup>2</sup> x 50,000 cy = 10,000 cy per year.

#### **1.4.4 Earthen Berm Maintenance and Extension**

Gulf LNG would extend the existing storm protection system surrounding the existing Terminal to encompass the Terminal Expansion facilities. The new storm surge protection system would consist of (1) a new concrete wall with a top elevation of 27 feet NAVD (North American Vertical Datum of 1988) and (2) a new earthen berm (an extension of the existing COE berm) with a top elevation of 27 feet NAVD. Following initial construction of the berm by Gulf LNG, the COE, in order to expand capacity of the BCDMMS, would extend the berm to a height of 39.2 feet NAVD. The COE would be responsible for maintaining the berm during operations of the Project, and would be responsible for all permits and approvals associated with maintenance and extension of the height of the earthen berm.

### **1.5 PERMITS, APPROVALS, AND REGULATORY REVIEWS**

The FERC and other federal agencies considering authorizing, permitting, or approving the Project are required to comply with a number of regulatory statutes including, but not limited to NEPA, Section 7 of the ESA, the MSA, the CAA, CWA, the *Rivers and Harbors Act*, Section 106 of the NHPA, and Section 307 of the CZMA. Each of these statutes has been taken into account in the preparation of this EIS. The major permits, approvals, and consultations for the Project are identified in table 1.5-1.

Section 7 of the ESA states that any project authorized, funded, or conducted by any federal agency should not "...jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical..." (16 USC 1536(a)(2)(1988)). The FERC staff is required to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed Project and conduct consultations with the FWS and/or NMFS, if necessary. If, upon review of existing data or data provided by Gulf LNG, the FERC staff determines that these species or habitats may be affected by the Project, the FERC staff is required to prepare a BA to identify the nature and extent of adverse impact, and to recommend measures that would avoid the habitat and/or species, or would reduce the potential impact to acceptable levels. As part of this consultation process, the FERC staff prepared a BA, which is summarized in section 4.7.1 and provided in appendix B.

TABLE 1.5-1

## Major Permits, Approvals, and Consultations for the Gulf LNG Liquefaction Project

Agency	Status		
	Permit/Approval/ Consultation	Terminal Expansion	Pipeline Modifications
<b>Federal</b>			
FERC	Authorization under Section 3 of the NGA	Application filed June 19, 2015	Not applicable
Federal Aviation Administration	Notification of Proposed Construction or Alteration	Determination of No Hazard to Aviation issued December 17, 2014. Extension of determination until December 8, 2017 issued on June 8, 2016. A new Determination of No Hazard to Aviation issued June 26, 2018 and expires on December 26, 2019. An Amended Request for temporary structures was filed on December 18, 2018 in FAA Docket 2018-ASO-27534-OE. Review is in progress.	Not applicable
Federal Emergency Management Agency	Construction with a Floodplain	Consultation ongoing	Not applicable
NOAA-NMFS	Section 7 ESA consultation	Informal consultation ongoing	Not applicable
	MMPA consultation	Informal consultation ongoing	Not applicable
	<i>Fish and Wildlife Coordination Act</i> consultation	Informal consultation ongoing	Not applicable
	MSA	Concurrence issued December 10, 2018	Not applicable
COE, Mobile District	CWA Section 404 Permit	Application submitted July 10, 2015. Revised application submitted March 29, 2019.	Not applicable
	<i>Rivers and Harbors Act</i> , Section 10 Permit	Application submitted July 10, 2015. Revised application submitted March 29, 2019.	Not applicable
	Section 408	Decision pending regarding the need for a Section 408 review for the proposed wetland mitigation site.	Not applicable

TABLE 1.5-1

**Major Permits, Approvals, and Consultations for the Gulf LNG Liquefaction Project**

Agency	Status		
	Permit/Approval/ Consultation	Terminal Expansion	Pipeline Modifications
USCG	33 CFR 127; 2004 Interagency Agreement (NVIC 05-08) LOR	The USCG prepared the final LOR and LOR-A dated May 4, 2016 which was provided to the FERC on August 9, 2017. Gulf LNG conducted its annual review to the Amendment to Follow-on WSA in July 2018.	Not applicable
	Notification to Mariners of dredging activities	Gulf LNG to submit notification to the USCG prior to commencement of dredging.	Not applicable
	Approval of FSP	Gulf LNG to submit updated FSP. Approval of the FSP for construction is expected by December 2019 and operation by July 2024.	Not applicable
	Approval of Operations Manual	Gulf LNG to submit updated an Operations Manual prior to facility startup.	Not applicable
	Approval of Emergency Manual	Gulf LNG to submit updated an Emergency Manual prior to facility startup.	Not applicable
DOE/FE	Authorization to Export LNG to FTA Countries	Authorization granted June 15, 2012 (DOE/FE Docket No. 12-47-LNG and Order No. 3104)	Not applicable
	Authorization to Export LNG by vessel to Non-FTA Countries	Application submitted August 31, 2012; under review, (DOE/FE Docket No. 12-101-LNG)	Not applicable
EPA	Title V Permit consultation and Greenhouse Gas Emission Permits	Not applicable (permitting authority transferred to MDEQ)	Not applicable
	CWA Section 402 consultation	Not applicable (permitting authority transferred to MDEQ)	Not applicable

TABLE 1.5-1

**Major Permits, Approvals, and Consultations for the Gulf LNG Liquefaction Project**

Agency	Status		
	Permit/Approval/ Consultation	Terminal Expansion	Pipeline Modifications
FWS	Section 7 of ESA consultation	Concurrence issued February 22, 2019	Concurrence issued February 22, 2019
	MBTA consultation	Informal consultation ongoing	Informal consultation ongoing
	BGEPA	Informal consultation ongoing	Informal consultation ongoing
	<i>Fish and Wildlife Coordination Act</i> consultation	Informal consultation ongoing	Informal consultation ongoing
DOT, Pipeline and Hazardous Materials Safety Administration	49 CFR 193 consultation (standards for LNG facilities)	Consultation ongoing	Not applicable
<b>State of Mississippi</b>			
MDAH-SHPO	NHPA, Section 106 consultation	Concurrence received November 2014 (Terminal Expansion) and July 2015 (wetland mitigation site)	Concurrence received November 2014
MDEQ, Air Quality Division	CAA, Pre-construction Air Permit for Construction emissions (PSD) and operation emissions (Title V) for stationary sources	PSD and Title V Applications submitted June 2015. Draft revision to the application submitted June 2017. Gulf LNG is addressing MDEQ comments and performing additional modeling. A revised application is expected to be submitted in the second quarter of 2019.	Not applicable
MDEQ, Office of Pollution Control	Large Construction Notice of Intent (Storm Water Construction General Permit) for projects greater than 5 acres	Application to be submitted 45 days prior to the start of construction.	Not applicable
	Hydrostatic Test Notice of Intent (for projects greater than 1 acre)	Application to be submitted 45 days prior to the start of regulated activity.	Not applicable
MDEQ, Water Quality Division	Section 401 of CWA, State Water Quality Determination	Application submitted July 10, 2015. Revised application submitted March 29, 2019.	Not applicable
Mississippi Office of the Secretary of State	Lease for use of Public Trust Tidelands for use as Wetland Mitigation Site	Negotiations ongoing	Not applicable
MDMR, Coastal Zone Management Office	CZMA	Consultation ongoing	Not applicable
	Coastal Zone Consistency	Consultation ongoing	Not applicable

TABLE 1.5-1

**Major Permits, Approvals, and Consultations for the Gulf LNG Liquefaction Project**

Agency	Status		
	Permit/Approval/ Consultation	Terminal Expansion	Pipeline Modifications
MDMR, Bureau of Wetland Permitting	Section 401 of CWA, State Water Quality Determination	Application submitted July 10, 2015. Revised application submitted March 29, 2019.	Not applicable
	Joint Review for Coastal Wetlands	Application submitted July 10, 2015. Supplemental information submitted March 29, 2019.	Not applicable
MDMR, Beneficial Use of Dredge Material Program	Approval of use of Beneficial Use sites for disposal of dredged material from the supply docks	Application submitted July 10, 2015	Not applicable
MDWFP	Threatened and Endangered and Listed Species consultation	Consultation ongoing	Consultation ongoing
JCPA and Commission	Lease of Terminal Expansion Site and Wetland Mitigation Site	Consultation ongoing	Not applicable
	Transfer of ownership of North Supply Dock after construction of the Project is complete	Consultation ongoing	Not applicable
Jackson County Emergency Services	Review of ERP	Consultation ongoing	Not applicable

Section 106 of the NHPA requires that the FERC take into account the effects of its undertakings on properties listed, or eligible for listing, in the National Register of Historic Places (NRHP), including prehistoric or historic sites, districts, buildings, structures, objects, or properties of traditional religious or cultural importance, and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the undertaking. Gulf LNG, as a non-federal party, is assisting the FERC in meeting its obligations under Section 106 by preparing the necessary information, analyses, and recommendations under the ACHP regulations in 36 CFR 800. Section 4.10 provides information on the status of this review.

Gulf LNG must comply with Sections 401 and 404 of the CWA. Water quality certification (Section 401) has been delegated to the state agencies, with review by the EPA. Water used for hydrostatic testing that is point-source discharged into waterbodies would require an NPDES permit (CWA Section 402) issued by the EPA. The COE has responsibility for determining compliance with all regulatory requirements associated with Section 404 of the CWA. The EPA also independently reviews Section 404 applications for wetland dredge-and-fill applications for the COE and has Section 404(c) veto power for wetland permits issued by the COE. The Section 404 permitting process regulates the discharge of dredged and fill material associated with the construction of facilities across streams and within wetlands. Before an individual Section 404 permit can be issued, the CWA requires completion of

a Section 404(b)(1) guideline analysis. The FERC staff, in the NEPA review represented by this EIS, has analyzed all technical issues required for the Section 404(b)(1) guideline analyses, including analysis of natural resources and cultural resources that would be affected by the Project, as well as analyses of alternatives. The results of our analysis of alternatives are provided in section 3.0, and a summary of wetland impacts is provided in section 4.4. In addition to CWA responsibilities, the COE has jurisdiction pursuant to Section 10 of the *Rivers and Harbors Act of 1899*, which requires authorization for construction activities in navigable waterways. Construction methods in wetlands and the associated impacts are summarized in section 4.4 of this EIS.

EPAct 2005 and Section 3 of the NGA require us to consult with the Department of Defense (DOD) to determine if there would be any impacts associated with the Project on military training or activities on any military installations. We initiated consultation with the DOD in a letter dated September 25, 2014. The DOD responded on March 10, 2016, concluding the Project would have minimal impact on the military operations conducted in this area.

The CZMA calls for the “effective management, beneficial use, protection, and development” of the nation’s coastal zone and promotes active state involvement in achieving those goals. As a means to reach those goals, the CZMA requires participating states to develop management programs that demonstrate how those states will meet their obligations and responsibilities in managing their coastal areas. In Mississippi, the MDMR Coastal Zone Management Office, administers the Coastal Zone Management Program (CZMP). Project-related issues associated with the CZMP are addressed in section 4.8.7.

The CAA was enacted by Congress to protect the health and welfare of the public from the adverse effects of air pollution. The CAA is the basic federal statute governing air pollution. Federal and state air quality regulations established as a result of the CAA include Title V operating permit requirements and PSD Review. The EPA is the federal agency responsible for regulating stationary sources of air pollutant emissions; however, the federal permitting process has been delegated to the MDEQ in Mississippi. Air quality impacts that could occur as a result of construction and operation of the Project are addressed in section 4.11.1.

Gulf LNG is responsible for obtaining all permits and approvals required to implement the Project, regardless of whether or not they appear in table 1.5-1.