



Environmental Assessment

US 90 Pearl River Bridges

St. Tammany Parish, LA and Hancock County, MS

**H.000284 US 90: Pearl River Bridges (HBI)
and H.000286 East Pearl River Bridge**

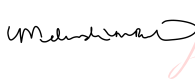
Federal Aid Project No. H000284 & No. H000286

June 2026



State Project Nos.: H.000284/H.000286
F.A.P. NOS.: H000284/H000286
Project Name: US 90 Pearl River Bridges (HBI)
Bridge Recall Nos. 0587500, 058710, 0587200, 058730, 058740
Route: US 90
Location: St. Tammany Parish, LA & Hancock County, MS

FHWA has approved, for public distribution and review, the Environmental Assessment (EA) for the captioned project. LADOTD will schedule a Public Hearing to receive public comment on the EA.

 Digitally signed by MELINDA
MICHELLE ROBERSON
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FHWA

July 20, 2026

Date

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
AST	Aboveground Storage Tank
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	U.S. Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESA	Environmental Site Assessment
ESI	Earth Search, Inc.
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GIS	geographic information system
GMFMC	Gulf of Mexico Fishery Management Council
GC	Gulf Council
GPS	global positioning system
GSMFC	Gulf States Marine Fisheries Commission
HAER	Historic American Engineering Record
HBPA	Historic Bridges Programmatic Agreement
HHS	U.S. Department of Health and Human Services
HRI	Historic Resources Inventory
I	Interstate
LA	Louisiana
LDCE	Louisiana Department of Conservation and Energy (formerly LDNR)
LA DHP	Louisiana Division of Historic Preservation
LA DOA	Louisiana Division of Archaeology
LADOTD	Louisiana Department of Transportation and Development
LDEQ	Louisiana Department of Environmental Quality

LDNR	Louisiana Department of Natural Resources (LDCE as of October 1, 2025)
LDWF	Louisiana Department of Wildlife and Fisheries
LNHP	Louisiana Natural Heritage Program
LPDES	Louisiana Pollutant Discharge Elimination System
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
MDAH	Mississippi Department of Archives and History
MDEQ	Mississippi Department of Environmental Quality
MDMR	Mississippi Department of Marine Resources
MDOT	Mississippi Department of Transportation
MDWFP	Mississippi Department of Wildlife, Fisheries, and Parks
MHW	Mean High Water
MNHP	Mississippi Natural Heritage Program
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
MS	Mississippi
MSA	Magnuson-Stevens Fisheries Conservation and Management Act
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NBI	National Bridge Inventory
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O&M	Operation and Maintenance
O ₃	ozone
PA	Programmatic Agreement
PM	particulate matter
ROW	Right-of-Way
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SOV	Solicitation of Views
SWPPP	Storm Water Pollution Prevention Plan
TNM	Traffic Noise Model
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VMT	Vehicle Miles Traveled
WMA	Wildlife Management Area

ENVIRONMENTAL CHECKLIST

WBS No.: H.000284, H.000286

Federal Aid No. H000284, H000286

Name: US 90 Pearl River Bridges (HBI) and East Pearl River Bridge

Route: US 90

Parish: St. Tammany, LA, Hancock County, MS

1. General Information

- | | | |
|---|---|---|
| ☒ Conceptual Layout | ☐ Line and Grade | ☐ Preliminary Plans |
| ☐ Survey | ☐ Plan-in-Hand | ☐ Advance Check Prints |

2. Class of Action

- | | |
|---|---|
| ☐ Environmental Impact Statement (E.I.S.) | ☐ Programmatic C.E. (P.C.E.) |
| ☒ Environmental Assessment (E.A.) | ☐ 23 CFR 771.177(c)_____ |
| ☐ Categorical Exclusion (C.E.) | ☐ 23 CFR 771.177(d)_____ |
| ☐ State Funded Only (EE/EF/ER) | |

3. Project Description

The Louisiana Department of Transportation and Development (LADOTD) in conjunction with Mississippi Department of Transportation (MDOT) is proposing the replacement of five bridge structures associated with the Pearl River system along US 90 in St. Tammany Parish, Louisiana and Hancock County, Mississippi. These bridges cross the West Pearl River, the West Middle Pearl River, the Middle Middle Pearl River, the East Middle Pearl River, and the East Pearl River. The Federal Highway Administration (FHWA) is the lead Federal agency for the project.

The existing US 90 roadway is a two lane rural arterial roadway with 12-foot travel lanes and 8 foot paved shoulders. The existing roadway section for US 90 meets the minimum design guidelines. However, the existing bridge segments do not. The bridges do not have shoulders and some bridges do not provide the minimum required roadway clearance. Additional deficiencies are discussed later in this document. According to the LADOTD traffic Assignment Study, dated August 11, 2016, the (2039) Average Daily Traffic (ADT) on this section of US 90 was approximately 3,000 vehicles per day. However, the ADT is now 0. In March of 2021, the roadway was closed from west of the West Pearl River Bridge to west of the East Pearl River Bridge due to the poor condition of the bridges along the route.

4. Public Involvement

- ☒ Views were solicited.
- ☐ Views were not solicited.
- ☒ Public Involvement events held. (List events and dates in Section 11.)
- ☒ A public hearing/opportunity for requesting a public hearing required. (List dates in Section 11.)
- ☐ A public hearing/opportunity for requesting a public hearing not required.

5. Real Estate

	NO	YES	N/A
a. Will additional right-of-way (ROW) be required?	☐	☒	☐
Is right of way required from a burial/cemetery site?	☐	☐	☒
Is right-of-way required from a Wetland Reserve Program (WRP) property?	☐	☐	☒
Is required right-of-way prime farmland ? (Use form AD 1006, if needed) ...	☐	☐	☒
b. Will any relocation of residences or businesses occur?	☐	☒	☐
c. Are construction or drainage servitudes required?	☐	☒	☐

6. Section 4(f) and Section 6(f)

	NO	YES	N/A
a. Will historic sites or publicly owned parks, recreation areas, wildlife or waterfowl refuges (Section 4f) be affected?	☐	☒	☐
b. Are properties acquired or improved with L&WC funds affected?	☒	☐	☐

7. Cultural Section 106

	NO	YES	N/A
a. Are any known historic properties adjacent or impacted by the project? (If so, list below).....	☐	☒	☐
b. Are any known archaeological sites adjacent or impacted by the project? (If so, list site # below)	☒	☐	☐
c. Would the project affect property owned by or held in trust for a federally recognized tribal government ?	☒	☐	☐

8. Natural & Physical Environment

	NO	YES	N/A
a. Are wetlands affected?	☐	☒	☐
b. Are other waters of the U.S. affected?	☐	☒	☐
c. Are Endangered/Threatened Species/Habitat affected?	☐	☒	☐
d. Is project within 100 Year Floodplain ?	☐	☒	☐
e. Is project in Coastal Zone Management Area?	☐	☒	☐
f. Is project in a Coastal Barrier Resources area?	☒	☐	☐
g. Is project on a Sole Source Aquifer ?	☐	☒	☐
h. Is project impacting a navigable waterway ?	☐	☒	☐
i. Are any State or Federal Scenic Rivers/Streams impacted?	☐	☒	☐
j. Is a noise analysis warranted (Type I project)	☐	☒	☐
k. Is an air quality study warranted?	☒	☐	☐
l. Is project in a non-attainment area?	☒	☐	☐
m. Is project in an approved Transportation Plan, Transportation Improvement Program (TIP) and State Transportation Improvement Program (STIP)?	☐	☒	☐
n. Are construction air, noise, & water impacts major?	☒	☐	☐
o. Will the project affect or be affected by a hazardous waste site , leaking underground storage tank, oil/gas well, or other potentially contaminated site?	☒	☐	☐

9. Social Impacts

	NO	YES	N/A
a. Will project change land use in the area?	☒	☐	☐
b. Are any churches and schools impacted by or adjacent to the project? (If so, list below)	☒	☐	☐

		NO	YES	N/A
c.	Has Title VI been considered?	☐	☒	☐
d.	Will any specific groups be adversely affected? (i.e., <i>children, elderly, disabled, etc.</i>)	☒	☐	☐
e.	Are any hospitals, medical facilities, fire police facilities impacted by or adjacent to the project? (If so, list below).....	☒	☐	☐
f.	Will Transportation patterns change?	☒	☐	☐
g.	Is Community cohesion affected by the project?	☒	☐	☐
h.	Are short-term social/economic impacts due to construction considered major?	☒	☐	☐
i.	Do conditions warrant special construction times? (i.e., <i>school in session, congestion, tourist season, harvest</i>)	☒	☐	☐
j.	Were Context Sensitive Solutions considered? (If so explain below).....	☒	☐	☐
k.	Were bike and pedestrian accommodations considered? (explain below).....	☐	☒	☐
l.	Will the roadway/bridge be closed? (If yes, answer questions below).....	☐	☒	☐
	Will a detour bridge be provided?	☒	☐	☐
	Will a detour road be provided?	☒	☐	☐
	Will a detour route be signed?	☐	☒	☐

10. Permits (Check all permits that may be required)

- | | | |
|--|---|--|
| ☐ Corps Nationwide | ☒ CUP/Consistency Determination | ☒ LA Scenic Stream |
| ☒ Corps Section 404/10 | ☒ USCG Bridge | ☒ DEQ WQC |
| ☒ Levee or Corps 408 | ☒ USCG Navigational Lights | ☒ LPDES Stormwater |
| ☐ Other (explain below) | | |

11. Other (Use this space to explain or expand answers to questions above.)

See Environmental Assessment Chapters for information relative to impacts.

Preparer: Carey Cox,
Title: Environmental Impact Manager
Date: 4-10-2026

Attachments

- ☒ S.O.V. and Responses
- ☒ Wetlands Finding
- ☐ Project Description Sheet
- ☒ CSR
- ☒ Noise Analysis
- ☐ Air Analysis
- ☒ Exhibits and/or Maps
- ☒ 4(f) Evaluation
- ☒ 106 Documentation (SHPO)
- ☒ Form AD 1006 (Farmlands)
- ☐ Other _____

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The Louisiana Department of Transportation and Development (LADOTD) in conjunction with Mississippi Department of Transportation (MDOT) is proposing the replacement of five bridge structures associated with the Pearl River system along US 90 in St. Tammany Parish, Louisiana and Hancock County, Mississippi. These bridges cross the West Pearl River, the West Middle Pearl River, the Middle Middle Pearl River, the East Middle Pearl River, and the East Pearl River. The Federal Highway Administration (FHWA) is the lead Federal agency for the project.

The existing US 90 roadway is a two lane rural arterial roadway with 12-foot travel lanes and 8 foot paved shoulders. The existing roadway section for US 90 meets the minimum design guidelines. However, the existing bridge segments do not. The bridges do not have shoulders and some bridges do not provide the minimum required roadway clearance. Additional deficiencies are discussed later in this document. According to the LADOTD traffic Assignment Study, dated August 11, 2016, the (2039) Average Daily Traffic (ADT) on this section of US 90 was approximately 3,000 vehicles per day. However, the ADT is now 0. In March of 2021, the roadway was closed from west of the West Pearl River Bridge to west of the East Pearl River Bridge due to the poor condition of the bridges along the route. While travelers have been using alternative routes since its closure, the traffic demand still exists for this segment of the US 90 corridor. Prior to the US 90 route segment closure, pedestrians and bicyclists were allowed to use the 8-foot roadway shoulder but were limited to sharing a travel lane on the five bridges with no shoulders. Since the route segments closure, similar to vehicular traffic, pedestrian and cyclist use has been restricted to the westernmost and easternmost end of the closed route segment. However, upon replacement of the bridges and restoration of the route, bicyclists and pedestrians will be accommodated with a minimum 4-foot shoulders on each bridge and the roadway will maintain it's 8-foot shoulders in accordance with LADOTD's complete streets policy.

The Study Area map (**Figure 1**) shows the limits of the project. The project logical termini are the US 90 intersection with US 190 in St. Tammany Parish Louisiana and the US 90 intersection with Kelly Road/7th Avenue in Pearlinton, Hancock County, Mississippi. These logical termini were identified by LADOTD and the MDOT and approved by FHWA. The majority of the Study Area is comprised of maintained right-of-way (ROW) and rural residential development (within the Pearlinton community).

The overall goals of this project are to improve the structural integrity and functionality of the bridges; to support hurricane evacuations; to reopen the roadway; and to maintain system linkage on US 90, specifically in the event of a traffic diversion from Interstate 10.

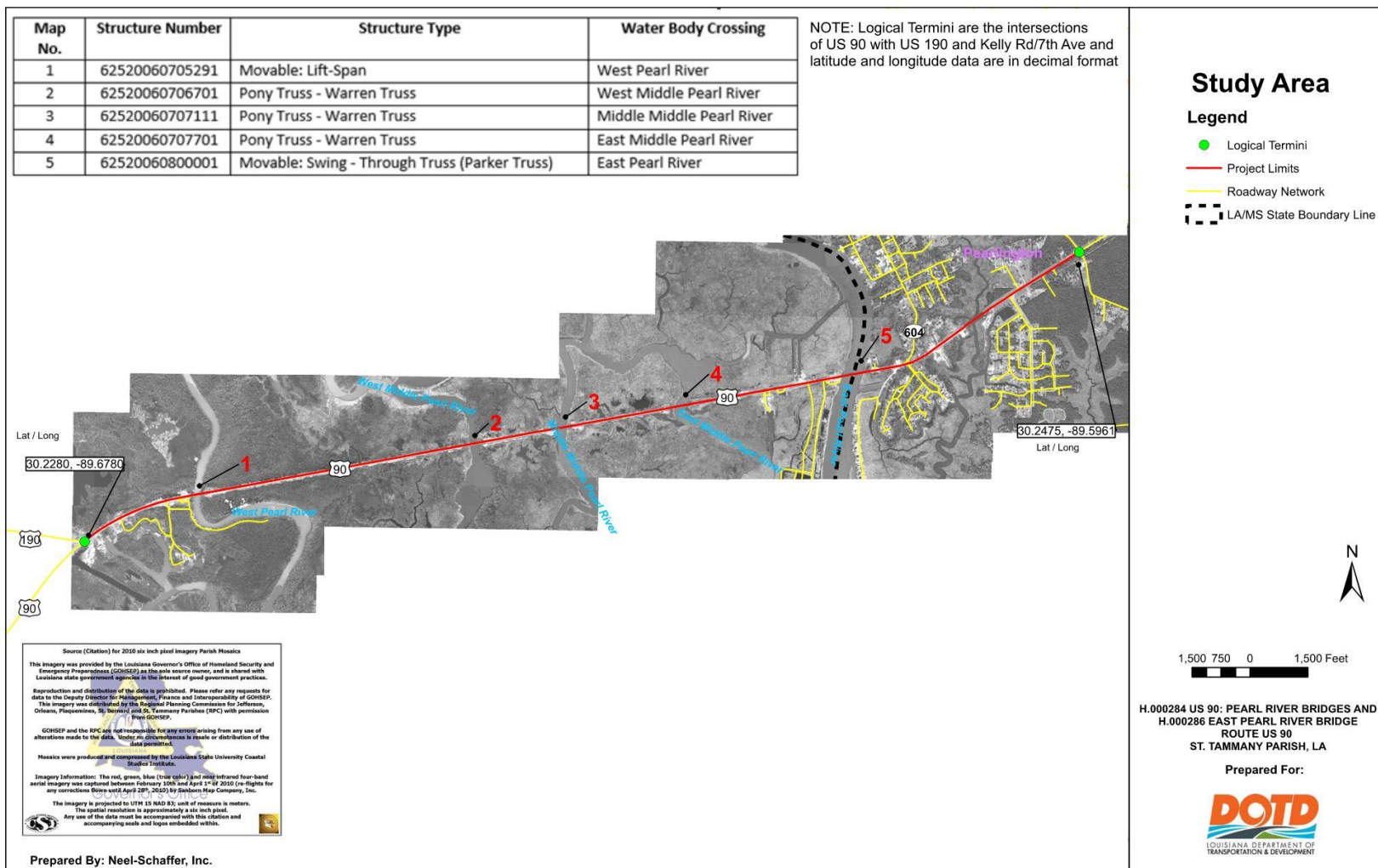


Figure 1 Study Area

1.2 Description of the Proposed Action

The LADOTD and the MDOT in cooperation with the FHWA propose to replace five bridge structures associated with the Pearl River system along US 90 as follows.

- **West Pearl** River Bridge, Movable Lift Span, Structure No. 62520060705291, Recall No. 058710, H.000284
- **West Middle** Pearl River Bridge, Structure No. 62520060706701, Recall No. 058720, H.000284
- **Middle Middle** Pearl River Bridge, Structure no. 62520060707111, Recall No. 058730, H.000284
- **East Middle** Pearl River Bridge, Structure no. 62520060707701, Recall No. 058740, H.000284
- **East Pearl** River Bridge, Movable Swing Span, Structure no. 62520060800001, Recall No. 058750, H.000286

1.3 Project Purpose

The purposes of the proposed action are to improve the structural integrity and functionality of the bridges; to reopen the roadway; and to maintain system linkage on US 90, specifically in the event of a traffic diversion from Interstate 10.

1.4 Need for the Project

1.4.1 BRIDGE CONDITION

Bridges are classified by the FHWA utilizing three categories. Bridges classified as Structurally Deficient have a Condition Rating of 4 (poor) or less for either the deck, superstructure or the substructure. Bridges classified as Functionally Obsolete were built to standards that are not used today and may not have adequate lane widths, shoulder widths or vertical clearances to serve current traffic demand or may occasionally be flooded. Bridges that are not classified as either Structurally Deficient or Functionally Obsolete are classified as Not Deficient. Structurally Deficient bridges qualify for Federal-aid funds for rehabilitation or replacement.

US 90 Bridge across West Pearl River

The US 90 bridge across the West Pearl River was built in 1933. The structure is 570 feet long. The main span must be elevated to allow passage of vessels taller than 10 feet. The maximum vertical clearance for vessel navigation with the main span in the raised position is 50 feet. This bridge does not have shoulders and does not meet minimum requirements for a Rural Arterial roadway. This bridge was classified as Structurally Deficient. In March of 2021, the bridge was closed to vehicular traffic due to its condition.

US 90 Bridges across the West Middle Pearl River, the Middle Middle Pearl River, and the East Middle Pearl River

The US 90 bridges across West Middle Pearl River, the Middle Middle Pearl River, and the East Middle Pearl River were built in 1933. The structures are 582 feet long. The maximum vertical clearance for vessel navigation is 10 feet. The bridges do not meet the minimum requirements for a Rural Arterial roadway. The bridges were classified as Structurally Deficient. In March of 2021, the bridges were closed to vehicular traffic due to their condition.

US 90 Bridge across East Pearl River

The US 90 bridge across East Pearl River was built in 1933. The structure is 961 feet long. The main span must be turned to allow passage of vessels taller than 10 feet. The bridge is classified as Structurally Deficient. The bridge roadway width (24 feet) and vertical clearance (15 feet) do not meet the minimum requirements for a Rural Arterial roadway. The bridge does not have shoulders. This bridge remains open to local traffic.

1.4.2 SAFE HARBOR EVACUATION ROUTE

The West Pearl and East Pearl bridges also provide for safe harbor passage of vessels evacuating storm threats. There is a need to expedite safe harbor evacuations for vessels. This means the moveable bridges need to open for maritime traffic during evacuations.

1.4.3 MAINTAIN SYSTEM LINKAGE

Interstate 10 (I-10) replaced US 90 as the primary east - west route along the southern gulf coast. US 90 still provides the closest diversion from I-10 should a major incident occur on I-10. Recent construction along I-10 between I-12 in Louisiana and MS 607 in Mississippi demonstrated this when this roadway segment restrictions induced substantial delays along the interstate and US 90 was used as a diversion by the traveling public. It is vital for the transportation network to maintain an alternate reliable system linkage for this part of the region. The route is currently closed due to the unacceptable condition of the bridges. Reopening the route is a critical need for system linkage.

2.0 ALTERNATIVES ANALYSIS

The NEPA process requires consideration of all reasonable alternatives that could achieve the purpose and need for the project. This chapter describes the alternatives development process including the development of conceptual alternatives, refinement of the build alternatives, and selection of a preferred alternative.

2.1 Alternatives Development Methodology

A tiered approach was utilized in the development of the replacement and rehabilitation alternatives to meet the purpose and need. The methodology reduced the range of alternatives through consecutively more detailed analyses that included an engineering and environmental screening evaluation process. The process included agency coordination and multiple public meetings.

2.2 Planning Considerations

The following requirements provided guidance relating to the development of alternatives.

2.2.1 SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are properties that are listed on the National Register of Historic Places (NRHP) or that meet the criteria for listing on the NRHP. All five bridges are eligible for the National Register of Historic Places (NRHP) and subject to the Section 106 process. Other identified historic properties also are subject to the Section 106 process.

In 2012, LADOTD and FHWA began to develop an inventory of state owned and non-state owned vehicular bridges eligible for the NRHP located in Louisiana. This inventory excluded bridges that cross state borders. In

2015, a Section 106 Programmatic Agreement for the Treatment of Historic Bridges (HBPA) was executed among the FHWA, the LADOTD, the Advisory Council on Historic Preservation, and the Louisiana State Historic Preservation Officer (LASHPO) regarding the Management of Historic Bridges in Louisiana (HBPA). Treatment of the four US 90 bridges located wholly in Louisiana has followed the stipulations presented in the HBPA.

The East Pearl River swing span bridge was also determined to be eligible for the NRHP. Because the East Pearl River span is a state border bridge, it was not covered within the HBPA and is undergoing a separate Section 106 consultation process. This has included coordination among the FHWA, LADOTD, Mississippi Department of Transportation (MDOT), LASHPO, and the (Mississippi State Historic Preservation Officer (MSSHPO). As a result, a Memorandum of Agreement (MOA) has been drafted that memorializes the adverse effect the project will have on the five historic bridges and provides legally binding stipulations to mitigate for the adverse effects to historic properties.

2.2.2 U.S. COAST GUARD PERMITS

All five bridges are located on navigable waterways and USCG permits are required demonstrating that the new bridges provide continued access to navigation. USCG permits consider the bridges horizontal channel clearance (the channel width) as well as the bridges “low chord elevation” which is the lowest point of the bridge structure over the navigable waterway. Permits will be required for replacement structures, including temporary bypass structures as may be required. The USCG has issued a Preliminary Navigation Determinations for the bridges. **Table 2-1** depicts the clearances proposed.

Table 2- 1 Summary of Proposed Minimum Bridge Clearances and Preliminary Navigation Determinations

Waterway	Proposed Structure	Proposed Vertical Clearance above	Proposed Horizontal Clearance
West Pearl River ¹	Fixed	20'	90'
West Middle Pearl River ²	Fixed	10'	60'
Middle Middle Pearl River ²	Fixed	10'	60'
East Middle Pearl River ²	Fixed	10'	60'
East Pearl River ³	Fixed or movable	73'	115'

2.2.3 LADOTD FLOODPLAIN GUIDANCE

LADOTD typically requires that the low chord elevation of bridges remain one foot (1') above the flood elevation. On this project, LADOTD evaluated two criteria before establishing the minimum low chord flood elevations at each bridge.

¹ Preliminary Determination letter from USCG dated September 19, 2023

² Preliminary Determination letter from USCG dated December 29, 2023

³ Preliminary Determination letter from USCG dated October 17, 2019

- The St. Tammany Parish DFIRM elevation plus 1'
- An LADOTD determination of the projected hurricane surge, plus the projected wave height plus 1'

2.3 Development and Screening of Engineering Concepts

Bridge concepts conforming to the planning considerations and LADOTD's design criteria were developed for the five river crossings. The engineering level of detail supporting each bridge concept included sufficient engineering to develop a vertical profile of each bridge structure and a plan view concept showing the bridge tied to the existing roadway. Temporary diversion bridge structures were considered as appropriate to support the construction of the new bridges while maintaining traffic flow. However, as discussed below, this segment of the route is closed to traffic, making temporary diversion bridge structures unnecessary.

Each concept alternative was evaluated considering costs (roadway and bridge construction costs, design costs, utility relocation costs, and ROW acquisition costs), potential impacts to wetlands (based on the screening of potential wetlands), and other considerations as noted in the screening analysis. The results of the screening analysis for each bridge at each crossing were documented and compared in May 2016. The matrices were updated considering the alternatives presented in the August 22, 2019 Public Meeting. Subsequent to the Alternatives Screening as noted above, life cycle costs were developed comparing the life cycles cost of the fixed span and movable span bridge concepts for the East Pearl River alternatives.

2.4 Alternatives Carried Forward for Analysis

Based on the findings summarized in the Screening Matrixes and in consultation with LADOTD, MDOT, and FHWA, alternative concepts were prepared for presentation in the initial public meetings held in in Pearlington, Mississippi on September 22, 2016, and Slidell, Louisiana on September 27, 2016. Subsequent to the 2016 Public Meetings, the engineering concepts were refined and surveys for the technical studies supporting this EA were initiated. These included:

- A Wetlands Finding, a Biological Survey Report, determination of Essential Fish Habitat (EFH) and other studies assessing potential impacts to the natural environment
- Cultural Resources studies
- Air Quality and Noise Studies
- Section 4(f) Evaluation
- Phase 1 Environmental Site Assessment (ESA)
- Conceptual Stage Relocation Plan

For the East Pearl River Bridge, these studies were updated considering traffic analysis undertaken subsequent to the 2016 public meetings considering the fixed span alternative variant (identified as the Gooseneck Frontage Road Concept), which was developed in response to comments received in the 2016 public meetings. The updated alternatives / concepts were presented in the August 22, 2019 Public Meeting. In March of 2021, four of the bridges (West Pearl, West Middle, Middle Middle, and East Middle) had to be closed due to their conditions. The East Pearl River Bridge remains open to local traffic. This situation impacted the alternatives under consideration for these four bridges.

The East Pearl River Bridge alternatives remain under consideration. The alternatives for the other four bridges have been reduced to replacement on existing alignment. The reason is that the bridge closures resulted in the closure of U.S. 90 from west of the West Pearl River Bridge to west of the East Pearl River Bridge. The East Pearl

River Bridge remains open from Honey Island Marina Road to Pearlington. The closure of U.S. 90 has resulted in a 23.7 mile detour from end to end. Since the bridges and roadways are closed, there is no need to evaluate bridge alternatives that are offset or alternatives that require a diversion bridge.

Rehabilitation alternatives for each bridge were considered and evaluated. The rehabilitation of the bridges were evaluated in accordance with the requirements of NEPA, Section 106, and Section 4(f). With regard to Section 106, the rehabilitation required for the bridges would adversely affect the historic integrity of the bridges. Furthermore, the rehabilitation of the bridges does not meet the purpose and need of the project. Alternatives that do not meet the purpose and need are not prudent alternatives pursuant to Section 4(f) and are not reasonable alternatives pursuant to NEPA. Therefore, the rehabilitation alternatives are no longer being considered.

As mentioned above, upon replacement of the bridges and restoration of the route, bicyclists and pedestrians will be accommodated with 4-foot minimum shoulders on each bridge and the roadway will have 8-foot shoulders, as it does currently.

The No Action Alternative was also considered. With the No Action Alternative the bridges would not be replaced or rehabilitated. The No Action Alternative does not meet the purpose and need, especially in light of the current closures.

2.5 West Pearl River Bridge Alternatives

The existing West Pearl River lift span provides horizontal navigation clearance of 90'. Vertical clearance of the existing lift span is 50' above mean high water with the bridge in the open position. In the closed position, the existing span is approximately 10' above mean high water. The draw of the US 90 West Pearl River Bridge opens on signal if at least 4 hours' notice is given.



View Upstream Approach, West Pearl River Bridge

There is an existing boat launch utilized both by recreational boaters and the tour boat operators located within LADOTD ROW downstream and west of the existing bridge.



West Pearl River Boat Launch

The primary users of the West Pearl River waterway are eco-tour companies. Pearl River Eco-tours has canal access to the West Pearl River south of US 90. Cajun Encounters Eco-tours operates from west of the West Pearl River, and launches tours of various sizes from both sides of the US 90 bridge. Discussions with tour companies that use the River show that, as long as the proposed clearances meet or exceed the present clearance of the existing bridge in the closed position, their businesses will not be affected. Comments were received that, should the vertical clearances be increased, larger tour boats could be built and used on the river.

Rehabilitation Alternatives:

Due to the degree of structural deficiency of the West Pearl River bridge, the bridge could not feasibly rehabilitated up to current transportation standards, especially regarding load and vertical and horizontal roadway clearances.

2.5.1 REPLACEMENT ALTERNATIVES CONSIDERED

Replacement alternatives were developed initially on an offset to allow for the complete replacement of the existing lift span while keeping the existing bridge open to traffic. The Replacement Alternatives considered were Fixed Span Alternative (Alternative F-1), Movable Span Alternatives: Vertical Lift Span (Alternative M-1) and Bascule Span (Alternative M-3)⁴.

The Fixed Span Alternative would be located at a 52.5' offset downstream from the existing bridge centerline. The new fixed span structure would provide 50' vertical clearance above National Oceanic and Atmospheric Administration (NOAA) Mean High Water (MHW) of 1.4 NAVD88. The existing 90' wide channel would be

⁴ Alternative M-2 was removed from detailed analysis during the screening evaluation process.

retained. This alternative included a new road to the north of existing US 90 which ties back to the existing US 90 centerline. The cost estimate was \$24,780,600 for this alternative.

The Movable Span Alternatives would be located at a 52.5' offset downstream from the existing bridge centerline. The navigation channel retains the 90' horizontal clearance. The minimum vertical clearance with the movable span in the open position is 50' above NOAA MHW of 1.35 NAVD88. The vertical clearance of the bascule span bridge is unlimited. These alternatives both included a new road to the north of existing US 90 which ties back to the existing US 90 centerline. A new road would also be constructed to the south of the existing US 90 centerline to provide continued access to Camp Road. The cost estimate was \$32,499,311 for the vertical lift span and \$ 41,409,514 for the bascule span.

2.5.2 WEST PEARL RIVER BRIDGE PREFERRED ALTERNATIVE

After the roadway and bridges were closed, LADOTD considered a new alternative for the West Pearl River Bridge. DOTD proposes to replace the bridge on existing alignment with a fixed bridge. LADOTD proposed two scenarios with different vertical clearances to the USCG who placed the proposals on public notice. After the receipt of public comments, LADOTD in consultation with the USCG decided to provide a fixed bridge with a 20' vertical clearance and a 90' horizontal clearance. As part of this alternative, a new road would be constructed to the north of existing US 90 which ties back to the existing US 90 centerline. This roadway would provide access to adjacent properties. The cost estimate for this alternative is \$34 million.

Replacement on existing alignment with a fixed bridge with a vertical clearance of 20' is the preferred alternative. See the exhibit in **Appendix A**.

2.6 West Middle and Middle Middle Pearl River Bridges Alternatives

The US 90 bridge across the West Middle Pearl River was built in 1933. The structure is 582' long and consists of 12 reinforced concrete deck girder approach spans and 3 steel pony truss spans across the river. The maximum vertical clearance for vessel navigation is 10' above mean high water. The horizontal navigation clearance is 60'.



West Middle River Upstream Approach

The US 90 bridge across the Middle Middle Pearl River was built in 1933. The structure is 582' long and consists of 12 reinforced concrete deck girder approach spans and 3 steel pony truss spans across the river. The maximum vertical clearance for vessel navigation is 10' above high water. The horizontal navigation clearance is 60'.



Middle Middle River Upstream Approach

A public boat launch located downstream on the west side of the Middle Middle River. The launch serves as the primary water access point of departure to the Pearl River Wildlife Management Area (WMA).



Middle Middle Pearl River Boat Launch

Rehabilitation Alternatives:

Due to the degree of structural deficiency of the West Middle and Middle Middle Pearl River bridges, the bridges could not feasibly be rehabilitated up to current transportation standards, especially regarding load and vertical and horizontal roadway clearances.

2.6.1 REPLACEMENT ALTERNATIVES CONSIDERED

Replacement alternatives were developed on an offset alignment, or on the existing alignment with a diversion bridge, to accommodate traffic during construction. Two alternatives were developed for each of these

bridges. The Replacement Alternatives consisted of fixed spans on a 52.5' offset alignment upstream from existing bridges (Alternative F-1) and a fixed span on existing alignment (Alternative F-2) which required diversion bridges so that the US 90 corridor remained open during the construction of the replacement bridge.

In regards to navigation, the primary users of the Middle Pearl Rivers are recreational boaters and eco-tour companies. Discussions with tour companies that use the Middle Rivers indicate that, as long as the proposed vertical clearances meet or exceed the present clearance of the existing Middle River bridges, businesses will not be affected. The vertical clearance of the West Middle Pearl River will increase by 1.1' over the existing condition; the vertical clearance at the Middle Middle Pearl River will increase 1.9' over the existing condition.

Estimated costs associated with the implementation of the West Middle and Middle Middle Pearl River Replacement Alternatives were \$13,405,860 for Alternative F-1 and \$14,539,250 for Alternative F-2. The estimated cost for construction on existing alignment was greater than the cost for construction on offset alignment due to the requirement for diversion bridges to maintain traffic.

2.6.2 WEST MIDDLE AND MIDDLE MIDDLE PREFERRED ALTERNATIVE

The West Middle Pearl River Bridge and Middle Middle Pearl River Bridge are currently closed to traffic. Since the roadway to and from these bridges is also closed, diversion bridges or offset alignments are no longer needed. The preferred alternative is the replacement of the West Middle Pearl River Bridge and Middle Middle Pearl River Bridge with fixed span bridges on existing alignment without diversion bridges. The fixed bridges will have a 10' vertical clearance and a 60' horizontal clearance. The cost estimate for each bridge is \$12 million. See exhibit in **Appendix A**.

2.7 East Middle Pearl River Bridge Alternatives

The US 90 bridge across the East Middle Pearl River was built in 1933. The structure is 582' long and consists of 12 reinforced concrete deck girder approach spans and 3 steel pony truss spans across the river. The maximum vertical clearance for vessel navigation is 10' above high water. The horizontal navigation clearance is 45'.



East Middle River Downstream Approach

Rehabilitation Alternatives:

Due to the degree of structural deficiency of the East Middle Pearl River bridge, the bridge could not feasibly rehabilitated up to current transportation standards, especially regarding load and vertical and horizontal roadway clearances.

2.7.1 REPLACEMENT ALTERNATIVES CONSIDERED

Replacement alternatives were developed on an offset alignment, or on the existing alignment with a diversion bridge, to accommodate traffic during construction. The Replacement Alternatives were a fixed span on a 52.5' offset alignment downstream from the existing bridge centerline (Alternative F-3) and a fixed span on existing alignment (Alternative F-4) which required a diversion bridge so that the US 90 corridor remains open during the construction.

The primary users of the Middle Pearl River waterways are recreational boaters and eco-tour companies. Discussions with tour companies that use the Middle Rivers indicate that, as long as the proposed vertical clearances meet or exceed the present clearance of the existing Middle River bridges, businesses will not be affected. The vertical clearance of the East Middle Pearl River will increase by 1.9' over the existing condition.

Costs estimates associated with the implementation of the East Middle Pearl River Replacement Alternatives were \$6,748,330 for Alternative F-3 and \$7,717,550 for Alternative F-4. The estimated cost for construction on existing alignment was greater than the cost for construction on offset alignment due to the requirement for a diversion bridge.

2.7.2 EAST MIDDLE PEARL RIVER PREFERRED ALTERNATIVE

The East Middle Pearl River Bridge is closed as well as the roadway to and from the bridge. Since the roadway to and from the bridge is closed, a diversion bridge is not needed. The preferred alternative is the replacement of the East Middle Pearl River Bridge with a fixed span bridge on existing alignment without a diversion bridge. The fixed bridge will have a 10' vertical clearance and a 60' horizontal clearance. The cost estimate is \$12 million for this bridge. See exhibit in **Appendix A**.

2.8 East Pearl River Bridge Alternatives

The existing East Pearl span is a swing span structure. The navigation channel width is 90' and there is no vertical restriction.

The draw of the US 90 highway bridge opens on signal; except from 7:00 p.m. to 7:00 a.m. when the draw opens on signal if at least four hours' notice is given. The openings are related to recreation traffic (including houseboats and large personal crafts), commercial fishing traffic, transport of barges/materials, and patrolling/training from the U.S. Navy and St. Tammany Parish Sheriff's office.



View Upstream Approach, East Pearl River Bridge

There is an existing boat launch utilized by recreational boaters located within LADOTD ROW downstream and west of the existing bridge.



East Pearl River Boat Launch

Coordination with NASA and the US Navy

Navigation access associated with the Stennis Space Center is limited to the East Pearl River. It includes National Aeronautics and Space Administration (NASA) facilities as well as military traffic. All of the Navy craft are smaller vessels with vertical navigation clearance requirements of less than 40'. Consultation with NASA personnel indicate that the new East Pearl River Bridge should match the clearances permitted and provided by the I-10 East Pearl River crossing (73-foot vertical clearance above high water and 115-foot horizontal clearance). NASA indicated that these clearances will meet their current and anticipated future navigation needs.

Vessel Trip Frequency

Bridge tender logs for years 2013 - 2018 were provided by LADOTD and pdf copies of these logs are attached to the East Pearl River Navigation Study (**Appendix B**). Considering the possibility of a 25-foot clearance mid-level movable span bridge, **Table 2-2** summarizes the vertical navigation clearance associated with year 2013 and year 2018 vessel transits aggregated by clearance.

Table 2-2. Summary of 2013 Bridge Openings US 90 @ East Pearl River				
2013	Total Openings	Military Patrol Crafts	Vessels Clearance Greater Than 25'	Vessels Clearance 25' or less
Number of Openings	284	64	46	241
Percent	100.0%	22.5%	16.2%	84.9%
2018	Total Openings	Military Patrol Crafts	Clearance Greater Than 25'	Clearance 25' or less
Number of Openings	356	118	75	281
Percent	100.0%	33.1%	21.1%	78.9%

Safe Harbor Navigation

Referencing **Table 2-2**, twenty-one (21) of the 75 vessel transits with vessel clearance greater than 25 feet occurred between September 2, 2018 and September 6, 2018 concurrent with Tropical Storm Gordon's landfall in Mississippi. This represents 28% of the annual vessel traffic considering vessels with clearance greater than 25 feet.

Another example of the use of the East Pearl River for safe harbor navigation is documented in October 2017 in association with the landfall of Hurricane Nate, a category 1 hurricane. Hurricane Nate made its first landfall near the mouth of the Mississippi River around 7:00 pm on October 7th, 2017 with winds of 85mph. A second landfall occurred just west of Biloxi, Mississippi after midnight on October 8th, 2017.

On October 6th, 2017 one hundred six (106) vessels transited the East Pearl swing span northbound. The bridge was opened 15 times. Each opening required 10-15 minutes to open and close the bridge. Also, the vast majority of the vessels transiting northbound seeking safe harbor exceeded the 25' vertical navigation clearance as proposed for the movable span replacement bridge alternatives.

Rehabilitation Alternatives:

Due to the degree of structural deficiency of the East Pearl River bridge, the bridge could not feasibly rehabilitated up to current transportation standards, especially regarding load and vertical and horizontal roadway clearances.

2.8.1 REPLACEMENT ALTERNATIVES CONSIDERED

The USCG requested that the navigation clearances for the new US 90 bridge match the navigation clearances provided for the upstream I-10 crossing of the East Pearl River. The horizontal I-10 navigation clearance width is 115' and the vertical clearance is 73' above high water. If the current structure remains in place with a 90' horizontal navigation clearance, the crossing will not meet the current design guidance for horizontal navigation clearance, which is 115'.

The Replacement Alternatives analyzed are as follows and are discussed in the following sections:

- Long Span Alternative, Loop Road Option
- Long Span Alternative, Gooseneck Frontage Road Option
- Movable Span Alternatives
 - Vertical Lift Span
 - Bascule Span

2.8.1.1 *Long Span Alternatives*

The Long Span Alternative alignments are shown on the exhibit in **Appendix A**. The Long Span Alternative would construct a new long span bridge south of the existing East Pearl River Bridge. West of the river, a new road, Boat Launch Access Road, would be constructed to the north of existing US 90 which would tie back to the existing US 90 centerline. This road would provide continued access to the existing bridge during construction of the new bridge. Access to Honey Island Marina road and the boat launch would remain unchanged. The boat launch would be impacted by the placement of bridge support piers.

Two concepts for routing the Long Span Bridge through Pearlington have been developed and evaluated: the Loop Road Option and the Gooseneck Frontage Road Option. Both options were presented at the August 22, 2019 Public Meeting.

Long Span Alternative, Loop Road Option

Considering the Loop Road Option, the MS 604 / US 90 intersection would be relocated east of the existing intersection and remain as a stop control intersection. A left turn lane is provided from eastbound US 90 to northbound MS 604. Connectivity would be provided to Tahiti Road with a newly constructed frontage road located north of the new bridge, extending west from existing MS 604. The existing Riverside Drive would be routed under the new bridge to tie in with the new frontage road.

The new loop road would support continued east–west access between MS 604 and US 90. During construction, access can be provided from US 90 to the existing bridge with the use of the loop road or a diversion. Access would be provided to existing residences and commercial properties. Twenty properties along existing US 90 in Pearlington may be impacted by the loss of direct access to existing US 90.

Long Span Alternative, Gooseneck Frontage Road Option

The Long Span Alternative, Gooseneck Frontage Road Option was developed subsequent to the September 2016 Public Meeting. MS 604 currently terminates at US 90. In this option, MS 604 will turn east through the new roundabout and continue parallel to the new bridge to connect with US 90.

A new frontage road would extend west from the roundabout to provide access to developed properties. Existing Riverside Drive would be routed under the new bridge to tie in with the new frontage road. Tahiti Drive would connect directly with the roundabout.

The new gooseneck frontage road would support continued east–west access between MS 604 and US 90. During construction, access could be provided from US 90 to the existing bridge with the use of the gooseneck frontage road or a diversion. Access would be provided to existing residences and commercial properties.

Two business locations on US 90 would be acquired and 19 properties along existing US 90 in Pearlington may be impacted by the loss of direct access to existing US 90.

2.8.1.2 Movable Span Alternatives

The proposed movable span alternatives would construct a lift span or bascule span south of the existing bridge. To allow for the location of a downstream movable span at 52.5' offset, modifications would have to be made to the existing swing span structure allowing the structure to reverse the direction of its swing. The work to modify the existing span could take up to three month, and there would be temporary disruptions to marine and vehicular traffic relating to the modifications. During this period when the electrical system is down, the bridge would require manual opening, potentially resulting in navigation delays from a half hour to up to four hours. USCG permits would be required for the work and coordination with the USCG will be accomplished to establish protocols supportive of continuous river navigation.

A review of three years of navigation data showed that approximately 80% of the marine traffic requiring the existing bridge to open would be able to transit the river unimpeded if the clearance of the new bridge in the closed position was 25' or greater above MHW. The mid-level alternatives were developed to provide 25' vertical clearance in support of this concept. Both lift span and bascule span concepts have been evaluated. It will take approximately 5 to 10 minutes for a movable span (lift or bascule) to cycle through a closure operation. The Movable Span Alternative alignment is shown on the exhibit in **Appendix A**.

West of the river, a new road would be constructed south of and parallel to the alignment of the new mid-level span to provide continued access to Honey Island Marina Road and the boat launch. Access to the existing bridge would remain as is during construction of the new bridge.

Within Pearlington, a left turn lane is provided from eastbound US 90 to northbound MS 604 and a right turn lane is provided from westbound US 90 to northbound MS 604. East of the river, Riverside Drive would be routed east to tie into Tahiti Road, and a new intersection would be constructed including US 90, relocated Tahiti Road and MS 604. Access would also be provided as shown to existing commercial and residential properties. Four properties on existing US 90 in Pearlington may be impacted by the loss of direct access to existing US 90.

2.8.1.3 Comparison of Alternatives

Table 2-3 compares the Engineering / Purpose and Need and Environmental Effects of the East Pearl River Alternatives which were evaluated. MDOT requested that the alternatives analysis associated with the East Pearl River replacement bridge consider life cycle costs of bridge operations over a 50-year period. The cost estimates (as presented in the August 22, 2019 Public Meeting) are in the Appendix, (**Appendix C**) along with the Life Cycle Cost Estimate for East Pearl River Movable alternatives.

Table 2- 3 Summary of Environmental Effects - East Pearl River Bridge

Evaluation Criteria	Unit	Replacement Alternatives		
		Long Span		Movable Span
		Loop Road Option	Gooseneck Frontage Road Option	
Corridor Alignment and ROW and Considerations				
Additional Required ROW to be Acquired	acres	3.0	3.8	0.81
Number of Parcels for Appraisal	number	31	27	8
Total Estimated Cost		\$1,701,160	\$2,341,422	\$973,718
Residential Relocations	number	0	0	0
Commercial Relocations	number	0	2 bldgs (4 possible relocations*)	0
Engineering / Purpose and Need				
Conforms with Navigation Clearances	Y/N	Y	Y	Y
Support Safe Harbor Navigation / Evacuations and US 90 capability to function as an I-10 Bypass	See Notes	①	①	②
Conforms with Design Criteria	Y/N	Y	Y	Y
Human Environment Considerations and Estimated Impact				
Potential for Community Disruption	Low/High	High	High	Low
Community Facility Impacts	Y/N	N	N	N
Air Quality Impact	Y/N	N	N	N
Noise Impacts	Y/N	N	N	N
Recreational Facility Impacts	Y/N	Y	Y	Y
NRHP Eligible Standing Structures	number	2	1	1
NRHP Eligible Archaeological Sites	number	0	0	0
Section 4(f)	number	1	1	1
Section 6(f)	number	0	0	0
Hazardous Waste Sties	number	0	0	0
Natural Environment Considerations and Estimated Impact				
Wetlands and Waters of the U.S.	acres	5.17	5.76	5.17
100-Year Floodplains	acres	27.8	28.3	18.4
Wild and Scenic Rivers	number	0	0	0
Coastal Zone Impact	Y/N	Y	Y	Y
Intermediate Marsh	acres	2.0	2.8	2.1
Freshwater Marsh	acres	--	--	--
Baldcypress Swamp	acres	--	--	--
Scrub/Shrub Swamp	acres	0.7	0.7	0.8
Mixed Hardwood-Loblolly Forest	acres	1.6	1.1	1.2
Bottomland Hardwood Forest	Acres	0.2	--	--
Maintained	acres	21.0	21.5	12.0
Significant Trees	number	0	0	0
Endangered Species Present	Y/N	Y	Y	Y
Essential Fish Habitat	acres	2.77	2.77	2.77
Prime Farmlands	Y/N	N	N	N
Estimated Construction Cost				

Evaluation Criteria	Unit	Replacement Alternatives		
		Long Span		Movable Span
		Loop Road Option	Gooseneck Frontage Road Option	
Implementation Cost ¹	Dollars (\$)	\$200,000,000	\$202,000,000	\$105,000,000
75-Year Life Cycle O&M Cost	Dollars (\$)	\$10,000,000	\$10,000,000	\$60,000,000

① Long Span meets the Purpose and Need as it provides maximum support for safe harbor navigation, evacuations and I-10 Bypass

② Mid-Level Movable Span may provide less resiliency. As storms approach, evacuations and safe harbor navigation may be compromised. Also, US 90 may perform with less efficiency / reliability as an I-10 Bypass.

¹Except for O&M costs, cost shown include design, roadway & bridge construction, utility relocations, and right-of-way acquisition

**It is unknown if occupancy is owner or tenant for the two commercial businesses within required ROW. Tenant occupancy is utilized in the estimate so two relocations assumed for each (owner & tenant).*

2.8.1.4 East Pearl River Identified Preferred Alternative

Replacement bridge costs from **Table 2-4** are summarized as follows:

Table 2- 4 Replacement Alternatives Cost Summary

		Long Span Gooseneck Frontage Road Option	Long Span Loop Road Option	Movable Span
Implementation Cost	Dollars (\$)	\$200,000,000	\$202,000,000	\$105,000,000
75-Year Life Cycle O&M Cost of Bridge	Dollars (\$)	\$10,000,000	\$10,000,000	\$60,000,000
Total Costs	Dollars (\$)	\$210,000,000	\$212,000,000	\$165,000,000

Considering the movable span alternatives versus the Long Span Alternative, the Long Span Alternative eliminates navigation delays associated with trafficking larger vessels as well as disruptions which routinely occur associated with the operation of a movable span. It provides a more secure I-10 bypass in support of the Purpose and Need; and a more secure hurricane evacuation route in support of the Purpose and Need. It also provides improved vessel access to safe harbor upstream of US 90 during tropical/hurricane events. Consequently, the Long Span Alternative is preferred over the Movable Span Alternatives.

With respect to the Loop Road and Gooseneck Frontage Road concepts, the Gooseneck Option Long Span Bridge Alternative avoids impacts to Virle Reid's NRHP property located at #5098 State Route 604 and avoids potential impacts to the NRHP property. Consequently, the Long Span Bridge Gooseneck Frontage Road option is identified as the Preferred Replacement Alternative for the East Pearl River Bridge crossing.

2.8.2 DESIGN EXCEPTIONS

There are no design exceptions anticipated for the portion of the project located in Louisiana, as all LADOTD guidance is met. During the alternative analysis development in Mississippi, there were two design related

decisions which were made to reduce impacts while still adhering to sound engineering judgement. Both of these decisions were made in coordination with LADOTD, MDOT and the project team.

The design for the US 90 East Pearl River Bridge within Mississippi was developed using a 4% longitudinal grade. The application of the 4% grade was necessary to allow the East Pearl Bridge to return to grade in such a way as to connect with relocated MS 604 and to provide sufficient separation from the Cowan Bayou Bridge to support a safe connection with the Cowan Bayou Bridge

MDOT guidance requires an 8-foot-wide shoulder on rural arterials such as existing US 90 in Mississippi. The proposed typical section for US 90 consists of an 8-foot-wide shoulder, except near the Cowan Bayou Bridge. The US 90 bridge return to grade approaching the connection with relocated MS 604 is a three-lane section (two thru lanes and an eastbound left turn lane to relocated MS 604). A 6-foot-wide shoulder is provided on the north side of US 90 approaching the Cowan Bayou Bridge east of relocated MS 604. The 6-foot shoulder allows for a transition from a three lane section to the existing two lane section.

A design variance will be required from MDOT for the maximum grade of 3% on level terrain. In addition, a design exception will be required from MDOT for the required 8-foot shoulder width. During the preliminary and final design, the design team will be required to continue to work to minimize the impacts to the greatest extent practicable.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The following sections define the current natural, built, and human environmental resources within the Study Area, the potential effects on those resources of the Preferred Alternatives, and any measures taken or proposed to avoid, minimize, or further mitigate potential adverse impacts.

The No Action Alternative was also considered, although it does not meet the purpose and need for the project. As part of the analysis, the No Action Alternative serves as a benchmark to allow for the meaningful comparison of the magnitude of environmental effects associated with the Alternatives. Under the No Action Alternative, the roadway and bridges, except for East Pearl River Bridge which remains open to local traffic, will remain closed. The closed roadway adversely impacts the community, hurricane evacuation, emergency response, access to properties, travel times, and local economy. Moreover, the boat launch at Middle Middle will remain inaccessible. The No Action Alternative would have no effect on air quality, wildlife and fisheries, state-listed natural communities or species, Essential Fish Habitat (EFH), and cultural resources. The No Action Alternatives would have minimal reasonably foreseeable impact on the potential for inducing changes in patterns of land use, population density, or growth rate.

3.1 Land Use and Zoning

Figure 2 below shows a general overview of the land use and zoning abutting the Study Area in Louisiana and Mississippi. Except for a few out-parcels, the area between the West Pearl River and the East Pearl River in Louisiana is owned and managed by the Louisiana Department of Wildlife and Fisheries (LDWF) as the Pearl River WMA. There are public boat launches located on the southwest side of US 90 at the West Pearl River, Middle Middle Pearl River, and the East Pearl River, all of which are located within the existing LADOTD ROW.

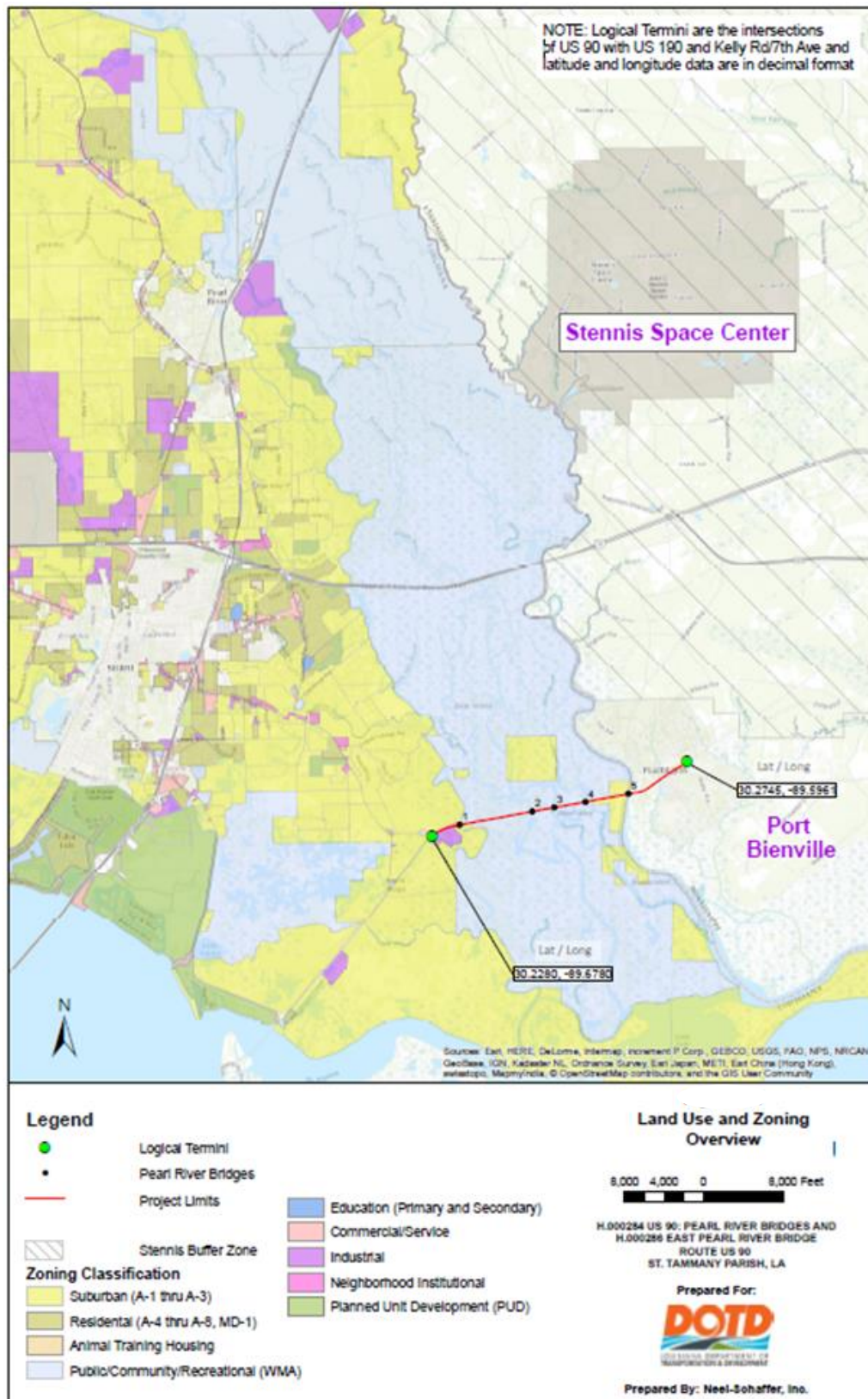


Figure 2 Land Use and Zoning Overview

Cajun Encounters Eco-tours, located on the northwest side of the West Pearl River, currently operates an airboat, swamp tour business, and utilizes the West Pearl River in business operations. In addition, Pearl River Eco-tours has canal access to the West Pearl River south of US 90.

The Stennis Space Center and buffer zone dominate the land use in Mississippi. Navigation associated with the Stennis Space Center is limited to the East Pearl River. It includes NASA facilities as well as military traffic.

Land use in Pearlinton includes a number of commercial properties located on US 90 as well as residential properties located north and south of US 90. Also, the Port Bienville Industrial Park accesses the river system south of the existing US 90 crossing.

Figure 3, provides more detailed look at land uses within Pearlinton.

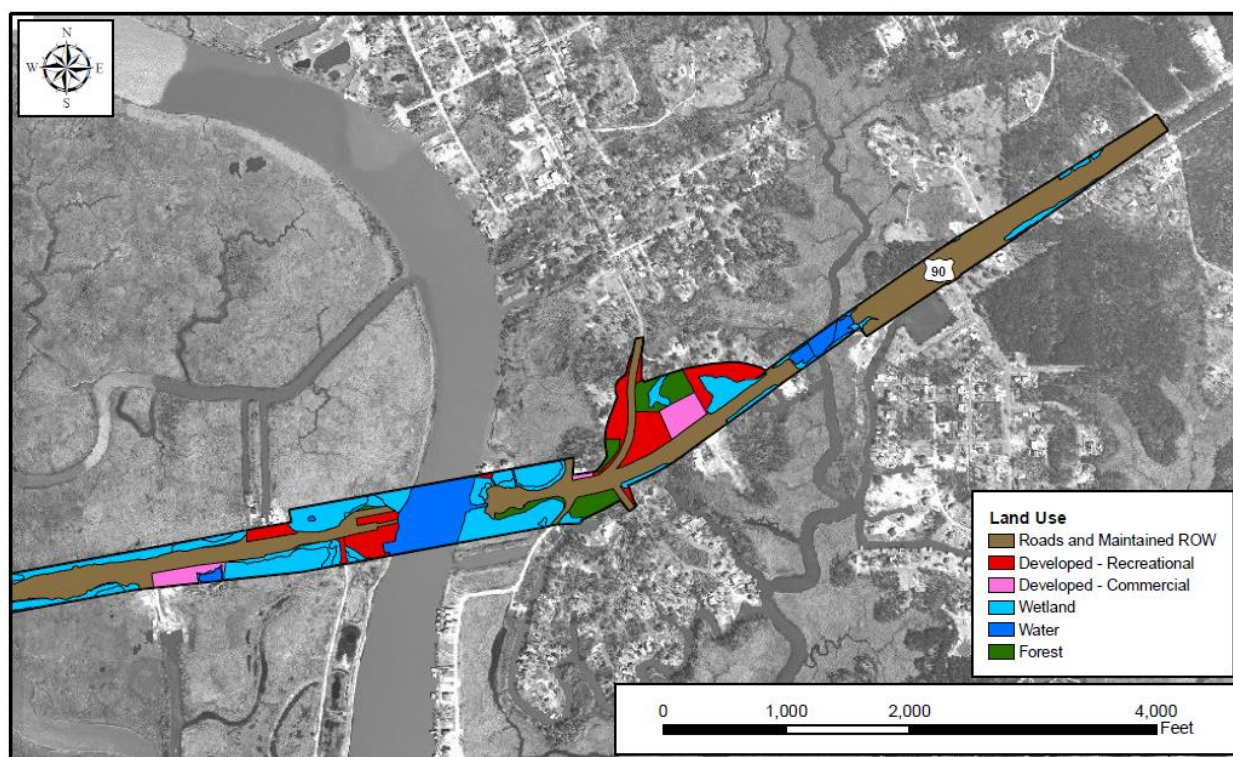


Figure 3 Land Use Near East Pearl River Bridge

For four of the bridges, West Pearl, West Middle, Middle Middle, and East Middle, the general pattern of development in the Study Area, which is primarily restricted by the presence of the WMA, will not change. Moreover, these bridges will be replaced on existing alignment. No impacts to land use are anticipated.

Short-term, minor impacts to the boat launches at West Pearl River Bridge and East Pearl River Bridge are anticipated during construction; however, full access to the launches will be provided after construction. No impacts are anticipated to the boat launch at the Middle Middle Pearl River Bridge, as the bridge will be replaced on existing alignment, and the boat launch currently is not accessible due to road and bridge closure.

For the East Pearl River Bridge alternative, changes in the general pattern of development in the Study Area are not anticipated because of the relatively small size of the Pearlington community and its overall demonstrated slow rate of development. Given the improvement in traffic and circulation, however, it would be expected that existing businesses would remain and new development would occur (although still at a relatively slow pace) in the developable areas of Pearlington under the Replacement Alternatives than under the No Action Alternative.

3.1.1 COMMITMENTS AND MITIGATION MEASURES

There are no commitments or mitigation measures proposed for Land Use and Zoning.

3.2 Right-of-Way Acquisition and Relocation

3.2.1 DEMOGRAPHICS

On January 20, 2025, President Trump signed Executive Order (E.O.) 14148 --Initial Rescissions of Harmful Executive Orders and Actions and E.O. 14154 – Unleashing American Energy. The E.O.s revoked E.O. 14096 – Revitalizing Our Nation’s Commitment to Environmental Justice for All (April 21, 2023). Subsequently on January 21, 2025, President Trump signed E.O. 14173 – Ending Illegal Discrimination and Restoring Merit-Based Opportunity. This E.O. revoked E.O. 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). On February 25, 2025, the Council on Environmental Quality (CEQ) published an Interim Final Rule removing the CEQ’s National Environmental Policy Act (NEPA) implementing regulations, effective April 11, 2025 (90 Fed. Reg. 10610). As a result of these actions, all federal environmental justice requirements are revoked and no longer apply to the federal environmental review process. FHWA, FTA and FRA’s Joint NEPA regulations (23 CFR part 771) and the agencies Interim Final Guidance on “Section 139 Environmental Review Process: Efficient Environmental Reviews for Project Decisionmaking and One Federal Decision” (12/17/2024) do not require an environmental justice analysis. Accordingly, no analysis of environmental justice is included in this EA. Any purported environmental justice impacts *will not be* considered in the federal decision. Social, economic, and community impacts will continue to be disclosed where applicable in accordance with 23 CFR 771.

The population of the Study Area is completely contained within Census Tract 407.08 in St. Tammany Parish and within Census Tract 304 in Hancock County. **Table 3-1** shows the change in population from 2010 to 2016⁵ for St. Tammany Parish and Hancock County and the change in population for Census Tract 407.08 (St. Tammany) and Census Tract 304 (Hancock County). **Table 3-2** shows how the number of house units has changed between 2010 and 2016.

⁵ 2016 data comes from American Community Survey 5-Year Estimates for 2018, which spans 2014-2018.

Table 3- 1 Population Change within the Study Area

Geographic Area	Total Population		
	2010	2016	Percent Change
St. Tammany Parish	233,740	252,093	7%
Census Tract 407.08	6,044	5,546	-9%
Hancock County	43,929	46,653	6%
Census Tract 304	2,313	2,149	-8%

Source: U.S. Census Bureau 2010 SF1; 2018 ACS Five-Year Estimates S1903

Table 3- 2 Changes in the Number of Housing Units within the Study Area

Geographic Area	Housing Units								
	All Housing Units			Occupied			Vacant		
	2010	2016	Percent Change	2010	2016	Percent Change	2010	2016	Percent Change
St. Tammany Parish	95,412	101,887	6%	87,521	91,975	5%	7,891	9,912	20%
Census Tract 407.08	2,246	2,289	2%	2,116	2,142	1%	130	147	12%
Hancock County	21,840	24,818	12%	17,380	19,519	11%	4,460	5,299	16%
Census Tract 304	1,189	1,133	-5%	935	863	-8%	254	270	6%

Source: U.S. Census Bureau 2010 SF1; 2018 ACS Five-Year Estimates B25002

There are no community facilities within the Study Area (i.e. hospitals, churches, civic centers, nursing homes). A demographic profile of the U.S. Census units that contain the Study Area was compiled. **Table 3-3** compares the race and ethnicity composition of the population between St. Tammany Parish, Census Tract 407.08, Hancock County, and Census Tract 304.

Table 3- 3 Race and Ethnicity within the Study Area

Geographic Area	Race and Ethnicity %						
	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race or Two or More Races	Hispanic or Latino (of any race)
St. Tammany Parish	83.0%	11.8%	0.6%	1.6%	0.0%	3.0%	5.5%
Census Tract 407.08	88.6%	8.6%	0.0%	1.6%	0.0%	1.2%	5.9%
Hancock County	87.3%	8.1%	0.6%	0.7%	0.0%	3.4%	3.8%
Census Tract 304	93.2%	3.9%	0.0%	0.0%	0.0%	2.9%	0.9%

Source: U.S. Census Bureau 2010 SF1; 2018 ACS Five-Year Estimates B02001

Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and FHWA implementing regulations (23 CFR Part 200) prohibit discrimination on the basis of race, color, or national origin in programs or activities receiving Federal financial assistance. The service benefits of the project would be available to all affected individuals along the corridor regardless of race or ethnic origins, and the public involvement program has been implemented to inform all affected parties, establish a dialogue, and develop workable and reasonable design solutions.

3.2.2 RIGHT OF WAY ACQUISITION AND RELOCATIONS

There would be no rights-of-way (ROW) acquisitions required for the replacement of the West, West Middle, Middle Middle, and East Middle Pearl River bridges. The East Pearl River Bridge replacement would require ROW acquisition.

For the East Pearl River Bridge replacement alternatives, **Table 3-4** below depicts the cost estimates, acreage, and number of anticipated relocations for the alternatives. This information is subject to change as more details become available during design and property appraisals.

Although the Moveable-Span Bridge Alternative for the East Pearl River Bridge would not result in displacements, four properties on existing US 90 in Pearlington may be impacted by the loss of direct access to existing US 90.

The MDOT Real Estate section was consulted regarding modification of parking historically granted within existing ROW and advised that continued parking will be addressed with affected owners adjacent to existing ROW to the extent that said use does not interfere with public safety or use of existing ROW.

Table 3- 4 Summary of ROW Acquisition and Relocations by Alternatives for the East Pearl River Bridge

Movable Bridge Alternative				
Project Acreage	Number of Parcels for Appraisals	Total Estimated Cost	Number of Residential Relocations	Number of Commercial/Landlord Relocations
0.8120	8.0	\$973,718	0	0
Long Span Alternative, Loop Road Option				
Project Acreage	Number of Parcels for Appraisals	Total Estimated Cost	Number of Residential Relocations	Number of Commercial/Landlord Relocations
2.9972	31.0	\$1,701,160	0	0
Long Span Alternative, Gooseneck Frontage Road Option				
Project Acreage	Number of Parcels for Appraisals	Total Estimated Cost	Number of Residential Relocations	Number of Commercial/Landlord Relocations
3.8101	27.0	\$2,341,422	0	4*
Commercial Relocations:				
Parcel 54 - Mississippi Title Loans Office Building				
Parcel 55 - Office Warehouse Building				
Anticipated duration for completed relocation to be 90 days.				
* It is unknown if occupancy is owner or tenant for the two commercial businesses within required ROW. Tenant occupancy is utilized in the estimate so two relocations assumed for each (owner & tenant).				

3.2.3 COMMITMENTS AND MITIGATION MEASURES

The ROW acquisitions would be mitigated through acquisition and relocation assistance that will be provided in accordance to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Also, Louisiana law provides additional direction:

Louisiana Constitution Article 1, §4 states the requirement for just compensation: “Property shall not be taken or damaged by the state . . . except for public purposes and with just compensation paid to the owner or into court for his benefit.” Also, for every expropriation or action to acquire property, the owner shall be compensated to the full extent of his loss pursuant to the provisions of Article 1, §4: Except as otherwise provided in this Constitution, the full extent of law shall include, but not be limited to, the appraised value of the property and all costs of relocation, inconvenience, and any other damages actually incurred by the owner.

3.3 Air Quality

The U.S. Environmental Protection Agency (USEPA) Regions 4 and 6, Louisiana Department of Environmental Quality (LDEQ), and Mississippi Department of Environmental Quality (MDEQ) regulate air quality in Louisiana and Mississippi. The Clean Air Act (42 U.S.C. 7401-7671q) (CAA), as amended, gives USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR §50) that set acceptable concentration levels for six criteria pollutants: particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O₃), and lead. Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health effects. Each state has the authority to adopt standards stricter than those established under the Federal program; however, Louisiana and Mississippi accept the Federal standards.

Areas are designated by the USEPA as “attainment”, “nonattainment”, “maintenance”, or “unclassified” with respect to the NAAQS. Regions in compliance with the standards are designated as “attainment” areas. In areas where the applicable NAAQS are not being met, a “nonattainment” status is designated. Areas that have been classified as “nonattainment” but are now in compliance can be redesignated “maintenance” status if the state completes an air quality planning process for the area. Areas for which no monitoring data is available are designated as “unclassified,” and are by default considered to be in attainment of the NAAQS.

Transportation conformity is a process required of Metropolitan Planning Organizations (MPOs) pursuant to the CAA Amendments of 1990. These Amendments require that transportation plans, programs, and projects in nonattainment or maintenance areas that are funded or approved by the FHWA be in conformity with the State Implementation Plan (SIP), which represents the State’s plan to either achieve or maintain the NAAQS for a particular pollutant. The proposed project is not located in a nonattainment or maintenance area, so conformity does not apply to this project.

3.3.1 CARBON MONOXIDE (CO)

Transportation projects have the potential to affect air quality by changing the number of vehicles at specific locations. Tailpipe emissions from vehicles could result in increases in ambient concentrations of CO near the

project. Both Louisiana and Mississippi are in attainment statewide for CO. The Replacement Alternatives' CO concentrations are not anticipated to cause or contribute to an exceedance of the CO NAAQS.

3.3.2 MOBILE SOURCE AIR TOXICS (MSATS)

On December 6, 2012, FHWA released "Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA" (FHWA 2012). The purpose of this guidance is to advise on when and how to analyze MSATs in the NEPA process for highways. This guidance is interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance.

A basic analysis of the potential MSAT emissions impacts of this project was completed in accordance with this Interim Guidance. Additional background information regarding MSATs can be found in the supplemental technical reports titled *Traffic Noise and Air Quality Analysis Technical Report, St. Tammany Parish, Louisiana* which is included as **Appendix D**.

The qualitative assessment presented below has been prepared in accordance with FHWA's Interim Guidance derived in part from a study conducted by the FHWA entitled "A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives." (Clagget 2006).

FHWA's Interim Guidance groups projects into the following categories:

- Exempt Projects or Projects with no Meaningful Potential MSAT Effects;
- Projects with Low Potential MSAT Effects; and,
- Projects with Higher Potential MSAT Effects.

Examples of projects with low potential MSAT emissions include minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street, or where design year traffic projections are less than 140,000 to 150,000 annual average daily traffic (AADT). The Replacement Alternatives include the improvement of five US 90 bridges and meet the definition of a project with low potential MSAT effects as the highest design year AADT on US 90 is substantially lower than the FHWA criterion.

For the Replacement Alternatives, the amount of MSATs emitted would be proportional to the vehicle miles traveled (VMT) assuming that other variables such as fleet mix are the same for each alternative. The estimated VMT for the Replacement Alternatives is essentially the same as the VMT for the No Action Alternative. Therefore, it is expected that there would be no appreciable difference in overall MSAT emissions between the No Action and Replacement Alternatives.

Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of USEPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent from 2000 to 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the Study Area are likely to be lower in the future in nearly all cases.

When a highway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions for the Replacement Alternatives could be higher relative to the No Action Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions).

However, on a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

3.3.3 COMMITMENTS AND MITIGATION MEASURES

Based on the traffic analysis and the current attainment status, no adverse air quality impacts are expected, either directly or indirectly, due to the implementation of the project. All five bridges are located in an area that has been designated by the USEPA as in attainment for all criteria pollutants. No exceedances of the NAAQS are expected under any of the Replacement Alternatives. Additionally, there would be no appreciable difference in overall MSAT emissions between the No Action and Replacement Alternatives. As a result, no mitigation measures are required.

3.4 Noise

Noise studies for the Louisiana and Mississippi sections of the project were conducted in accordance with the FHWA noise regulation, *Procedures for Abatement of Highway Traffic and Construction Noise*, 23 CFR 772, the LADOTD Highway Traffic Noise Policy, and the MDOT Highway Traffic Noise Policy. Two separate technical reports titled *Traffic Noise and Air Quality Analysis Technical Report, St. Tammany Parish, Louisiana* (2017) and *Traffic Noise Analysis Technical Report, Hancock County, Mississippi* (2019) were prepared by Bowlby and Associates, Inc. as a supplement to this document and are included as **Appendix D**. Since the preferred alternative changed the sound profile for some receivers, additional analysis was performed by LADOTD; and this noise addendum is included in Appendix D.

The noise studies identified the noise-sensitive land uses that might be impacted by the project. The land uses in Louisiana include four (4) residences (Activity Category B), four public boat launch areas (Activity Category C) and several commercial land uses with exterior use areas (Activity Category E). The land uses in Mississippi include twenty-five (25) residences.

Per the FHWA noise regulation and the LADOTD and MDOT noise policies, impact is determined by comparing future worst hour noise levels with the project to thresholds established by FHWA and to existing noise levels. The project would impact Activity Category B and C land uses if future worst hour noise levels are 66 dBA or higher, or if an increase of 10 dBA or more is predicted over existing noise levels in Louisiana, or if an increase of 15 dBA or more is predicted over existing noise levels in Mississippi.

The project would impact Activity Category E land uses if future worst hour noise levels are 71 dBA or higher, or if an increase of 10 dBA or more is predicted over existing noise levels in Louisiana, or if an increase of 15 dBA or more is predicted over existing noise levels in Mississippi.

The rehabilitation alternatives were not evaluated since they are Type III projects per the FHWA noise regulation and do not require a noise study. The noise effects of Type III projects are expected to be negligible.

Future Predicted Noise Levels and Impacts

The FHWA Traffic Noise Model (TNM 2.5) computer program was used to calculate worst hour noise levels at the noise-sensitive land uses (receptors) for existing conditions and for the future Replacement and No Action Alternatives. Receptors were modeled using TNM "receiver" points at areas of frequent human. For single-

family residences, that area could be the front or back yard, depending on orientation of the residence relative to US 90.

The models include traffic data for the project developed by the LADOTD. For the portion of the project within Louisiana, AADT projections were provided for US 90 for the Base Year 2019 and Future Year 2039 (Base Year 2019 traffic was adjusted from “Existing” Year 2016 volumes). For the portion of the project within Mississippi, Existing Year 2017 and Design Year 2044 “base volumes” were provided. **Table 3-5** summarizes the predicted noise levels and impacts. The results are discussed in the following sections.

The predicted exterior worst hour noise levels for the Year 2019 (Louisiana) and Year 2017 (Mississippi) ranged from 41 to 62 dBA over all study areas. For the West Pearl River and Middle-Middle Pearl River Bridges, the TNM models were used to predict worst-hour noise levels for the No Action Year 2039 condition at the noise-sensitive land uses in the project area. The predicted noise level range is 45 to 62 dBA for the No Action Alternative. The predicted worst hour noise levels for the Replacement Alternatives ranged from 46 to 61 dBA for the West Pearl River and Middle-Middle Pearl River Bridges. None of the Category B residences or Activity Category C or E land uses are predicted to be impacted by the Replacement Alternatives.

For the East Pearl River Bridge, the TNM model for the Existing case was modified to predict worst-hour noise levels for the No Action Year 2039 (Louisiana) and No Action Year 2044 (Mississippi) conditions at the noise-sensitive land uses in the Study Area. Predicted worst hour noise levels for the No Action Year 2039 condition ranged from 51 to 54 dBA for noise-sensitive land uses within Louisiana. Predicted worst hour noise levels for the No Action Year 2044 case ranged from 42 to 61 dBA for noise-sensitive land uses within Mississippi. None of the Category B residences are impacted under the No Action Alternatives. Additionally, no Activity Category C or E impacts are predicted. The predicted worst hour noise levels for the residence and boat launch area in Louisiana for the Replacement Alternatives ranged from 48 to 56 dBA. The predicted worst hour noise levels for the noise-sensitive receptors in Mississippi for the Replacement Alternatives ranged from 42 to 64 dBA.

Changes from existing noise levels for the receptors in Louisiana for the Replacement Alternatives range from a 5 dB decrease to a 7 dB increase. Changes from existing noise levels for the receptors in Mississippi for the Replacement Alternatives range from a 9 dB decrease to a 10 dB increase. None of the Category B residences or Activity Category C or E land uses are predicted to be impacted.

Table 3- 5 Noise Impact Summary

Prediction Case	Range of Predicted $L_{eq}(h)$ (dBA)	Maximum Increase over Existing $L_{eq}(h)$ (dB)*	Impacts
Louisiana (Summary for all 5 Bridges)			
Replacement Alternative (2039) – All five bridges	46 - 61	7	0
No Action Alternative (2039)	45 - 62	1	0
Mississippi (Summary for East Pearl River Bridge Only)			
Year (2017)	41 – 59	N/A	0

Long Span Alternative, Loop Road Option (2044)	47 - 60	10	0
Long Span Alternative, Gooseneck Frontage Road Option (2044)	42 - 56	2	0
Movable Span Bridge Alternative (2044)	44 - 64	7	0
No Action Alternative (2044)	42 - 61	2	0

Noise Abatement Evaluation

In accordance with criteria in the LADOTD and MDOT noise policies, noise abatement will be considered when traffic noise impacts are identified. Since impacts were not identified, abatement was not considered. Noise barriers are not proposed for this project.

Information for Local Officials

LADOTD encourages local communities and developers to practice noise compatibility planning to avoid future noise impacts. Guidance documents on noise compatible land use planning are available from FHWA.

Table 3-6 presents future predicted noise levels for areas along US 90 within the project limits where vacant and possibly developable lands exist. The results indicate that exterior areas of Activity Category B and C uses would be impacted within a distance of approximately 25 feet from edge of pavement of the nearest travel lane of US 90. This information is being included to make local officials and planners aware of anticipated highway noise levels so that future development will be compatible with these levels.

Table 3- 6 Design Year Predicted Noise Levels for Undeveloped Areas

Distance*	L_{Aeq} (1h), dBA
25 feet	66
50 feet	64
75 feet	63
100 feet	61
125 feet	59
150 feet	57

* Perpendicular distance to the centerline of the nearest travel lane of US 90.

3.5 Water Quality

Surface Water Resources

The Study Area lies within the Lower Pearl Watershed, hydrologic unit code 0318004 (USEPA 2015). The Pearl River Basin is found in southeastern Louisiana and central and southwestern Mississippi and covers over 8,700 square miles (MDEQ 2007). The Basin drains all or parts of 24 counties in Mississippi and three parishes in Louisiana. Over 16,000 miles of streams and rivers flow through this basin. The West Pearl, West Middle, Middle Middle, East Middle, East Pearl, and Cowan Bayou are the primary waterways within the Study Area. Several canals are interspersed throughout the Basin for navigation use.

Waters from the West Pearl River and the West Middle Pearl River flow into The Rigolets and Little Lake, respectively, thence into Lake Borgne. Waters from the Middle Middle and East Middle Pearl Rivers flow into

the East Pearl River, approximately 2.5 miles south of the East Pearl River Bridge. The East Pearl River empties into Lake Borgne, where the dredged Pearl River Channel meets the Gulf Intracoastal Waterway. The discharge flows eastward past Grand Island through St. Joe Pass and into the Mississippi Sound. Cowan Bayou empties into Mulatto Bayou which flows into the East Pearl River. All discharges eventually reach the Gulf of America. These rivers flow south/southeast, except during times of high tide and/or a hurricane event when waters may be pushed upstream and into the surrounding marsh.

Two water quality analysis reports are prepared by the LDEQ and the MDEQ in order to meet the requirements contained in the Clean Water Act (CWA) of 1977. These reports include the 305(b) Water Quality Assessment Report and the 303(d) List of Impaired Waterbodies. The primary purpose of these reports is to assess the water quality of the state's streams, lakes, and estuaries. These reports were used to broadly assess existing surface water quality within the Study Area.

LDEQ and MDEQ water quality standards define eight designated uses for surface water that include primary contact recreation, secondary contact recreation, fish and wildlife propagation, drinking water supply, shellfish propagation, agriculture, outstanding natural resource, and limited aquatic and wildlife use. Each water body is provided a numeric rank for each of the eight designated uses and then evaluated as fully supported, not supported, or insufficient data. Support for each designated use is defined by its most severely impaired parameter when more than one parameter defines a designated use.

West Pearl River

According to the 2018 Louisiana Water Quality Inventory: Integrated Report (305(b)/303(d)), water use designations for this segment of the West Pearl (segment number LA090202-00) fully supports primary contact recreation, secondary contact recreation, and outstanding natural resource. Areas suitable for the propagation of fish and wildlife are not supported. Suspected causes of water quality impairment in this segment of the West Pearl River include the presence of mercury. Suspected sources of impairment may include atmospheric deposition – toxins (LDEQ 2018).

This segment of the West Pearl is not listed on the Section 303(d) List of Impaired Water Bodies (LDEQ 2018).

West Middle and Middle Middle Pearl Rivers

According to the 2018 Louisiana Water Quality Inventory: Integrated Report (305(b)/303(d)), water use designations for this segment of the West Middle and Middle Middle Pearl Rivers (segment number LA090207-00) fully supports primary contact recreation and secondary contact recreation. Areas suitable for the propagation of fish and wildlife are not supported. Suspected causes of water quality impairment in this segment of the West Middle and Middle Middle Pearl Rivers include the presence of mercury, dissolved oxygen, and total dissolved solids. Suspected sources of impairment may include natural sources, atmospheric deposition – toxins, wildlife other than waterfowl, and unknown sources (LDEQ 2018).

This segment of the West Middle and Middle Middle Pearl Rivers is listed on the Section 303(d) List of Impaired Water Bodies for total dissolved solids (LDEQ 2018). The suspected sources of impairment are natural sources.

East Middle Pearl River

The East Middle Pearl River is not included on either the 305(b) Water Quality Assessment Report or the Section 303(d) List of Impaired Water Bodies (LDEQ 2018).

East Pearl River

According to the 2018 Louisiana Water Quality Inventory: Integrated Report (305(b)/303(d)), water use designations for this segment of the East Pearl River (segment numbers LA090101-00, LA090103-00, and LA090107-00) fully supports primary contact recreation and secondary contact recreation. Areas suitable for the propagation of fish and wildlife are not supported. Suspected causes of water quality impairment in these segments of the East Pearl River include the presence of mercury, sulfates, and dissolved oxygen. Suspected sources of impairment may include atmospheric deposition – toxins, industrial point source discharge, natural sources, sources outside state jurisdiction or borders, and unknown sources (LDEQ 2018).

These segments of the East Pearl River are listed on the Section 303(d) List of Impaired Water Bodies for sulfates and dissolved oxygen. The suspected sources of impairment are industrial point source discharge, sources outside state jurisdiction or borders, and natural sources.

Ground Water Resources

The Southern Hills Aquifer System is the major freshwater aquifer beneath the Study Area. The Southern Hills Aquifer System (aquifer system) is a renewable groundwater resource that extends from Vicksburg, Mississippi, south to Baton Rouge, west through West Baton Rouge and Pointe Coupee parishes, thence east through the eight Florida Parishes to the Pearl River. The aquifer system supplies southeast Louisiana and southwest Mississippi with a large quantity of water that is used for domestic, agricultural, light business, and industrial purposes.

The Sole Source Aquifer Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974. Designation of an aquifer as a sole source aquifer provides the USEPA with the authority to review federal financially assisted projects planned for the area to determine their potential for contaminating the aquifer. The Southern Hills Aquifer System is designated as a sole source aquifer (USEPA 2016).

Surface Water Resources

The rivers and associated wetlands are the water resources in this portion of the Study Area that could experience water quality impacts. The Replacement Alternatives' potential impacts to water quality would be associated with constructing, operating, and maintaining a new bridge over the river and associated roadway construction.

Bridge construction at the river's edge makes it possible for soil to erode into the river. Over time, increased amounts of soil entering the river can damage the river ecosystem by lowering oxygen levels and covering food sources and fish spawning areas. Soil and rock washed away around bridge piers can change the river bottom, affecting those species that use the bottom for food or habitat. Because construction projects disturb large areas of land, thus increasing the possibility of erosion, they have potential to cause environmental harm. The CWA requires construction sites to put controls in place to prevent pollution from being discharged with storm water into nearby waterways. Without on-site pollution controls, sediment-laden runoff from construction

sites could flow directly to the nearest waterway and possibly degrade water quality. In addition, storm water could pick up other pollutants such as concrete washout, paint, used oil, pesticides, solvents, or other debris and the polluted runoff could harm or kill fish and wildlife, degrade aquatic habitat, and affect drinking water quality.

The LDEQ regulates the control of runoff from land disturbance and issues a permit for the work to LADOTD, although the contractor is responsible for complying with the permit conditions. To protect water quality and reduce impacts during and after construction, LADOTD will comply with LDEQ's storm water regulations, which are intended to prevent soil from leaving the construction site. These regulations require erosion control measures to be put in place when land clearing begins at the project site. In accordance with the National Pollutant Discharge Elimination System (NPDES) requirements of the CWA, LADOTD operates under the provisions of the Louisiana Pollutant Discharge Elimination System (LPDES) Storm Water General Permits. This permit requires using erosion control measures and limits the amount of pollutants that can leave a job site.

LADOTD has developed specific policies for controlling erosion and sediment on job sites. The development of guidelines to address storm water runoff and consequential erosion problems is required as part of Louisiana's overall Storm Water Management Program. Requirements include project specific plans for controlling erosion and sediment loss for which a LPDES Storm Water General Permit is required.

Construction of any of the Replacement Alternatives would require the development and implementation of an erosion and sediment control plan. The erosion and sediment control plan would detail the risk of erosion in different parts of the Study Area and would specify best management practices (BMPs) to be used prior to construction activities and periodic maintenance and inspection procedures during construction. The plan would be designed to reduce suspended solids, turbidity, and downstream sedimentation that may degrade water quality and adversely impact aquatic life. The plan provides for temporary erosion and sediment control measures that will be included within construction contract specifications. The stormwater pollution prevention plan must be submitted and approved by LADOTD prior to the commencement of any construction activity. Erosion and sediment controls may include a combination of ditch checks, silt fence, berms, sediment basins, temporary and permanent seeding, slope drains, etc. All protective practices would be consistent with the LADOTD's soil erosion control procedures.

Preventing water quality impacts on a major bridge project presents some slightly different challenges than a road construction project. Although erosion control during construction of the roadway approaches is important, special attention must be given to work in the river itself. Any project that involves discharge into navigable waters of the U.S. requires a Water Quality Certification from LDEQ that is linked to the U.S. Army Corps of Engineers (USACE) issuance of a CWA 404 permit. This project will require obtaining a water quality certification to ensure that the proposed activities do not exceed state water quality standards. All construction activities will comply with the existing rules and regulations of governmental agencies having jurisdiction over streams and water supplies in the area.

Operating and maintaining a highway can adversely affect water quality, vegetation, and associated aquatic life if storm water runoff washes chemical pollutants from the roadway surface to the river during normal roadway operation. These pollutants come from motor vehicles as well as roadway chemicals (i.e., herbicides and deicing salts). Pollutants from vehicles can include grease and petroleum from lubricant spills or leaks, antifreeze and hydraulic fluid, and zinc, which is used in tires and motor oil. The water quality effects from

such pollutants would be greatest at locations where storm water runoff directly enters waterways. Generally, the amount of pollutants would be low volume and would have only a localized impact, at most. Based on the amount of traffic traveling over the bridge daily, it is not anticipated that pollutants in highway runoff would be present in amounts high enough to harm water quality. LADOTD will design ditches and storm water runoff areas so that storm water or road surface pollutants that run off the highway have limited effects on water quality.

Groundwater Resources

The No Action Alternative would have no effect on groundwater resources.

The Replacement Alternatives would have no effect on groundwater resources. According to the USEPA's Solicitation of Views (SOV) response dated February 5, 2014, "Based on the information provided for the project, we have determined that the project, as proposed, should not have an adverse effect on the quality of ground water underlying the project site." Copies of the USEPA correspondence are in **Appendix E**.

3.5.1 COMMITMENTS AND MITIGATION MEASURES

Commitments and mitigation measures for water quality are outlined in **Section 3.21** Construction Impacts.

3.6 Wetlands and Waters of the U. S.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to the ebb and flow of the tide, and all interstate waters including interstate wetlands. Waters of the United States are further defined as all other waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas.

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987). Jurisdictional boundaries for these water resources are defined in the field as the ordinary high water mark which is that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (USACE 1987).

A routine delineation with on-site inspections was conducted between June 6 and November 4, 2016, as well as a follow-up site visit February 13, 2025, on the entire Study Area. Current aerial photographs, U.S. Geological Survey (USGS) topographic maps, and National Wetland Inventory (NWI) maps were studied before and during the survey in order to help identify potential wetlands and other waters of the U.S.

The Study Area was delineated using the 1987 Wetland Delineation Manual (USACE 1987) and the Atlantic and Gulf Coastal Plain Region Regional Supplement (USACE 2010). The limits of the potential wetlands and waters of the U.S. were mapped using a Trimble GeoXH® Global Positioning System (GPS) device and the data was input into a geographic information system (GIS) program for analysis.

Plant communities and dominant plant species were identified to determine the presence of hydrophytic vegetation. The National Wetland Plant List (USACE 2016) was used to determine the indicator status of dominant plant species. Soils information was obtained from the U.S. Department of Agriculture (USDA) web soil survey (USDA 2016). Soil profiles were examined to determine if hydric soil indicators were present. Wetland hydrology was determined by on-site visual observation of geomorphic and hydrologic conditions. Additionally, soil pits were dug to a minimum depth of 20 inches to determine if hydrology indicators were present. A separate technical report titled Wetland Findings Report, U.S. 90 Pearl River Bridges, St. Tammany Parish, Louisiana and Hancock County, Mississippi, and Addendum Wetland Findings were prepared as a supplement to this document and is included as **Appendix F**.

A total of 103.28 acres of wetlands were delineated within the entire 238.8-acre Study Area. Wetlands are classified as either palustrine or estuarine, depending on location. Palustrine wetlands included palustrine forested, scrub-shrub, emergent, and aquatic bottom (ponds). Estuarine wetlands are classified as either aquatic bottom (ponds), emergent, or scrub-shrub. A total of 18.43 acres of Waters of the U.S. were delineated within the Study Area. These include the main channels of the West Pearl, West Middle Pearl, Middle Middle Pearl, East Middle Pearl, East Pearl, and Cowan Bayou. The West Pearl River and West Middle Pearl River are classified as riverine, and the Middle Middle Pearl, East Middle Pearl, East Pearl, and Cowan Bayou are classified as estuarine. All are perennial. A total of 117.07 acres of uplands were also delineated within the Study Area. **Table 3-7** provides a summary of the delineated features. All potential jurisdictional features should be considered preliminary prior to confirmation by the USACE.

Table 3- 7 Wetland and Waters of the US Summary by Type

Wetland Type	Acreage Delineated within the Study Area
Palustrine Forested	26.04
Palustrine Scrub-Shrub	9.28
Palustrine Emergent	3.94
Palustrine Aquatic Bottom	0.59
Palustrine Unconsolidated Bottom	0.29
Estuarine Intertidal Scrub-Shrub	15.96
Estuarine Intertidal Emergent	41.56
Estuarine Intertidal Aquatic Bottom	5.62
Wetland Total	103.28
Waters of the U.S. Type	
Riverine Lower Perennial Unconsolidated Bottom	4.56
Estuarine Intertidal Streambed	13.87
Waters of the U.S. Total	18.43
Total Acreage of Uplands in Study Area	117.07
Total Acreage in Study Area	238.78

On February 13, 2025, LADOTD biologists visited the project site to walk the corridor to determine if there were any jurisdictional Waters of the U.S. present that were not identified in the initial Wetland Report completed by Neel-Schaffer, Inc., dated April 2020, and summarized in Table 3-10 above. Based on the findings during the follow-up site visit, there were no changes to the identified habitats that are proposed to be impacted by the

project. It is the professional opinion of LADOTD biologists that habitat conditions characterized in the April 2020 report remain at the site, and still reflect the current conditions today. An addendum report was prepared and is included in **Appendix F**.

The No Action Alternative will not impact wetlands.

3.6.1 WEST PEARL RIVER BRIDGE ALTERNATIVES

For the West Pearl, impacts were calculated utilizing the limits of construction and/or any new required ROW. Long-term, minor, adverse impacts to wetlands and waters of the U.S. would be expected from implementation of the Replacement Alternatives. A summary of the impacts is listed in **Table 3-8**.

Table 3- 8 West Pearl River Bridge – Wetland Impacts

West Pearl River Bridge	Cowardian Classification	Total Impacts (Acres)
	R2UB (West Pearl River)	0.78
	PFO	1.17
	PEM	0.14
Totals		2.09

Legend:

PFO – Palustrine Forested
PEM – Palustrine Emergent

R2UB – Riverine Lower Perennial Unconsolidated Bottom

3.6.2 WEST MIDDLE PEARL RIVER AND MIDDLE MIDDLE PEARL RIVER BRIDGES ALTERNATIVES

For the West Middle and Middle Middle, impacts were calculated utilizing the limits of construction. Replacement Alternatives are entirely within the existing ROW of US 90. Long-term, minor, adverse impacts to wetlands and waters of the U.S. would be expected from implementation of the Replacement Alternatives. A summary of the impacts is listed in **Table 3-9**.

Table 3- 9 West Middle & Middle Middle Pearl River Bridges - Wetland Impacts

West Middle and Middle Middle Pearl River Bridge	Cowardian Classification	Total Impacts (Acres)
	R2UB (West Middle Pearl)	0.86
	E2SB (Middle Pearl River)	0.92
	E2SS	0.48
	E2EM	0.97
	E2AB (pond)	0.01
	PFO	0.13
	PSS	0.14
	PEM	0.31
Totals		3.82

Legend:

PFO – Palustrine Forested E2AB – Estuarine Intertidal Aquatic Bottom PAB – Palustrine Aquatic Bottom
PEM – Palustrine Emergent E2SB – Estuarine Intertidal Streambed R2UB – Riverine Lower Perennial Unconsolidated
PSS – Palustrine Scrub Shrub E2EM – Estuarine Intertidal Emergent Bottom E2SS – Estuarine Intertidal Scrub-Shrub

3.6.3 EAST MIDDLE PEARL RIVER BRIDGE ALTERNATIVES

For the East Middle, impacts were calculated utilizing the limits of construction. Replacement Alternatives are entirely within the existing ROW of US 90. Long-term, minor, adverse impacts to wetlands and waters of the U.S. would be expected from implementation of the Replacement Alternatives. A summary of the impacts is listed in **Table 3-10**.

Table 3- 10 East Middle Pearl River Bridge - Wetland Impacts

East Middle Pearl River Bridge	Cowardin Classification	Total Impacts (Acres)
	E2SB (East Middle Pearl)	1.03
	E2EM	0.59
	E2SS	0.42
Totals		2.04

Legend:

E2SB – Estuarine Intertidal Streambed E2EM – Estuarine Intertidal Emergent E2SS – Estuarine Intertidal Scrub-Shrub

3.6.4 EAST PEARL RIVER BRIDGE ALTERNATIVES

For the East Pearl, impacts were calculated utilizing the limits of construction and/or any new required ROW. Both Replacement Alternatives would require additional ROW. Long-term, minor, adverse impacts to wetlands and waters of the U.S. would be expected from implementation of the Replacement Alternatives. A summary of the impacts within each alternative is listed in **Table 3-11**.

Table 3- 11 East Pearl River Bridge Alternatives - Wetland Impacts

East Pearl River Bridge	Cowardin Classification	Total Impacts (Acres)
	E2SB (East Pearl River)	2.28
	E2SS	0.69
	E2EM	2.01
	PFO	0.19
Totals		5.17
Long Span Alternative – Gooseneck Frontage Road Option		
	E2SB (East Pearl River)	2.28
	E2SS	0.69
	E2EM	2.79
Totals		5.76
Movable Span Alternatives		
	E2SB (East Pearl River)	2.28
	E2SS	0.81
	E2EM	2.08
Totals		5.17

Legend:

PFO – Palustrine Forested

E2EM – Estuarine Intertidal Emergent

E2SB – Estuarine Intertidal Streambed

E2SS – Estuarine Intertidal Scrub-Shrub

3.6.5 COMMITMENTS AND MITIGATION MEASURES

USACE permits and water quality certifications would be required for unavoidable impacts to jurisdictional wetlands and other waters. Specifically, any dredge or fill activity that would impact jurisdictional wetlands, directly or indirectly, would require a Section 404 permit through Section 404 of the CWA.

The USACE Vicksburg and New Orleans Districts would be contacted to acquire the necessary permits and mitigation. Section 404(b)(1) guidelines require compensatory mitigation to offset waters and wetland impacts. Impacts would be authorized under a Section 404 permit issued by the USACE which would require compensatory mitigation as a permit condition. Mitigation credits would be obtained from a USACE Vicksburg/New Orleans District approved mitigation bank.

The USACE also administers Section 10 of the *River and Harbors Appropriations Act of 1899*, which controls construction activities in navigable waters of the U.S. The Act would apply to the navigation channels of the West, West Middle, Middle Middle, East Middle, and East Pearl Rivers. Any work in these rivers would trigger Section 10, which generally allows only the absolute minimum of temporary obstruction to the navigable channel and requires that there be no permanent impacts to the channel. Construction activities in these five rivers would require a Section 10 permit.

All Alternatives at each river crossing would require Section 404, Section 10, and USCG bridge permits.

3.7 Floodplains

EO 11988, "Floodplain Management" was enacted in order to set guidelines to avoid the long and short-term adverse effects associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Floodplains are, in general, those lands most subject to recurring floods, situated adjacent to rivers and streams, and coastal areas. As a topographic category, a floodplain is quite flat and lies adjacent to the stream or river. Floods are usually described in terms of their statistical frequency. A "100-year flood" or "100-year floodplain" describes an event or an area subject to a percent probability of a certain size flood occurring in any given year.

The floodplain status for the Study Area was determined by locating the areas on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, Community Panel No. 2252050575D and 2252050600D, effective April 2, 1991 and Community Panel No. 28045C04001D, effective October 16, 2009. The entire Study Area is in the 100-year floodplain, and storm-related flooding from tidal surge is common. The Study Area is not protected by levees or other flood protection structures.

The No Action Alternative would result in no impact to the FEMA designated floodplain.

3.7.1 WEST PEARL, WEST MIDDLE, MIDDLE MIDDLE, & EAST MIDDLE PEARL RIVER BRIDGE ALTERNATIVES

The fixed span replacement alternatives for the West Pearl, West Middle, Middle Middle, and East Middle Pearl River bridges would result in long-term, minor, adverse impacts to the FEMA designated 100-year floodplain. The replacement alternatives locate support piers for the new bridges within the Pearl River floodplain. The fixed span replacements on existing alignment would occupy the same acreage of the 100-year floodplain as

the existing bridges. In accordance with DOTD's 2011 Hydraulics Manual, Section 11.5.2 the bridges would provide one foot of freeboard for the lowest part of the structures above the design water surface elevation.

3.7.2 EAST PEARL RIVER BRIDGE ALTERNATIVES

The Replacement Alternatives would result in long-term, minor, adverse impacts to the FEMA designated 100-year floodplain. All of the Replacement Alternatives locate support piers for the new bridge structure within the Pearl River floodplain and segments of at-grade roadway would be realigned within the floodplain. The Long Span Alternative, Loop Road Option would affect an estimated 27.8 acres of the 100-year floodplain; the Long Span Alternative, Gooseneck Frontage Road Option would affect an estimated 28.3 acres, and the Movable Span Alternatives would affect an estimated 18.4 acres. The approaches for either Replacement Alternative will rise to a higher elevation than the existing bridge approaches above the floodplain, reducing impacts to a less than significant effect.

3.7.3 COMMITMENTS AND MITIGATION MEASURES

During design of the bridges, DOTD will consider the effects of the project on the 100-year floodplain in its hydraulic analyses. DOTD will coordinate with FHWA and the St. Tammany Parish and Hancock County local Floodplain Administrators prior to final design to determine any water surface elevation impacts of placing fill within the floodplain. Studies will be conducted during final design to determine and refine any water surface elevation impacts.

Final design plans will incorporate the best measures to minimize impacts on the floodplain and ensure that no increase in flood levels occur during construction. It has been determined that the replacement bridges would avoid an adverse effect of the 100-year floodplain by assuring a minimum of a one-foot freeboard of the roadway above flood level as required by DOTD's 2011 Hydraulics Manual, Section 11.5.2. These studies and the measures to minimize impacts on the floodplain are developed in accordance with FHWA regulations, specifically 23 CFR Part 650, Subpart A, which implements EO 11988. There is no practicable alternative to crossing the floodplain.

3.8 Scenic Rivers

In 1970, the Louisiana Legislature created the Louisiana Natural and Scenic Rivers System, a protection initiative to limit impacts to certain Louisiana rivers, streams, and bayous. Louisiana's scenic streams are regulated under the Louisiana Scenic Rivers Act of 1988, which established procedures and provided a mechanism whereby the LDWF can preserve, protect, develop, reclaim and enhance the wilderness qualities, scenic beauties, and ecological regime of rivers and streams or segments thereof included within the Louisiana Natural and Scenic Rivers and Historic and Scenic Rivers System. There are currently 59 designated scenic rivers within the State of Louisiana. The West Pearl River from the state line to its entrance into Lake Borgne is included on the List of Natural and Scenic Rivers of the Louisiana Scenic Rivers Act (RS 56:1856) (LDWF 2019a).

In Mississippi, the Mississippi Scenic Stream Stewardship Act was passed in the 1999 Legislative Session and was signed by the Governor March 1999. This legislation created the Scenic Streams Stewardship Program which began August 9, 1999. The Scenic Streams Stewardship Program was designed to promote voluntary, private conservation efforts along Mississippi's unique and outstanding rivers and streams. The program is managed by the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP). Currently, the public

sections of six streams have been declared eligible for evaluation, none of which are located within or adjacent to the Study Area (MDWFP 2016a).

There are no designated National Wild and Scenic Rivers in the Study area. The West Pearl River has been designated as a scenic river by the State of Louisiana. Because all construction will occur at the location of an existing bridge, only short-term, minor, adverse effects to the river are anticipated as a result of the Replacement Alternatives.

3.8.1 COMMITMENTS AND MITIGATION MEASURES

Because US 90 is an existing road crossing the West Pearl River, there is no feasible way to avoid impacting this river by construction. The Louisiana Scenic Rivers Act requires permits authorizing activities in or affecting rivers that have been designated by the Louisiana Legislature as Natural and Scenic. A Louisiana Natural and Scenic River System Permit will be required for the West Pearl River Bridge, regardless of which alternative is selected. Mitigation, if required, will be determined during the permit process.

3.9 Coastal Zone

Congress enacted the Coastal Zone Management Act (CZMA) (16 U.S.C. 1451 et seq.) to protect the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses (e.g., State and Federal offshore oil and gas development). CZMA provisions help states develop coastal management programs to manage and balance competing uses of the coastal zone.

In Louisiana, the Louisiana Department of Conservation and Energy (LDCE) (formerly Natural Resources (LDNR), Office of Coastal Management is the agency responsible for regulating coastal use and development. The Office of Coastal Management is responsible for the maintenance and protection of the State's coastal wetlands. The main function of the Office of Coastal Management is the regulation of uses in the Louisiana coastal zone, especially those which have a direct and significant impact on coastal waters.

The Mississippi Coastal Program was legislatively mandated in Section 57-15-6 of the Mississippi Code of 1972 and approved by the NOAA under the provisions of the CZMA of 1972. The Mississippi Department of Marine Resources (MDMR) in cooperation with other state agencies is responsible under the Mississippi Coastal Program for managing the coastal resources of the State.

The No Action Alternative would have no effect on the coastal zone.

The Study Area is located within the coastal zone and all of the alternatives will require impacts that constitute regulated activities within coastal wetlands of Louisiana. As a result, a Coastal Use Permit will be required from LDCE, regardless of which alternative is chosen. Because all construction will occur at the location of an existing bridge, only short-term, minor, adverse effects to the Louisiana coastal zone are anticipated.

For the East Pearl River Bridge, all of the alternatives will have impacts that constitute regulated activities within coastal zones of Louisiana and Mississippi. As a result, a Coastal Use Permit will be required from LDCE and MDMR, regardless of which alternative is chosen. Because all construction will occur at the location of an existing bridge, only short-term, minor, adverse effects to the Louisiana and Mississippi coastal zones are anticipated.

3.9.1 COMMITMENTS AND MITIGATION MEASURES

Each bridge would require a Coastal Use Permit. The LDCE and MDMR would be contacted to acquire said permit under the authority of the CZMA. Mitigation, if required, will be determined during the permit process.

3.10 Vegetation

General vegetation communities within the Study Area were determined during the field surveys. This information, along with the current aerial photography, the Louisiana Natural Heritage Program's (LNHP) Natural Communities of Louisiana Classification System (LDWF 2009), and Vegetation Types in Coastal Louisiana in 2013 (Sasser *et. al.* 2014) was used to classify the Study Area into seven general vegetation communities as identified in the tables below. Details can also be found in the Wetland Delineation report in **Appendix F**.

Intermediate Marsh

Intermediate Marsh was located throughout the Study Area, and includes the majority of the wetland areas from a point just east of the West Middle Pearl River to a point just east of Cowan Bayou. This community typically lies between Brackish Marsh and Freshwater Marsh. Intermediate Marsh has an irregular tidal regime, is characterized by very low salinity, and is dominated by narrow-leaved, persistent species. Small ponds are scattered throughout. This marsh type is characterized by a diversity of species, many of which are found in Freshwater Marsh and some of which are found in Brackish Marsh.

Freshwater Marsh

Freshwater Marsh is located from the West Pearl to the West Middle Pearl River. Freshwater Marsh is normally located adjacent to Intermediate Marsh along the northern most extent of the coastal marshes. Small ponds are scattered throughout. Frequency and duration of flooding which are intimately related to micro-topography seem to be the primary factors governing species distributions. Substrate, current flow, salinity, and competition are also important in determining species distribution patterns. Freshwater Marsh has the greatest plant diversity and highest soil organic matter content of any marsh type.

Baldcypress Swamp

Baldcypress Swamp occurs in small isolated areas from the US 190 intersection to the West Middle Pearl River. Baldcypress Swamps are forested, alluvial swamps growing on intermittently exposed soils. The soils are inundated or saturated by surface water or groundwater on a nearly permanent basis throughout the growing season except during periods of extreme drought. There is relatively low floristic diversity.

Scrub/Shrub Swamp

Scrub/Shrub Swamp is scattered throughout the Study Area and can be categorized as a fringe community between the maintained ROW and the emergent marsh or Baldcypress swamp. Scrub/Shrub Swamp is a low, flat wetland dominated by woody vegetation less than 20 feet tall. Soils are very poorly drained, surface water present for extended periods, sometimes drying during late summer or during drought.

Mixed Hardwood-Loblolly Forest

Mixed Hardwood-Loblolly Forests occurs in small isolated areas from the US 190 intersection to the West Middle Pearl River and in and around Pearlington. Mixed Hardwood-Loblolly Forests are found statewide in the uplands and are variable depending on elevation and consequent moisture regime. Loblolly pine comprises 20 percent or more of the overstory in a mixture with a number of hardwood species.

Bottomland Hardwood Forest

One small area of bottomland hardwood forest occurs in Pearlington north of US 90 where the loop option is proposed. This is a forested, alluvial wetland occupying the broad floodplain area that flanks the East Pearl River. Dominant species observed during field surveys include water oak, sweetgum, and hackberry (*Celtis laevigata*).

Maintained

This community consists of maintained road ROW and lawns associated with commercial and residential development. These areas are best described as areas where clearing of the natural vegetation previously occurred and lawn grasses now dominate. These areas have not obtained a climax vegetation state because they are subject to periodic maintenance activities including mowing, leveling, clearing, or applications of herbicides to control plant growth. This community makes up the majority of the Study Area).

Significant Trees

LADOTD policy defines a significant tree as a live oak, red oak, white oak, magnolia, or cypress that is considered aesthetically important, 18" or greater in diameter at breast height (4' to 6' above the ground), and having a form that separates it from the surrounding vegetation or is considered historic. Field screening in Louisiana did not locate any Significant Trees within the limits of construction.

Long-term, minor, adverse impacts would be expected to occur to existing vegetation under the Replacement Alternatives. Habitat loss and disturbance would be minor because of the linear nature of the proposed project, the previously disturbed nature of LADOTD ROW, and the proximity of similar habitat. Long-term localized impacts from construction activities would be expected and would include removal of trees and shrubs accompanied by leveling operations and altering the original topography and soil structure. Project components that would result in direct impacts to vegetation communities include clearing within new ROW.

Much of the Study Area has been previously disturbed (existing ROW) and does not contain historical naturally occurring vegetation communities, with the exception of fringe wetlands on each bank of the River. Acreage impacts to vegetation communities are detailed in **Table 3-12 and Table 3-13**.

Table 3- 12 W. Pearl, W. Middle, Middle Middle, & E. Middle Bridges – Vegetation Communities Impacts

Community	W. Pearl	W. Middle & Middle Middle	E. Middle
	Fixed Span	Fixed Span	Fixed Span
Intermediate Marsh	--	1.0	0.4
Freshwater Marsh	0.1	0.3	--
Baldcypress Swamp	1.2	0.1	--
Scrub/Shrub Swamp	--	0.6	0.6
Mixed Hardwood-Loblolly Forest	0.5	0.1	--
Maintained	15.5	10.0	4.5

Totals	17.3	12.1	5.5
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Table 3- 13 East Pearl River Bridge Alternatives - Vegetation Communities Impact

Community	Alternatives		
	Long Span – Loop Option	Long Span – Gooseneck Option	Movable Span
Intermediate Marsh	2.0	2.8	2.1
Freshwater Marsh	--	--	--
Baldcypress Swamp	--	--	--
Scrub/Shrub Swamp	0.7	0.7	0.8
Mixed Hardwood-Loblolly Forest	1.6	1.1	1.2
Bottomland Hardwood Forest	0.2	--	--
Maintained	21.1	21.5	12.0
Totals	25.6	26.1	16.1

3.10.1 COMMITMENTS AND MITIGATION MEASURES

None required.

3.11 Wildlife and Fish

The healthy, undisturbed floodplains of the Pearl River Basin and the Pearl River WMA support a high diversity of wildlife, and coastal marshes contribute to productive fisheries. The river channel, sandbars and wetlands create habitat for mussels, fish, mammals, birds, amphibians, reptiles, and invertebrates. The Basin is home to over 130 species of native fishes—catfish, crappie, sunfish, bass, etc. Many marine species regularly migrate from the Gulf up the Pearl Rivers as part of their life cycle. In addition, migratory birds making the long journey across the Gulf of America stop to feed and rest in the trees and marsh in the lower basin.

Avian Species

The Pearl River Basin provides nesting, wintering and breeding habitat for nearly 200 species of birds. The Study Area lies within the Mississippi Flyway, a major migratory route for hundreds of bird species. Fall migrants and spring returning migrants are often as common as the permanent resident species during these seasons. Of the wildlife present in the Pearl River Basin, birds are the most visible, with bird watching and hunting being popular recreational activities.

Bird species within the Study Area are typical of southern swamp habitat and marshes. Many wading birds and birds of prey are common area residents. A substantial number of passerines and waterfowl are seasonal inhabitants. Common waders potentially inhabiting the Study Area include great and snowy egrets (*Ardea alba* and *Egretta thula*), great blue herons (*Butorides virescens*), little blue herons (*Egretta caerulea*), green herons (*Butorides virescens*), yellow-crowned night herons (*Nyctanassa violacea*), and anhingas (*Anhinga anhinga*).

Birds of prey indigenous to the Study Area include barred owls (*Strix varia*), great horned owls (*Bubo virginianus*), black and turkey vultures (*Coragyps atratus* and *Cathartes aura*), red-shouldered hawk (*Buteo lineatus*), and red-tailed hawk (*Buteo jamaicensis*). Bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion*

haliaetus), swallow-tail kites (*Elanoides forficatus*), and Mississippi kites (*Ictinia mississippiensis*) are also frequently seen.

Other typical species include mourning dove (*Zenaida macroura*), chimney swifts (*Chaetura pelagica*), ruby-throated hummingbird (*Archilochus colubris*), belted kingfisher (*Megaceryle alcyon*), and woodpeckers such as red-bellied (*Melanerpes carolinus*), yellow-bellied (*Sphyrapicus varius*), downy (*Dryobates pubescens*), and pileated (*Dryobates pileatus*).

Waterfowl are most commonly observed during the winter months. Pied-billed grebes (*Podilymbus podiceps*), double-crested cormorants (*Phalacrocorax auritus*), coots (*Fulica americana*), hooded merganser (*Lophodytes cucullatus*), and other ducks (mottled, mallards, teal, gadwalls, and widgeons (*Anas* spp.)) are primarily winter residents, arriving in the late summer to early fall and staying through March. The highest diversity of waterfowl occurs during December as winter residents concentrate in the marshes.

Passerines are often observed in the scrub-shrub marsh habitats in the late winter to early spring. Swallows, warblers, vireos, flycatchers, jays, thrushes, wrens, nuthatches, finches, titmice, sparrows, cardinals, and blackbirds are included in this order of birds.

Bald Eagle

Although the bald eagle is no longer federally listed as threatened or endangered, it remains protected under the Bald and Golden Eagle Protection Act. No agency contacted recorded sightings of bald eagle nests in the Study Area, and none were observed during field surveys. Although eagle activities such as foraging, soaring, and straight-line flight commonly occur over marshes, a lack of large trees, such as baldcypress or live oaks, within the Study Area limits its suitability for nesting.

Migratory Birds

No rookeries or large tracts of naturally vegetated congregational areas for migratory birds were observed within the Study Area, but migratory species are abundant. Scrub-shrub vegetation and landscaping plants dominate in the disturbed areas. Marsh grasses are predominant beyond the highway corridor.

The only migratory bird species listed by the Migratory Bird Treaty Act (MBTA) with a potential for project-related adverse effects is the cliff swallow (*Petrochelidon pyrrhonota*). Swallow nests were seen under the East Pearl River Bridge during field surveys in February 2016 and under all bridges in February 2025. These birds typically return to the same nesting site every year and most reuse their nest from the previous year. Migration to preferred nesting areas commences in mid-March and ends in October.

At the time of the 2025 survey, inactive cliff swallow nests were observed under all 5 bridges proposed to be replaced. Therefore, old nests will be removed in advance of the birds arriving from winter migration as the likelihood of reuse is fairly high. During demolition of the existing bridges, wash away mud nest frequently before they become active with eggs or chicks. Swallow breeding season lasts from March 1st through September 30th often producing two clutches per year.

Additional short-term, minor, adverse impacts could be expected from noise and lights from construction activities. Light and noise could affect migration, breeding, and nesting of wildlife in the vicinity of the roadway.

Short-term, minor, adverse impacts to wildlife species during project construction could include temporary disturbances to nesting and annual migration patterns of birds passing over or stopping in the Pearl River Basin.

The MBTA protects birds in their reproductive and foraging habitat. This may include large forest blocks, grassland-nesting area, floodplain nesting sites, and any nesting location used by migratory birds. The Study Area is in the Mississippi Flyway, which is a principal route for some migratory birds. Migratory birds rely on the Pearl River Basin for foraging, breeding, and nesting. Land clearing and noise during construction could disrupt bird stopovers, but those impacts would be temporary and localized during construction, resulting in only minor, short-term impacts.

Demolition of the existing bridge could adversely affect barn/cliff swallows, which are protected by the MBTA.

Mammal Species

The Pearl River Basin contains three major groupings of mammals including small mammals, furbearers, and game animals.

Furbearers are an important economic commodity in the region. Trapping is allowed for furbearers, including beaver, nutria, mink, muskrat, opossum, raccoon, coyote, and bobcat. Nutria pelts account for the majority of state fur revenues. Nutria concentrations are generally higher in freshwater marshes, which are present in the Study Area.

Small mammals such as mice, rats, and shrews are found throughout the Study Area and are more common along edges of two or more habitats. Game species hunted in and around the Study Area include white-tailed deer, feral hogs, squirrels, rabbits, waterfowl, snipe, and woodcock. Evidence of feral hogs was noted throughout the Study Area during field surveys.

A T&E evaluation was conducted for this project due to the passage of time from the initial evaluation. A review of the US Fish & Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) system and Louisiana Department of Wildlife and Fisheries database identified species that may be in the project action area or may be impacted by the proposed scope of work. According to IPaC, there is a possibility that the NLEB and Tricolored bat inhabit in the area. A survey was conducted on February 13, 2025, to evaluate the existing structures for use by the Northern Long-eared Bat (NLEB) (*Myotis septentrionalis*), and the Tricolored Bat (*Perimyotis subflavus*). There was a negative finding for bat use of the existing structures. Based on the project location, scope of work, and lack of suitable habitat for the listed species, the project should have no effect on any federally or state listed species and their habitats. The **Appendix G** contains documentation from IPaC as well as photos taken during the survey.

One marine mammal potentially occurs within the Study Area. The West Indian manatee (*Trichechus manatus*) occurs along the coast and coastal rivers of the southeastern United States. Manatee have been sporadically observed in coastal rivers throughout Louisiana from the Mississippi west to the Lake Charles area and could use the Pearl River waterways. The manatee is discussed in more detail in **Section 3.12**.

Reptiles and Amphibians

Swamps and marshes provide essential habitat for many reptile and amphibian species. The number of species in marshes is directly dependent on water salinity, a major source of stress. Freshwater marshes support the

greatest number of reptile and amphibian species, while salt marshes support the fewest. The Study Area could support a wide range of amphibians including frogs, tree frogs, toads, salamanders, and amphiuma. Two turtle species are known to only occur in the Pearl and Bogue Chitto Rivers. These include the ringed map turtle (*Graptemys oculifera*) and the Pearl River map turtle (*Graptemys pearlensis*). The ringed map turtle is discussed in more detail in **Section 3.12**.

3.11.1 AQUATIC COMMUNITY

Information for this section was taken from the Waterbody Management Plan Series, Pearl River Basin Waterbody Evaluation and Recommendations, prepared by the LDWF (2015). The Pearl River Basin contains the greatest aquatic species diversity in Louisiana. The Pearl River is popular for both freshwater and saltwater fishing. Largemouth bass, catfish, and crappie are targeted in the lower reaches of the rivers. Commercial fisheries include alligator gar, blue catfish, channel catfish, crawfish, and blue crab.

Short-term, minor, adverse impacts would be expected to wildlife and fish during construction. Clearing the ROW would cause localized and temporary dispersal impacts, but wildlife would be expected to return to adjacent areas after construction is complete and to the Study Area once pre-construction vegetation has returned.

Short-term, minor, adverse impacts to aquatic life could be expected during construction of the Replacement Alternatives. Demolition of the existing bridge and construction of the new bridge and associated roadway improvements would leave large areas of earth unprotected, and sloping work could increase the potential for erosion of the surface material during storm events. The construction of roadside ditches could result in eroded material being carried from the construction site down-slope entering downstream wetlands where sediment would be deposited. Sedimentation could degrade water quality by increasing turbidity, suspended solids, and pollutants in the river.

Sediment deposition also potentially would reduce floodwater storage capacity, change water depths and flow patterns, and block water inflow or outflow paths. Additionally, large volumes of sediment could adversely impact vegetative species by cutting off oxygen to their roots, and could bury the eggs of aquatic organisms that use the river for breeding purposes. Sediment deposition could fill pools and interstitial spaces along the banks of the River, choking out aquatic vegetation and smothering benthic organisms such as clams and mussels.

Increased turbidity (suspended soils or sediments) can harm aquatic life, especially benthic (sediment-dwelling) organisms that are an important part of the food chain. Increased turbidity can result from direct disturbance of sediments through proposed activities such as the placement of bridge pilings or anchors or from construction-exposed soils eroding during rainstorms and flowing into the water bodies. Turbid water interferes with respiration and filter-feeding behavior of macro-invertebrates as well as reduces fish feeding success due to visual impairment. Turbidity also decreases photosynthesis for primary producers.

Impacts to wildlife and fish resulting from sediment deposition or increased turbidity will be reduced to less than significant levels by the proper use of BMPs.

3.11.1 Commitments and Mitigation Measures

Barn/cliff swallows, like other migratory birds, are protected by the MBTA. Prior to any demolition activities, the existing bridges will be surveyed for barn/cliff swallows and other migratory bird nests. Old nests will be removed in advance of the birds arriving from winter migration as the likelihood of reuse is fairly high. During demolition of the existing bridges, mud nests will be washed away frequently before they become active with eggs or chicks. Swallow breeding season lasts from March 1st through September 30th often producing two clutches per year. Active nests will be left undisturbed until the end of breeding season on September 30th.

3.12 Federally Protected Species and Critical Habitats

The Endangered Species Act (ESA) [16 U.S.C. 1531 et. seq.] of 1973, as amended, was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All federal agencies or projects utilizing federal funding are required to implement protection programs for designated species and to use their authorities to further the purposes of the act.

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are the primary agencies responsible for implementing the ESA. The USFWS is responsible for birds and terrestrial and freshwater species, while the NMFS is responsible for non-bird marine species. These agencies' responsibilities under the ESA include: (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those which have been formally submitted to Congress for official listing as threatened or endangered. Species may be considered endangered or threatened when any of the five following criteria occurs: (1) The current/imminent destruction, modification, or curtailment of their habitat or range; (2) Overuse of the species for commercial, recreational, scientific, or educational purposes; (3) Disease or predation; (4) The inadequacy of existing regulatory mechanisms; and (5) Other natural or human-induced factors affect continued existence.

In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate (C) designation includes those species for which the USFWS has sufficient information on hand to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

LADOTD initiated a review of the US Fish & Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) system and Louisiana Department of Wildlife and Fisheries database identified species that may be in the project action area or may be impacted by the proposed scope of work. In addition, NOAA NMFS, Southeast Regional Office, was consulted regarding marine species and EFH. Copies of all correspondence with these agencies are provided in **Appendix G**.

Table 3-14 lists the federally protected species that were determined to be likely to occur in the Study Area along with the designated federal status and state rank.

Table 3- 14 Federally Listed Species Likely to Occur within Study Area

Scientific Name	Common Name	State Rank	State Status	Federal Status
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	S1	T	E
<i>Perimyotis subflavus</i>	Tricolored Bat	S4	-	PE
<i>Trichechus manatus</i>	West Indian Manatee	S1N	T	T
<i>Laterallus jamaicensis ssp. jamaicensis</i>	Eastern Black Rail	S2N, S1B	-	T
<i>Charadrius melodus</i>	Piping Plover	S2N, S1B	T	T
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	S2	E	T
<i>Calidris canutus rufa</i>	Rufa Red Knot	S2N	T	T
<i>Macrochelys temminckii</i>	Alligator Snapping Turtle	S3	Restricted	PT
<i>Gopherus polyphemus</i>	Gopher Tortoise	S1	T	T
<i>Graptemys oculifera</i>	Ringed Map Turtle	S2	T	T
<i>Rana sevosia</i>	Dusky Gopher Frog	SH	-	E
<i>Acipenser oxyrinchus (=oxyrhynchus) desotoi</i>	Gulf Sturgeon	S1	T	T
<i>Danaus plexippus</i>	Monarch Butterfly	S5	-	PT

Sources: USFWS 2019a, 2019b, and IPac 2025

T – Threatened.

E - Endangered.

PT – Proposed Threatened

S1 - Critically imperiled because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extirpation.

S2 - Imperiled because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extirpation.

B or N - When used as qualifier of ranks, indicates whether the occurrence is breeding or nonbreeding.

The Study Area was assessed for the existence of suitable habitats of federally listed species through review of available data and aerial imagery. Desktop findings were confirmed during the field surveys.

Gulf Sturgeon

Suitable habitat for the Gulf sturgeon does occur within the Study Area, and all five rivers are likely used as a thoroughfare during semiannual migrations between freshwater and marine habitats and could be used as foraging and spawning grounds. The majority of recent Gulf sturgeon sightings in the Pearl River drainage have occurred downstream of the Pools Bluff Sill near Bogalusa, Louisiana and downstream of the Bogue Chitto Sill on the Bogue Chitto River in St. Tammany Parish, Louisiana.

The 2003 Gulf sturgeon critical habitat boundaries established by 50 CFR 226 include the Pearl River drainage. The Study Area falls within the Pearl River Critical Habitat Unit (Unit 1). This unit includes the West Pearl, West Middle Pearl, Middle Middle Pearl, East Middle Pearl, and East Pearl Rivers (**Figure 4**). Unit 1 encompasses a total of 795 river kilometers or 494 river miles. The lateral extent of Unit 1 is the ordinary high water line on each bank of the associated rivers. All five bridge crossings occur within designated critical habitat for the Gulf sturgeon.

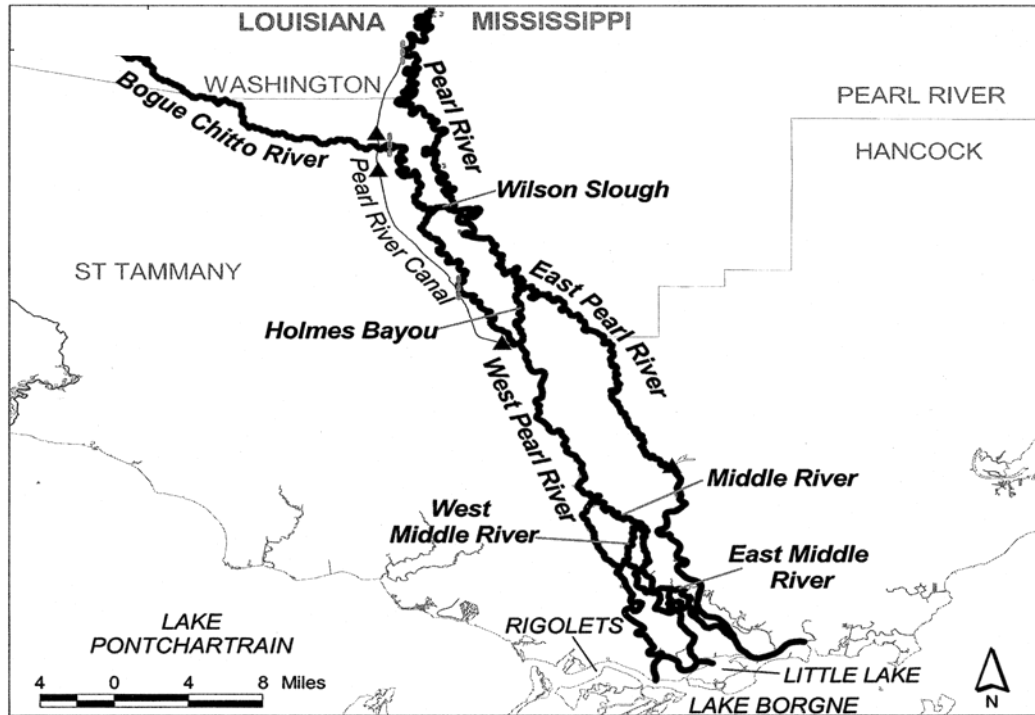


Figure 4 Gulf Sturgeon Critical Habitat within Study Area (USFWS 2003)

Surveys for Gulf sturgeon for this project were not conducted because of the complexity of surveys and the risk of harm to the species. LADOTD assumes presence of the Gulf sturgeon in the Study Area.

Ringed Map Turtle

The ringed map turtle is restricted to the Pearl River and its major tributaries in Mississippi and Louisiana. According to the USFWS SOV letters, "In Louisiana, it occurs in the Bogue Chitto River south of Franklinton, and in the Pearl River north of Louisiana Highway 190 in St. Tammany and Washington Parishes." Suitable foraging and basking habitat for the ringed map turtle does occur within the Study Area; however, there are no sand or gravel bars within the Study Area that would provide nesting habitat.

The West and East Pearl Rivers are known to support ringed map turtle, and the likelihood of occurrence of this species in the West Middle, Middle Middle, and East Middle is high. Surveys for ringed map turtle for this project were not conducted because this species is elusive and startles easily when approached. LADOTD assumes presence of the ringed map turtle in the Study Area.

The USFWS has not designated critical habitat for the ringed map turtle.

West Indian Manatee

According to the USFWS SOV, the manatee "is known to regularly occur in Lakes Ponchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the LNHP, over 80% of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through

December.” Sightings of the West Indian manatee in Louisiana have occurred in the Amite, Blind, Tchefuncte, Tickfaw, and Atchafalaya Rivers, Mississippi River Gulf Outlet Canal, and in canals within the adjacent coastal marshes of Louisiana. However, there is no known population thriving in the State.

All five rivers could potentially support West Indian manatee. In fact, the LDWF has placed a “Manatee Area” sign at the boat launch on the East Pearl to encourage boaters to proceed with caution. Surveys for West Indian manatee for this proposed project were not conducted because this species is highly mobile and may not occur in the area during the majority of the year. LADOTD assumes presence of the West Indian manatee in the Study Area.

Critical habitat has been designated for the West Indian manatee; however, the extent of this designation is entirely within the State of Florida.

Gulf Sturgeon

The Replacement Alternatives are anticipated to have minor, short-term effects on the gulf sturgeon. Effects could include:

- Noise from construction during Gulf sturgeon migration (*i.e.*, effects of pile driving, drilling, demolition, blasting, and boat operations)
- Disturbance of sediment and increased turbidity
- Exposure to contaminants as a result of storm and wastewater runoff
- Direct mortality/incidental take

Behavioral responses as a result of the Replacement Alternatives are expected to be temporal and limited to the area and time when underwater noise levels are greatest and as such will be limited to only several hours at a time. These behavioral responses could range from a temporary startle to avoidance of the construction area. Construction activities are not anticipated to cause any significant delay to spawning migrations or the abandonment of spawning migrations. Any minor changes in behavior resulting from exposure to increased underwater noise associated with construction are not anticipated to prevent the Gulf sturgeon from completing any essential behaviors such as resting, foraging, or migrating. It is anticipated that all effects of exposure to increased underwater noise, turbidity, and contaminants will be insignificant and discountable.

In regards to critical habitat, the Replacement Alternatives are anticipated to cause temporary adverse effects to some essential features of critical habitat, including water quality, substrate, migration conditions, and forage grounds. However, these effects would be temporary, and ceasing upon completion of the project. Construction would require the development and implementation of an erosion and sediment control plan, which would specify BMPs to be used prior to construction activities and periodic maintenance and inspection procedures during construction. The plan would be designed to reduce suspended solids, turbidity, and downstream sedimentation that may degrade water quality and adversely impact aquatic life (including Gulf sturgeon). It is anticipated that all effects to designated critical habitat in the Study Area will be insignificant and discountable through implementation of the erosion and sediment control plan.

In response to Section 7 initiation, letters were received from USFWS Lafayette and Jackson Ecological Services Offices dated February 26, 2016 and February 25, 2016, respectively. USFWS Lafayette responded with a determination of “*not likely to adversely affect*”, and USFWS Jackson responded with a determination of “*may affect, is not likely to adversely affect*” the Gulf sturgeon. In addition, USFWS Jackson concurred with the determination that the project “is not likely to adversely affect” designated critical habitat for the Gulf sturgeon. Copies of these letters can be found in **Appendix G**.

Ringed Map Turtle

The Replacement Alternatives are anticipated to have minor, short-term effects on the ringed map turtle. Effects could include:

- Noise from construction
- Disturbance of sediment and increased turbidity
- Exposure to contaminants as a result of storm and wastewater runoff
- Habitat loss, fragmentation, and alternation (e.g., changes in temperature, moisture, light, noise, pollutants, or quality of available habitat)
- Injury or mortality occurring during construction (e.g., inadvertent burial or crushing) or subsequent physical contact with construction vehicles

The ringed map turtle tends to startle easily and is fast moving in water. As a result, construction activities and noise would most likely result in only minor disturbances (temporary displacement).

The likelihood of injury or mortality is low because this species will most likely remove itself from the Study Area during construction. Construction would require the development and implementation of an erosion and sediment control plan, which would specify BMPs to be used prior to construction activities and periodic maintenance and inspection procedures during construction. In addition, construction activities would be limited to a small section of potentially suitable habitat for the species. Ample habitat can be found upstream and downstream of the proposed bridge locations. Habitat loss, fragmentation, and alteration as a result of the Replacement Alternatives is not anticipated to impact the species’ abundance, reproduction, distribution, diversity, or habitat quality or function on a regional scale. It is anticipated that all effects of exposure to increased underwater noise, turbidity, and contaminants will be insignificant and discountable.

In response to Section 7 initiation, the USFWS Lafayette responded with a determination of “*not likely to adversely affect*”, and USFWS Jackson responded with a determination of “*may affect, is not likely to adversely affect*” the ringed map turtle. Copies of these letters can be found in **Appendix G**.

West Indian Manatee

The Replacement Alternatives are anticipated to have minor, short-term effects on the West Indian manatee. If West Indian manatees are present within the Study Area during construction activities, it is anticipated that the Replacement Alternatives would result in only minor disturbance (temporary displacement). The manatees would likely move and relocate to other nearby areas for foraging or resting purposes.

In response to Section 7 initiation, the USFWS Lafayette responded with a determination of “*not likely to adversely affect*”, and USFWS Jackson responded with a determination of “*may affect, is not likely to adversely affect*” the West Indian manatee. Copies of these letters can be found in **Appendix G**.

3.12.1 COMMITMENTS AND MITIGATION MEASURES

Gulf Sturgeon

LADOTD will make every effort to ensure that the potential for incidental take of Gulf sturgeon is minimized by observing a number of environmental commitments and assurances. These include:

1. DOTD will provide instructions and educational material to the contractor to familiarize construction personnel with Gulf sturgeon and other sensitive issues associated with the project prior to the commencement of construction activities.
2. Use of pile tapping (i.e. a series of minimal energy strikes) for an initial period at the start of pile installation to encourage fish to move from the immediate area of pile driving activity. Pile driving activities will be limited to generating 206dB.
3. Scheduling work at a time of the year where it is less likely for sturgeon to be present. No piling installation will be conducted during March 1st through May 1st or September 1st through November 1st.
4. No nighttime piling installation will be conducted from March 1st through November 1st, with nighttime defined as 30-minutes after sunset to 30-minutes before sunrise.
5. Maintenance of a corridor of passage outside of the immediate construction area to allow fish migration. In-water activities will only be allowed to occur concurrently on two of the five waterways; ensuring a passageway for fish migration at all times.
6. Minimization of suspended sediments. The use of sediment exclusion measures (cofferdams, silt curtains, silt fence, sediment traps/basins, staked and floating turbidity barriers, synthetic bales, sandbags, rock bags, etc.) will be used to minimize suspended sediments. In-River/In-stream (within the waterway) BMPs will be limited to the active jobsite where turbidity increases are likely.

West Indian Manatee

LADOTD will make every effort to ensure that the potential for incidental take of manatees is minimized by observing a number of environmental commitments and assurances. These include:

1. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. LADOTD shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the ESA of 1973.
2. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shut down if a manatee(s) comes within 50' of the operation. Activities will not resume until the manatee(s) has moved beyond the 50' radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50' of the operation. Animals must not be herded away or harassed into leaving.

3. If a manatee(s) is sighted near the project area, all vessels associated with the project shall operate at "Idle Speed/No Wake" at all times while in the area and while in water where the draft of the vessel provides less than a 4' clearance from the bottom. All vessels will follow routes of deep water whenever possible.
4. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
5. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. Each vessel involved in construction activities shall display the sign at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8½" by 11" reading language similar to the following: "CAUTION BOATERS; MANATEE AREA/IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8½" by 11" shall be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50' OF OPERATION". The Contractor shall remove the signs upon completion of construction.
6. Any collision with, injury to, or sightings of a manatee(s) shall be reported immediately to USFWS Louisiana Ecological Services Office (337-291-3100); the USFWS Mississippi Ecological Services Office (601-965-4900); the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225-765-2821); and the Mississippi Department of Wildlife, Fisheries, and Parks, Mississippi Natural Heritage Program (601-576-6000).
7. The contractor shall be held responsible for any manatee harmed, harassed, or killed as a result of construction activities not conducted in accordance with these specifications.

Migratory Birds

Migratory Bird Conditions will be required for all bridge construction, demolition, or maintenance within the months of March 1 through September 30. Special Provisions, S.P. (Sec 202) Removal of Debris (Bird Maintenance), of the 2026 Louisiana Standard Specifications for Roads and Bridges will be inserted into the plans and adhered to during demolition of existing and detour structures.

3.13 State-Listed Species

Natural Communities

State-listed species and natural communities have no protection under the ESA, but actions which may adversely affect these species or natural communities would require coordination with LDWF or MDWFP prior to construction commencement. Fifteen (15) natural communities were identified in the Species by Parish List (LDWF 2019b) with a potential for occurrence in St. Tammany Parish. As noted in **Section 3.10**, two (2) of these communities of concern occur within the Study Area:

- Intermediate Marsh
- Freshwater Marsh

Plants and Animals

For the purposes of this section, state-listed species are defined as the following:

- Plants and animals listed or proposed for listing as threatened or endangered under the ESA (50 CFR 17.11 for listed animals, 50 CFR 17.12 for listed plants, and various notices in the Federal Register for proposed species).
- Plants and animals that are candidates for possible future listing as threatened or endangered under the FSA.
- Plants and animals that meet the definitions of threatened or endangered species under state law (Title 56 of the Louisiana Revised Statutes, Mississippi State Nongame and Endangered Species Act).

The LNHP and the Mississippi Natural Heritage Program (MNHP), parts of the LDWF and MDWFP, respectively, maintain lists of state-listed species, plant communities, and other natural features. Based on a LNHP/MNHP query and a review of existing literature, a total of 26 special-status species have the potential for occurrence in St. Tammany Parish and Hancock County. Because this list of species is considered regional, an analysis of the range and habitat preferences of those species was conducted to identify which sensitive species have the potential to occur within the Study Area (refer to **Table 3-15**).

NSI biologists determined that the following 10 state-listed species have the greatest potential to occur within or adjacent to the Study Area: Louisiana black bear (*Ursus americanus*), peregrine falcon (*Falco peregrinus*), brown pelican (*Pelecanus occidentalis*), bald eagle, rainbow snake (*Farancia erythrogramma*), crystal darter (*Crystallaria asprella*), ironcolor shiner (*Notropis chalybaeus*), Alabama shad (*Alosa alabamiae*), pearl darter (*Percina aurora*), and inflated heelsplitter (*Potamilus inflatus*). West Indian manatee, ringed map turtle and gulf sturgeon are not included in this list, as they are addressed in **Section 3.15**. None of these species were observed during field surveys; however, it should be noted that neither fish sampling nor mussel surveys were conducted.

Table 3- 15 Protected Species Potentially within St. Tammany Parish, LA & Hancock County, MS

Common Name	Scientific Name	Legal Status	Habitat	Rationale for Expecting Presence or Absence
Mammals				
Florida Panther	<i>Puma concolor coryi</i>	FE SE (MS)	Large, contiguous areas that meet their social, reproductive, and energetic needs. Panther habitat selection is related to prey availability. Dense understory vegetation.	Suitable Conditions Present: The Study Area does contain suitable habitat; however, this species is only known to occur in Florida. Species not observed during surveys.
West Indian Manatee	<i>Trichechus manatus</i>	FE SE (LA/MS)	Marine open water, bays, and rivers.	Suitable Conditions Present: Suitable aquatic habitat in all 5 river systems. Species not observed during surveys. LADOTD assumes presence in Study Area.

Common Name	Scientific Name	Legal Status	Habitat	Rationale for Expecting Presence or Absence
Louisiana Black Bear	<i>Ursus americanus</i>	ST (LA) SE (MS)	Primarily restricted to large tracts of heavily wooded bottomland hardwoods and swamps.	Suitable Conditions Present: Suitable habitat is present within the Study Area. Species not observed during surveys.
Birds				
Red Knot	<i>Calidris canutus</i>	FT SE (MS)	Outside of the breeding season, strictly coastal, tidal mudflats or sandflats, sandy beaches of sheltered coasts, rocky shelves, bays, lagoons and harbors, occasionally also oceanic beaches and saltmarshes.	Suitable Conditions Absent: The Study Area does not contain suitable habitat. Species not observed during surveys.
Piping Plover	<i>Charadrius melodus</i>	SE (MS)	On sandy beaches, sandflats, barrier islands, alkaline lakes, riverine sand/gravel bars, reservoirs, and sand/gravel pits.	Suitable Conditions Absent: The Study Area does not contain suitable nesting habitat. Species not observed during surveys.
Southeastern Snowy Plover	<i>Charadrius nivosus</i>	SE (MS)	Chiefly sea coasts, but also open flats near brackish or saline lakes, lagoons, seasonal water courses, saltworks and depressions.	Suitable Conditions Absent: The Study Area does not contain suitable nesting habitat. Species not observed during surveys.
Peregrine Falcon	<i>Falco peregrinus</i>	SE (MS)	Extreme variety of habitats, tolerating wet and dry, hot and cool climates, from sea level up to 130 feet.	Suitable Conditions Present: Suitable habitat is present within the Study Area. Species not observed during surveys.
Brown Pelican	<i>Pelecanus occidentalis</i>	SE (MS)	Shallow inshore waters, estuaries and bays, avoiding the open sea.	Suitable Conditions Present: Suitable habitat is present within the Study Area. Species not observed during surveys.
Red-cockaded Woodpecker	<i>Picoides borealis</i>	FE SE (LA/MS)	Longleaf pine forests, mixed pine-upland hardwood forests with little or no hardwood midstory.	Suitable Conditions Absent: The Study Area does not contain suitable nesting habitat. Species not observed during surveys.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SE (LA)	Nests primarily in the tops of cypress trees near open water; feeds in open lakes.	Suitable Conditions Present: Suitable foraging and nesting habitat is present within the Study Area. Species not observed during surveys.

Common Name	Scientific Name	Legal Status	Habitat	Rationale for Expecting Presence or Absence
Reptiles				
Loggerhead Sea Turtle	<i>Caretta caretta</i>	FT SE (MS)	Coastal waters of the Gulf of America.	Suitable Conditions Absent: The Study Area does not provide suitable habitat for this species.
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	FE SE (MS)	Coastal waters of the Gulf of America.	Suitable Conditions Absent: The Study Area does not provide suitable habitat for this species.
Eastern Indigo Snake	<i>Drymarchon couperi</i>	FT SE (MS)	Sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass; flatwoods; most types of hammocks; coastal scrub; dry glades; palmetto flats; prairie; brushy riparian and canal corridors; and wet fields.	Suitable Conditions Absent: The Study Area does not provide suitable habitat for this species.
Rainbow Snake	<i>Farancia erythrogramma</i>	SE (MS)	In or near rivers, creeks, swamps, springs, open marshes, including brackish tidal areas; it burrows into soil, wet debris, and mats of vegetation along the water's edge, and it may shelter among cypress roots, logs, stone piles, or dock pilings.	Suitable Conditions Present: Suitable habitat throughout Study Area. Species not observed during surveys.
Gopher Tortoise	<i>Gopherus polyphemus</i>	FT ST (LA) SE (MS)	Upland longleaf pine forest; mixed pine-hardwood forest; soils must be very sandy and well drained	Suitable Conditions Absent: Study Area does not contain the appropriate soil conditions for this species.
Southern Hognose Snake	<i>Heterodon simus</i>	SE (MS)	Open, xeric habitats with well-drained, sandy or sandy-loam soils such as sand ridges, stabilized coastal sand dunes, pine flatwoods, mixed oak-pine woodlands and forests, scrub oak woods, and oak hammocks; also old fields and river floodplains.	Suitable Conditions Absent: The Study Area does not provide suitable habitat for this species.
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	FE SE (MS)	Coastal waters of the Gulf of America.	Suitable Conditions Absent: The Study Area does not provide suitable habitat for this species.
Ringed Map Turtle	<i>Graptemys oculifera</i>	FT ST (LA)	Clean rivers having a moderate current, an open canopy, and numerous	Suitable Conditions Present: Suitable habitat along all 5 river systems.

Common Name	Scientific Name	Legal Status	Habitat	Rationale for Expecting Presence or Absence
			nesting beaches and basking logs	Species not observed during surveys. LADOTD assumes presence in Study Area.
Amphibian				
Dusky Gopher Frog	<i>Rana sevosa</i>	FE (LA)	Upland sandy habitats forested with longleaf pine; breeds in temporary ponds	Suitable Conditions Absent: The Study Area does not provide suitable habitat for this species.
Fishes				
Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>	FT ST (LA) SE (MS)	All saltwater habitats, except during the spawning season when it is found in major rivers that empty into the Gulf of America	Suitable Conditions Present: Suitable aquatic habitat in all 5 river systems, which are designated critical habitat. LADOTD assumes presence in Study Area.
Crystal Darter	<i>Crystallaria asprella</i>	SE (MS)	Swift-flowing streams with clear or slightly turbid water and moderately swift riffles, on small or medium-sized rivers with beds of sand or gravel.	Suitable Conditions Present: Suitable aquatic habitat in all 5 river systems. Fish sampling not conducted.
Ironcolor Shiner	<i>Notropis chalybaeus</i>	SE (MS)	Pools and slow runs of low gradient, small acidic creeks and small rivers with sandy substrate.	Suitable Conditions Present: Suitable aquatic habitat in all 5 river systems. Fish sampling not conducted.
Alabama Shad	<i>Alosa alabamae</i>	FC (LA)	Along sand and gravel bars in medium to large freshwater rivers and at sea.	Suitable Conditions Present: Suitable aquatic habitat in all 5 river systems. Fish sampling not conducted.
Pearl Darter	<i>Percina aurora</i>	FPT (LA)	Low-gradient, coastal plain rivers including the Pearl River drainages	Suitable Conditions Present: Suitable aquatic habitat in all 5 river systems. Thought to be extinct in the Pearl River system. Fish sampling not conducted.
Mussels				
Inflated Heelsplitter	<i>Potamilus inflatus</i>	FT ST (LA)	Flowing rivers with stable sand or silt bottoms	Suitable Conditions Present: Suitable aquatic habitat in all 5 river systems. Mussel surveys not conducted.

Common Name	Scientific Name	Legal Status	Habitat	Rationale for Expecting Presence or Absence
Plants				
Louisiana Quillwort	<i>Isoetes louisianensis</i>	FE (MS)	Small blackwater streams (water often tea-colored, stained with tannins released from leaf decomposition), often on sand/gravel/mud bars and stream banks.	Suitable Conditions Absent: The Study Area does not provide suitable aquatic habitat for this species.

Legend:

FE – Federal Endangered

FT – Federal Threatened

FC – Federal Candidate

FPT – Federal Proposed Threatened

SE – State Endangered

ST – State Threatened

No direct effects are anticipated to the state-listed Louisiana black bear, peregrine falcon, brown pelican, bald eagle, or rainbow snake, as these species are highly mobile. Effects of construction activities, including noise and vibration, may cause these species to temporarily abandon habitat adjacent to construction areas, but if present, these species would be expected to return to adjacent areas after construction is complete. The crystal darter, ironcolor shiner, Alabama shad, pearl darter, and inflated heelsplitter could be affected by turbidity, noise, and other in-water activities from demolition of the existing bridge and construction of the new bridge for either Replacement Alternative. It is anticipated that all effects of exposure to increased underwater noise, turbidity, and contaminants will be insignificant and discountable with the proper use of BMPs.

3.13.1 COMMITMENTS AND MITIGATION MEASURES

There are no commitments or mitigation measures additionally proposed for state-listed natural communities or species.

3.14 Essential Fish Habitat

The Magnuson-Stevens Fisheries Conservation and Management Act of 1976 (MSA) (16 U.S.C. 1801 et seq.) was passed to promote sustainable fish conservation and management. Under the MSA, the NMFS was granted legislative authority for fisheries regulation in the U.S. within a jurisdictional area located between 3 miles and 200 miles offshore, in the Exclusive Economic Zone depending on geographic location. NMFS was also granted legislative authority to establish eight regional fishery management councils responsible for the proper management and harvest of fish and shellfish resources within these waters. Measures to ensure the proper management and harvest of fish and shellfish resources within these waters are outlined in Fisheries Management Plans prepared by the eight councils for their respective geographic regions. The Pearl River system is within the management jurisdiction of the Gulf Council (GC), formerly the Gulf of Mexico Fishery Management Council (GMFMC).

NMFS recognized that many marine fisheries are dependent on nearshore and estuarine environments for at least part of their life cycles. The MSA was reauthorized and changed extensively via amendments in 1996 (P.L. 104-297), stressing the importance of habitat protection to healthy fisheries. The authority of NMFS and its councils was strengthened by the reauthorization to promote more effective habitat management and protection of marine fisheries. Specific marine environments important to marine fisheries are referred to as

EFH in the MSA and are defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (16 U.S. Code [U.S.C.] § 1802 (10)). The EFH regulations (at 50 C.F.R. § 600 Subpart J) provide additional interpretation of the definition of EFH: waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fishes and may include areas historically used by fishes. Substrate includes sediment, hardbottom, structures underlying the waters, and any associated biological communities. “Necessary” means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types used by a species throughout its life cycle.

In addition to the regional FMCs, the Gulf States Marine Fisheries Commission (GSMFC) and NMFS also have management responsibilities for certain fisheries. The GC formerly the GSMFC is an organization of five states from the Gulf Coast of Florida to Texas that manages fishery resources in state waters of the Gulf of America. The GSMFC provides coordination and administration for a number of cooperative state/federal marine fishery resources. NMFS has jurisdiction over highly migratory species in federal waters of the Gulf of America. Typically, the GSMFC and NMFS work closely with regional Councils in preparing and implementing fishery management strategies.

A letter was sent by LADOTD to the NMFS dated January 27, 2016 initiating EFH consultation. In a response dated April 4, 2016, NMFS indicated that “only Spanish mackerel should be considered to have EFH potentially impacted by bridge replacement activities. All other pelagic fishery resources identified in your letter should not be included in the EA. Additionally, only gray snapper and lane snapper should be identified as reef fish potentially impacted by project implementation. The NMFS concurs with the inclusion of red drum, white shrimp and brown shrimp as federally managed species having EFH in the project area.” A copy of this letter is included in **Appendix G**.

A separate technical report titled *Essential Fish Habitat Report, U.S. 90 Pearl River Bridges, St. Tammany Parish, LA and Hancock County, MS* (2019) was prepared. See **Appendix H**. Complete species accounts, assumptions utilized for EFH determinations, and existing conditions within the Study Area can be found in this supplemental report.

Field Survey and Analysis

Prior to field work, GIS software was used to compile relevant environmental information within the Study Area. Field surveys were conducted between June 6 and November 4, 2016 to record relevant data on potential wetland and stream features. Wetland boundaries, streams, ponds, and the ordinary high-water mark were collected throughout the Study Area using a Trimble GeoXH® GPS device and the information was input to a GIS mapping program.

A boat survey was also performed at each of the five river crossings by environmental personnel on May 3 and 4, 2016. Data collected included hydrograph data, water clarity, sediment composition, habitat characteristics, and the wetland/upland line at the bridge crossings. The best clarity reading that was collected was 1.4 feet on the West Middle and Middle Middle Rivers. In terms of EFH, the survey indicates that there is open water in the channels, which transitions to a zone of emergent vegetation along each bank. No submerged aquatic vegetation was observed at any of the river crossings during the survey.

GPS data was downloaded into the GIS software after the completion of all field work. Utilizing this data and the assumptions for EFH determinations outlined in the supplemental report, the potential EFH within the Study Area was mapped and quantified (Appendix H). The locations of EFH in the Study Area by species based on field survey and analysis are shown on the maps included in the separate technical report.

Table 3- 16 Summary of Potential Essential Fish Habitat within the Study Area

River System	Spanish Mackerel	Gray Snapper	Lane Snapper	Red Drum	White Shrimp	Brown Shrimp	Potential EFH within the Study Area		
							Open Water (acres)	Emergent Marsh (acres)	Total (acres)
West Pearl River		X					1.74	0.03	1.77
Middle Pearl Rivers	X	X	X	X	X	X	14.05	23.59	37.64
East Pearl River	X	X	X	X	X	X	6.63	3.90	10.53
Cowan Bayou	X	X	X	X	X	X	1.65	0.35	2.00
Total							24.07	27.87	51.94

Impacts were calculated utilizing the limits of construction and/or any new required ROW and the potential EFH data layer. Long-term, minor, adverse impacts to EFH would be expected from implementation of the Replacement Alternatives. A summary of the impacts within each alternative is listed in **Table 3-17**.

Table 3- 17 W. Pearl, W. Middle, Middle Middle & W Middle Pearl River Bridges - Potential EFH Impacts

West Pearl River Bridge	Impacted Species	Category	Permanent Impacts (acres)	Temporary Impacts (acres)	Total Impacts (acres)
Fixed Span Alternative					
	Gray Snapper	Open Water	0.78	0.00	0.78
	Gray Snapper	Emergent Marsh	0.03	0.00	0.03
Total			0.81	0.00	0.81
West Middle Pearl River Bridge	Impacted Species	Category	Permanent Impacts (acres)	Temporary Impacts (acres)	Total Impacts (acres)
Fixed Span on Existing Alignment					
	All Species	Open Water	0.71	0.15	0.86
	All Species	Emergent Marsh	0.18	0.07	0.25
Total			0.81	0.22	1.11

Middle Middle Pearl River Bridge	Impacted Species	Category	Permanent Impacts (acres)	Temporary Impacts (acres)	Total Impacts (acres)
Fixed Span on Existing Alignment					
	All Species	Open Water	0.71	0.17	0.88
	All Species	Emergent Marsh	0.32	0.10	0.42
Total			1.03	0.27	1.30

East Middle Pearl River Bridge	Impacted Species	Category	Permanent Impacts (acres)	Temporary Impacts (acres)	Total Impacts (acres)
Fixed Span on Existing Alignment					
	All Species	Open Water	0.73	0.30	1.03
	All Species	Emergent Marsh	0.10	0.09	0.19
Total			0.83	0.39	1.22

Table 3- 18 East Pearl River Bridge Alternatives - Potential EFH Impacts

East Pearl River Bridge	Impacted Species	Category	Permanent Impacts (acres)	Temporary Impacts (acres)	Total Impacts (acres)
Fixed Span Alternative – Loop Road Option					
	All Species	Open Water	2.28	0.00	2.28
	All Species	Emergent Marsh	0.49	0.00	0.49
Total			2.77	0.00	2.77
Fixed Span Alternative – Gooseneck Frontage Road Option					
	All Species	Open Water	2.28	0.00	2.28
	All Species	Emergent Marsh	0.49	0.00	0.49
Total			2.77	0.00	2.77
Movable Span Alternatives					
	All Species	Open Water	2.28	0.00	2.28
	All Species	Emergent Marsh	0.49	0.00	0.49
Total			2.77	0.00	2.77

3.14.1 COMMITMENTS AND MITIGATION MEASURES

The implementing regulations of the MSA state that all EFH assessments must include proposed mitigation. Habitat mitigation will be completed as a component of the permit process for obtaining a Coastal Use Permit and a Section 10 permit from the USACE. Once that plan is in place, additional coordination with NMFS will be

initiated to determine if the mitigation for coastal wetlands and Section 10 waters will be sufficient for EFH. As part of the approved mitigation plan for impacts to wetlands, mitigation for impacts to marsh will be established with an approved bank. The purchase of mitigation credits at a bank that sells marsh mitigation would also serve as mitigation for EFH. Coordination with NMFS will continue until the exact compensatory mitigation actions are established and the agency is able to determine if impacts to EFH would be offset by implementation of the mitigation plan.

3.15 Parks and Recreation

A large portion of the Study Area is located immediately adjacent to and surrounded by the Pearl River WMA. Within the Study Area, the Pearl River WMA begins on the east side of the West Pearl River Bridge and ends between the East Middle Pearl River and the East Pearl River. The Pearl River WMA totals 35,618 acres and is owned and managed by the LDWF. The WMA provides fishing, canoeing, boating, crawfishing, and waterfowl hunting opportunities. These are generally accessed from boat launches, three of which are located within the Study Area. No right of way is required from the WMA.

There are no parks or recreational facilities located within or adjacent to the Study Area. There are three boat launches within the Study area on the West Pearl River, Middle Middle Pearl River, and East Pearl River. The boat launch on the West Pearl River is located within LADOTD right of way. The boat launch located on the southwest side of the existing Middle Middle Pearl River bridge is well maintained by LDWF and is on LDWF property with access and parking on LADOTD right of way. The boat launch on the East Pearl River is within LADOTD right of way and maintained by LADOTD. Parking at this launch occurs on both sides of the roadway.

Short-term, minor impacts to the boat launches are anticipated during construction. During construction, temporary closures of the boat launches within the right of way are expected due to their proximity to construction activities. With the roadway and bridges being closed, there is no current access to the boat launch at Middle Middle Pearl River.

3.15.1 COMMITMENTS AND MITIGATION MEASURES

LADOTD will provide access, as practicable, to boat launch facilities at the West Pearl and East Pearl during construction. Signage will notify users when the launch is closed due to construction. Access will be restored to the Middle Middle Pearl River launch upon completion of the project and the reopening of the roadway.

3.16 Soils and Prime Farmland

The Study Area is located within four general soil map units as identified in the USDA Natural Resources Conservation Service (NRCS) Soil Surveys for St. Tammany Parish, Louisiana and Hancock County, Mississippi (USDA 1990 and 1981). In Louisiana, these include Larose-Allemands-Kenner (level, very poorly drained soils in freshwater marshes) and Aral (level, very poorly drained soils in swamps). In Mississippi, these include Atmore-Beauregard-Escambia (nearly level to gently sloping, moderately well drained to poorly drained soils on broad, wet upland flats and ridges) and Handsboro-Bohlcket (nearly level, very poorly drained soils on tidal marshes).

According to the USDA Web Soil Survey (USDA 2016), there are eleven different soil types within the Study Area. **Table 3-19** provides details of the soils occurring within the Study Area.

Table 3- 19 Soil Types with Study Area & Their Properties

Soil Map Unit	Drainage Classification			Percent Slopes					Restrictive Soil Features*
	Well Drained	Moderately Well Drained	Poorly Drained	0-0.5	0-1	0-2	0-5	2-5	Local Roads and Streets
Abita silt loam (Aa)			X			X			Severe; low strength
Abita silt loam (Ab)			X					X	Severe; low strength
Aquents, dredged (Ag)			X				X		
Arat silty clay loam (AR)			X		X				Severe; ponding, flooding
Atmore silt loam (AT)			X			X			Severe; wetness
Beauregard silt loam (Be)		X			X				Moderate; low strength, wetness
Guyton silt loam (Gy)			X		X				Severe; wetness
Handsboro association (HA)			X		X				Severe; floods, wetness, low strength
Larose muck, tidal (LR)			X	X					Severe; flooding, ponding, excess humus
Saucier fine sandy loam (SaA)		X				X			Moderate; low strength, slope
Sulfaquepts, sandy (Sx)							X		

Source: USDA 1990 and 1981

*This column shows the degree and kind of soil limitations that affect local roads and streets. The limitations are considered slight if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; moderate if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and severe if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

3.16.1 PRIME FARMLANDS

Prime farmlands include land that has the best combinations of physical and chemical properties to be able to produce fiber, feed, or food, and are available for these uses. Abita silt loam is listed as a prime farmland soil. Prime farmlands are protected under the Farmland Protection Policy Act of 1980 and 1995. The Farmland Protection Policy Act's purpose is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. As required by Section 1541(b) of the Act, 7 U.S.C. 4202(b), federal agencies are (a) to use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that would lessen adverse effects, and (c) to ensure that their programs, to the extent practicable, are compatible with state and units of local government and private programs and policies to protect farmland (USDA 2000).

3.16.2 COMMITMENTS AND MITIGATION MEASURES

The project would have no effect on prime farmlands. No agricultural activity occurs within the Study Area. In the SOV response dated February 26, 2014, the NRCS states, “The project map submitted with your request indicates that the proposed project will not impact prime farmland and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA) – Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity.” A copy of the aforementioned correspondence is included in **Appendix E**. Therefore, no mitigation is proposed.

3.17 Cultural Resources

Methods

Earth Search, Inc. (ESI), completed a supplemental Phase I Cultural Resources Survey of the required ROW of all alternatives under consideration. The Phase I survey followed the guidelines established by the U.S. Secretary of the Interior, the Louisiana Divisions of Archaeology and Historic Preservation (LA DOA/DHP), and the Mississippi Department of Archives and History (MDAH). The archaeological survey was limited to the areas of potential construction (e.g. direct Area of Potential Effect [APE]). The architectural survey included the direct APE and an approximate 76 m (250 ft) buffer, which was referred to as the visual APE. Separate cultural resources reports were prepared for LADOTD and MDOT.

During the architectural survey, all standing structures greater than 47 years of age within the direct and visual APE were recorded utilizing Louisiana or Mississippi Historic Resources Inventory forms (HRI forms), as appropriate. The structures were evaluated in terms of NRHP criteria and the potential effects of the project were assessed. All previously recorded structures were revisited and their existing conditions were recorded.

Archaeology

The Replacement Alternatives would have no effect on archaeological resources, as no archaeological sites were recorded as a result of the Phase I cultural resources survey. No additional archaeological investigations were recommended. LASHPO and MDAH concurred with the findings in the Phase I CRS reports.

Historic Structures

The architectural survey identified two buildings (LA No. 52-02702 and 52-02703) in the visual APE and the five bridges in the direct APE in St. Tammany Parish. Neither of the buildings was recommended eligible for the NRHP. The five bridges, previously determined to be eligible for the NRHP, were not re-evaluated for their NRHP eligibility. Rather the potential effects of the various alternatives were examined.

The West Pearl River Bridge and the East Middle Pearl River Bridge are listed in the Preservation Candidate category in the HBPA for the treatment of historic bridges developed by the LADOTD, the FHWA, the LA SHPO, and the Advisory Council for Historic Preservation (ACHP). HAER documentation (LA-31) for the West Pearl River bridge was completed by LADOTD. Further, all stipulations in the HBPA for the Preservation Candidate bridges have been met.

The West Middle and Middle Middle Pearl River Bridges are listed in the Non-priority for Historic Preservation category in the HBPA. All stipulations in the HBPA concerning Non-Priority bridges have been met.

As a state border bridge, treatment of the East Pearl River Bridge is not included in the HBPA; however, through Section 106 consultation among FHWA, LADOTD, LASHPO, MDOT, and MDAH, it was determined that the bridge be considered equivalent to a Preservation Candidate bridge and treated thusly. Loss of this bridge, if it cannot be avoided or rehabilitated, is considered an adverse effect. Section 106 consultation among LADOTD, FHWA, SHPO, MDOT, MDAH, and other appropriate parties was conducted to determine methods to avoid, minimize, or mitigate adverse effects to the East Pearl River Bridge. The mitigations in the draft Memorandum of Agreement consisted of Historic American Engineering Record documentation of the bridge, along with marketing for a non-vehicular, alternative use at another location. The draft MOA is anticipated to be executed in 2026.

The architectural survey identified two buildings (ESI SS#01 and 02), an NRHP-listed residence (MS No. 045-PER0008-NR) in the visual APE, and the East Pearl River Bridge in the direct APE in Hancock County. ESI SS#01 and 02 were not recommended eligible for the NRHP.

The NRHP listed property (Virle Reid property) (MS No. 045-PER0008-NR), located at 5098 SR 604 (MS No. 045-PER0008-NR), Pearlinton, was not re-evaluated. None of the alternatives will have a direct impact on the NRHP-listed residence. Although the proposed realignment of SR 604 associated with the Long Span Alternative, Loop Road Option does pass within about 65 meters (213') of the cottage, it does not cross the boundaries described for the NRHP property. Thus, there are no direct impacts to the NRHP property nor will there be a required taking of the property. Section 106 consultation among MDOT, FHWA, MDAH, and other appropriate parties was conducted to determine if indirect impacts, such as viewshed issues, will have an adverse effect on the NRHP listed property. The Section 106 consultation determined that the project would not have an adverse effect on the NRHP listed property but that there would be an adverse effect to all five NRHP eligible bridges. The Section 106 consultation determined methods to avoid, minimize, or mitigate adverse effects.

In addition to the resources discussed above, the MDAH requires the evaluation of linear resources that are located in the direct APE. Two such resources were identified: US 90 and SR 604. US 90 (22Ha0171) is recommended eligible for nomination to the NRHP under Criterion A, as it contributes to important patterns in the history of transportation. The East Pearl River Bridge is a contributing element to the linear resource, as well as being individually eligible for the NRHP under Criteria A and C. None of the alternatives under consideration require moving the US 90 corridor. Therefore, there will be no effect on the US 90 linear resource. The section of SR 604 (22Ha784) in the direct APE is recommended ineligible for the NRHP. Thus, the construction of any of the alternatives will have no effect on historic linear resources.

3.17.1 COMMITMENTS AND MITIGATION MEASURES

The commitments and mitigation measures for the four Louisiana bridges have been met. Commitments and mitigation measures for the East Pearl River Bridge are stipulated in the draft MOA which can be found in **Appendix I**.

3.18 Section 4(f) Resources

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966, 49 USC 303(c), is a federal law that protects publicly owned parks, recreation areas, wildlife and/or waterfowl refuges, as well as significant historic sites, whether publicly or privately owned (collectively, “Section 4(f) resources”). Section 4(f) requirements apply to all transportation projects that require funding or other approvals by the USDOT. As a USDOT agency, FHWA must comply with Section 4(f). FHWA’s Section 4(f) regulations are at 23 CFR Part 774. FHWA also considers the guidance provided in FHWA’s Section 4(f) Policy Paper (July 20, 2012).

Under Section 4(f), FHWA cannot approve a transportation project that uses a Section 4(f) property unless FHWA determines that:

- There is no feasible and prudent avoidance alternative to the use of land from the Section 4(f) property, and the action includes all possible planning to minimize harm to the property resulting from such use (23 CFR 774.3(a)); or
- The use of the Section 4(f) property would have a *de minimis* impact on the property (23 CFR 774.3(b)). In determining whether an impact is *de minimis*, FHWA must consider all avoidance, minimization, mitigation, or enhancements measures that are incorporated into the project.

Boat Launches

Three public boat launches are located within the Study Area, all on the southwest side of US 90 at the West Pearl River, Middle Middle Pearl River, and the East Pearl River. All three launches are fully or partially located within existing LADOTD ROW. On August 25, 2025, FHWA concurred with LADOTD that Section 4(f) does not apply to the boat launches within the existing right-of-way.

U.S. 90 between west side of West Pearl River to Pearlington is closed. This segment of U.S. 90 was closed in March of 2021 because the bridges along the segment are in poor condition. The East Pearl River Bridge is still open for local traffic up to Honey Island Marina Road. West of Honey Island Road, the roadway is closed. The driveway to the boat launch on the East Pearl River is east of Honey Island Rd so access to the launch is still possible from the east. Similarly, access to the boat launch at West Pearl River Bridge is still possible for local traffic from the west but not from the east. There is no access to the boat launch at the Middle Middle Pearl River Bridge as the bridges to the east and west of the Middle Middle River Bridge are closed.

The project calls for the replacement of the bridges and the boat launches are using the existing bridges’ ROW. The impact of the bridge replacements on the boat launches is on their access and parking while the bridges are being constructed. Existing access is limited. There may be times when access may be restricted due to the proximity of the access to the construction. Also, parking if available during construction may be restricted to areas within the right of way not immediately adjacent to the construction site for safety reasons.

LADOTD has determined that Section 4(f) does not apply to these launches pursuant to 23 CFR 774.11 and FHWA concurred. 23 CFR 774.11(h) states that when a property formally reserved for a future transportation facility temporarily functions for park, recreation, or wildlife and waterfowl refuge purposes in the interim, the interim activity, regardless of duration, will not subject the property to Section 4(f). The existing ROW of a bridge is reserved for the future maintenance, rehabilitation and replacement of the bridge. The replacement

bridge is the future transportation facility. Hence, the boat launch, located within the existing ROW needed for the replacement bridge, is an interim activity not subject to Section 4(f). LADOTD and FHWA have determined that a Section 4(f) evaluation for the boat launches is not required.

Historic Resources

In Mississippi, the Gooseneck Option Long Span Bridge Alternative avoids impact to Virle Reid's property, a NRHP property, located at #5098 State Route 604. All five bridges proposed for replacement are eligible for listing on the NRHP, which makes all five bridges Section 4(f) resources. The *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges* (FHWA 1983) is applicable for this project. The Section 4(f) programmatic for historic bridges was applied and the report can be found in **Appendix J**.

3.21.1 COMMITMENTS AND MITIGATION MEASURES

The commitments and mitigation measures for the historic bridges are met through the application of the Section 106 HBPA and MOA. The Section 106 mitigation also serves as the mitigation for Section 4(f) for these resources. By following the requirements in the HBPA and the MOA, the project complies with the terms of the programmatic Section 4(f). The MOA commitments include marketing of the East Pearl River Bridge which will be done following execution of the MOA.

3.19 Section 6(f) Resources

The Land and Water Conservation Fund (LWCF) Act of 1965 regulates admission and special recreation user fees at certain recreational areas and establishes a fund to subsidize state and federal acquisition of lands and waters for recreational and conservation purposes. Section 6(f) of the Act requires coordination with and approval of federal undertakings by the U. S. Department of the Interior if land acquired and/or developed using LWCF funds is to be impacted by the undertaking.

No Section 6(f) properties were identified within or immediately adjacent to the Study Area (Louisiana Department of Culture, Recreation, and Tourism 2016 and MDWFP 2016b).

3.20 Hazardous Waste Sites

A Phase I ESA was performed in general conformance with the scope and limitations of ASTM E1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. A separate technical report titled *Phase 1 Environmental Site Assessment and Supplement Report, US Route 90 Bridge Replacements, St. Tammany Parish, Louisiana and Hancock County, Mississippi* (2016 and 2019) was prepared in support of this project.

For the purposes of the Phase I, the *property* is defined as the ROW of US 90, spanning approximately 4.8 miles from the intersection of Highway 190 in St. Tammany Parish, Louisiana to the intersection of Kelly Road/Seventh Avenue in Hancock County, Mississippi, with areas north of US 90 where access roads are expected to be constructed.

Recognized environmental conditions are indicative of the presence or likely presence of any hazardous substances or petroleum products in, on, or at the property: (1) due to any release to the environment; (2)

under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. No recognized environmental conditions were identified in connection with the property.

One active water well was observed on the property, adjacent to the East Pearl River Bridge approach. One abandoned water well was observed on the property, in the area where access roads for US 90 bridge replacement are expected to be constructed. Several pole-mounted electrical transformers were observed along the northern property boundary and appeared to be in good condition with no evidence of leaks or corrosion. The Phase I concluded that these would be considered *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

In July 2019, a supplementary environmental assessment of the proposed East Pearl Replacement Alternatives (Loop Road Option and Gooseneck Frontage Road Option) was prepared. In addition, an aboveground storage tank (AST) related to the bridge operator trailer adjacent to the East Pearl River Bridge was also investigated.

One septic tank, three pole-mounted electric power transformers, and three domestic water wells were observed within and adjacent to the proposed replacement alternative areas within residential and commercial properties north of US 90 and east of Highway 604. Additionally, above-grade piping possibly related to a former water well was observed at a razed residential property within the footprint of the proposed replacement alternative areas north of US 90 and west of Highway 604. The pole-mounted electric transformers appeared to be in good condition with no evidence of leaks or spills.

During site reconnaissance of the AST related to the bridge operator trailer adjacent to the East Pearl River Bridge, it was confirmed that the AST stored water for plumbing usage within the trailer. Additionally, it was confirmed that a septic tank was located adjacent to the bridge operator trailer. Confirmation was accomplished by visually-inspecting these features and interviewing the onsite bridge operator.

Based on the results of the Phase I ESA and the supplement to the Phase I ESA, no recognized environmental conditions were identified.

3.20.1 COMMITMENTS AND MITIGATION MEASURES

No specific mitigation is proposed. If any solid or hazardous wastes or soils and/or groundwater contaminated with hazardous constituents are encountered during the during construction, notification is required to either LDEQ's Single Point of Contact at (225) 219-3640 or (225) 342-1234 or the Mississippi Emergency Management Agency's 24-hour State Warning Point at 1-800-222-6362 depending on location. Additionally, precautions should be taken to protect workers from hazardous constituents.

3.21 Construction Impacts

Air

Direct emissions from construction equipment are not expected to produce adverse effects on local air quality provided that all equipment is properly operated and maintained. If required, traffic management techniques

are available during the construction period that would mitigate increased emissions from traffic congestion due to lane closures, detours, and construction vehicles accessing sites.

Air quality impacts due to temporary construction activities are possible particularly on dry and windy days. Minimization techniques could include development of site-specific traffic management plans; temporary signage and other traffic controls; designated staging areas, worker parking lots (with shuttle bus service if necessary), and truck routes; and prohibition of construction vehicle travel during peak traffic periods.

Potential fugitive dust impacts would be minimized through good "housekeeping" practices such as water sprays during demolition; wetting, paving, or landscaping exposed earth areas; covering dust-producing materials during transport; limiting dust-producing construction activities during high wind conditions; and providing street sweeping and tire washes for trucks leaving the site.

Noise

Noise levels from construction activities within the Study Area, although temporary, could be a nuisance at nearby sensitive receptors such as the residences in Pearlinton. Noise levels during construction are difficult to predict and vary depending on the types of construction activity and the types of equipment used for each stage of work. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns and is not usually at one location very long. Project construction activities can include bridge and ramp construction, relocating utilities, and roadway grading. Since heavy-duty impulsive equipment, such as pile drivers, may be utilized by the selected contractor as part of the construction activities, noise control measures (such as vibratory pile drivers or pre-auguring) may be required during construction to minimize temporary impacts in the community.

All construction equipment will be required to comply with OSHA Regulations as they apply to the employees' safety, and in accordance with the LADOTD Standard Specifications. All construction equipment used in the construction phase of the project should be properly muffled and all motor panels should be shut during operation.

To reduce temporary construction noise impacts that may result, several "good housekeeping" practices are recommended. The selected contractor would be required to comply with the LADOTD and MDOT's *Highway Traffic Noise Policy* regarding allowable construction periods and activities. Additionally, several noise control measures are available to minimize the noise impacts in the community and could be incorporated into the construction process including the following:

- Establish equipment and material staging areas away from sensitive receptors;
- Whenever possible, conduct all construction activities during the daytime period to minimize any potential sleep disturbances;
- Substitute louder equipment to minimize nuisance noise in the community; and,
- Adequately notify the public of construction operations and schedules.

Methods such as construction-alert publications could be used to handle complaints quickly.

Water Quality

Impacts to water quality are possible during and after construction. Erosion during construction of the proposed bridge and roadways can contribute sediment and silt to runoff waters, resulting in deteriorated water quality. Surface water runoff during construction could increase turbidity, lower dissolved oxygen, and increase biological oxygen demand in receiving waterbodies. Heavy metals, oils, other toxic substances, and debris from construction traffic and spillage can be absorbed by soil at construction sites and carried with runoff water.

Maintenance of Traffic

As the US 90 route is closed between the West Pearl River bridge and just west of the East Pearl River bridge, there would be no traffic to maintain. Utilities (water, drainage, and electric) will require relocation. In addition, access to businesses along US 90 would have to be maintained during construction.

Temporary impacts to traffic using the East Pearl River Bridge to access the west side of the East Pearl River will be experienced during construction of any of the Replacement alternatives. Upon completion of construction, local travelers will experience an adjustment to the revised circulation patterns of the permanent improvements. It is expected that any disruption to local travel will be short lived.

Navigation

Construction of either of the Replacement Alternatives could potentially affect boat traffic on the West Pearl River; however, these effects would be short-term.

3.21.1 COMMITMENTS AND MITIGATION MEASURES

To minimize impacts, LADOTD and MDOT will require its contractors to follow certain guidelines. Many of these are outlined in *Standard Specifications for Roads and Bridges* (LADOTD 2026 and MDOT 2017). Coordination with appropriate agencies is the overarching mitigation principle along with the commitment to maintain traffic flow on US 90, access to homes and businesses, and access for navigation.

Noise

LADOTD and MDOT are committed to abatement of construction noise at the noise sensitive locations within the Study Area. In general, the selected contractor would need to demonstrate compliance with the LADOTD and MDOT's *Highway Traffic Noise Policy* as well as any local noise ordinances regarding temporary construction activities.

Water Quality

Runoff control measures can be installed at the time of construction to reduce runoff pollution both during and after construction. Such measures can effectively limit the entry of pollutants into surface waters and protect their quality, fish habitats, and public health. These control measures are termed BMPs. LDEQ and MDEQ monitors these practices through the Section 401 Water Quality Certification program, which is integrated into the Section 404 wetlands permit. With the proper use of BMPs, impacts to water quality would be short-term and minimal.

Maintenance of Traffic

A Maintenance of Traffic plan will be prepared during final design for travelers using the East Pearl River bridge to reach the west side of the East Pearl River; however, the remaining segment of the US 90 route up through the West Pearl River Bridge will remain closed during construction.

Navigation

Regardless of which alternative is selected, LADOTD and MDOT will coordinate with the USCG to reduce impacts on navigation in the rivers. Measures to mitigate impacts will be included in the bridge permit requirements as approved by the USCG.

In addition, NASA expressed concerns regarding closures of the East Pearl River to navigation during construction activities. NASA requested that any such closure be brief (limited to a day or two) and that the closures be scheduled in coordination with NASA. LADOTD and MDOT will work with NASA and the U.S. Navy on the scheduling of any closures of the River to navigation during construction. Also, permitting of such closures would be under USCG jurisdiction purview.

Demolition Activities

Construction of any of the replacement alternatives will require removal of the existing bridge either by relocation or demolition. Demolition of structures in or under the water may employ mechanical cutting, impacting, or vibration techniques. Demolition work may require the use of explosives. Most construction work for construction of the bridges will be performed from floating barges. On land, demolition and reconstruction of the roadway will employ impact and vibration techniques, pile driving, earth moving, and other heavy equipment activities.

Detailed mitigation plans will be outlined in the construction and bridge plans prepared during the Design Phase of the project. Measures may include scheduling of certain activities, limiting blasting pressures and timing, reducing discharge to waters and wetlands, and restoring natural areas after construction.

3.22 Reasonably Foreseeable Impacts

Reasonably Foreseeable impacts are “caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable. These impacts may include growth inducing effects and other effects related to induced changes in patterns of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

The Alternatives would not change the general pattern of development in the Study Area as the pattern results from the local economy that drives the market demands for additional housing, commercial services, and community facilities to meet the needs of a slowly increasing population.

Because the majority of the wetland impacts are contained entirely within the ROW of US 90 and the majority of the area is protected as a WMA, the effects on these resources would not encourage development into adjacent wetland areas. The floodplains within the Study Area are already crossed by the existing highway and would not be impacted further by the project. The minor impacts to vegetated areas and wildlife are temporary or restricted to the wetland areas and, as with the wetlands, would not contribute to impacts in adjacent areas.

Although most through traffic has been using I-10 since its completion in 1970, up until the closure of this segment of US 90, the route and the existing bridges provided an alternate route in the event of delays on I-10. As the route segment is currently closed, there will be no traffic until construction is complete. The project is not expected to induce additional average daily traffic or an increase in land development beyond that which existed before the route closure.

3.23 Permits and Approvals

Implementation of the Alternatives would require the following permits and approvals:

- A Section 404 permit issued by the USACE. Compensatory mitigation to offset waters and wetland impacts would be required.
- A Section 10 permit issued by the USACE.
- As a condition of the 404 permit approval, a Water Quality Certification from the LDEQ and MDEQ.
- USCG Bridge Permits are required for the construction of a bridge across a navigable waterway in accordance Section 9 of the Rivers and Harbors Appropriations Act and the General Bridge Act.
- Regarding floodplain impacts, the St. Tammany Parish and Hancock County floodplain administrators will be contacted for any permits and approvals.
- A Louisiana Natural and Scenic River System Permit under the authority of the Louisiana Scenic Rivers Act, administered by the LDWF, would be required for the West Pearl River Bridge.
- A Coastal Use Permit issued by both LDCE (formerly LDNR) and MDNR.
- Authorization and/or permit under the Louisiana and Mississippi Pollutant Discharge Elimination Systems from LDEQ and MDEQ for Stormwater Discharge for Construction Activities over 5 Acres.

Table 3- 20 Summary of Commitments and Permits

EA Section	Commitment/Mitigation	Implementation Timing
Section 3.11 Migratory Birds	Migratory Bird Conditions will be required for all bridge construction, demolition, or maintenance within the months of March 1 through September 30. Special Provisions, S.P. (Sec 202) Removal of Debris (Bird Maintenance), of the 2026 Louisiana Standard Specifications for Roads and Bridges will be inserted into the plans and adhered to during demolition of existing and detour structures.	Prior to and During Construction
Section 3.12 Threatened and Endangered Species	Gulf Sturgeon: familiarize construction personnel with Gulf Sturgeon; pile tapping before pile driving; limit pile driving to no more than 206dB noise; no pile driving between March 1 through May 15 or September 1 through November 1; no nighttime pile driving between March 1 through November 1; maintain fish passage by limiting concurrent in-water activity to two of the five waterways; minimize suspended sediments using sediment exclusion measures; in-stream Best Management Practices limited to active jobsite where turbidity increases are likely. West Indian Manatee: familiarize construction personnel with West Indian Manatee and need to avoid collisions and injury, and advise of penalties for harming, harrasing or killing manatees; shut down operations when Manatee are within 50 feet of the operation and resume only when manatee is beyond 50 feet of operations, or until 30 minutes lapses and manatee has not reappeared; manatee must not be harassed or hearded into leaving; idle speed when manatees are within project area, all vessles follow deep water routes whenever possible; siltation and turbidity barriers shall be made of materials in which manatees cannot become entangled and shall be monitored regularly to avoid manatee entanglement and shall not impede manatee movement; temporary signs concerning manatees shall be posted prior to and during all in-water project activities; each vessel involved in construction shall display a sign near the control area instructing shutdown of all activities when manatees are within 50 feet of the operation, signs will be removed after constructions; Any collision with, injury to, or sightings of a manatee(s) shall be reported immediately to USFWS Louisiana Ecological Services Office (337-291-3100); the USFWS Mississippi Ecological Services Office (601-965-4900); the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225-765-2821); and the Mississippi Department of Wildlife, Fisheries, and Parks, Mississippi Natural Heritage Program (601-576-6000); contractor shall be held responsible for any manatee harmed, harassed, or killed as a result of construction activities not conducted in accordance with these specifications.	Prior to and During Construction
EA Section	Commitment/Mitigation	Implementation Timing

Section 3.14 Essential Fish Habitat	Additional coordination with National Marine Fisheries Service will be initiated once mitigation plan is in place for Coastal Use Permit and Section 10 USACE Permit to determine if mitigation for coastal wetlands and Section 10 Waters is sufficient for habitat mitigation; additional mitigation, if required, will be completed.	Prior to Construction
Section 3.15 Boat Launches at West Pearl and East Pearl Bridges	Provide public notification of closure	Prior to Construction
Section 3.17 Cultural Resources	Abide by conditions of Louisiana Historic Bridge Programmatic Agreement and project Memorandum of Agreement by marketing the West, West Middle, Middle Middle and East Middle, East Pearl River bridges; Historic American Engineering Record documentation of East Pearl River Bridge.	Prior to Construction
Permits		
Section 2.2 Navigation	Obtain U.S. Coast Guard Navigation Permit	Prior to Construction
Section 3.6 Wetlands and Waters of the U.S.	Obtain U.S. Army Corps of Engineers Section 404 and Section 10 Permit	Prior to Construction
Section 3.7 Floodplain	Coordinate with Floodplain Manager, follow best measures to minimize impact	Prior to Construction
Section 3.8 Louisiana Scenic River Act Permit	Obtain permit from Louisiana Department of Wild Life and Fisheries	Prior to Construction
Section 3.9 Coastal Zone	Obtain Coastal Use Permit from Louisiana Department of Conservation and Energy and Mississippi Department of Natural Resources	Prior to Construction
	Authorization and/or permit under the Louisiana and Mississippi Pollutant Discharge Elimination Systems from LDEQ and MDEQ for Stormwater Discharge for Construction Activities over 5 Acres	Prior to Construction

4.0 AGENCY AND PUBLIC COMMENT

This chapter contains a summary of agency coordination and the public involvement outreach process.

4.1 Solicitation of Views

Early coordination was initiated with a SOV packet during the initial planning stage of the project. The SOV packet was mailed by LADOTD September 27, 2012 and again on January 15, 2014 to applicable federal, state

and local agencies, organizations, individuals, Indian tribal contacts, and elected officials in the Study Area. On December 1, 2023, after the bridges and roadway were closed, LADOTD mailed a revised solicitation of views for the replacement of the four Louisiana bridges. The packet included a letter, preliminary project description, and project location map. The SOV letter requested identification of possible adverse economic, social, or environmental effects or concerns. Copies of the SOV packet and SOV responses are included in **Appendix E**. **Table 4-1** summarizes the responses to the SOV packet by the agencies.

Table 4- 1 Summary of Solicitation of Views Responses from Agencies

Date	Responder	Comment Summary
October 9, 2012	FEMA	Contact parish floodplain administrator
October 9, 2012 February 4, 2014 November 27, 2024	USACE Vicksburg	No ongoing or proposed activities in Study Area; permit required for wetland impacts; 408 Review required
October 10, 2012 February 26, 2014 December 12, 2023	NRCS	No impact to prime farmlands
October 11, 2012 February 5, 2014 November 30, 2023	USEPA Region 6	No adverse effect on groundwater (Sole Source Aquifer)
October 11, 2012 February 4, 2014	LADOTD	Contact floodplain administrator for St. Tammany Parish
October 12, 2012 February 13, 2014	USCG	USCG permit required USCG to act as cooperating agency
October 17, 2012 January 31, 2014	St. Tammany Parish	No objection
October 22, 2012	USACE New Orleans	Outside New Orleans District's regulator jurisdiction
October 24, 2012 April 7, 2014 December 4, 2023	LDEQ	No objection; obtain any necessary permit; evaluate potential impacts of increased flow; use proper design for velocities, scour, erosion, banks stability and water quality; consider nature based solutions; preserve natural function of streams; require LPDES permit for discharges into waters of the state; control non-point source pollution from construction; may need wetland permit; protect groundwater; if encounter solid or hazardous waste contact DEQ; protect workers; require scenic river permit; waterway impairments include mercury in fish; properly dispose of materials; report contaminated soil/groundwater to DEQ, St. Tammany is in attainment for NAAQS
October 24, 2012	LDWF	Potential impacts to gulf sturgeon and critical habitat

Date	Responder	Comment Summary
February 21, 2014 March 17, 2014 December 13, 2023 December 21, 2023		Authorization required from LDWF prior to work on West Pearl River (Scenic River), potential impacts to paddlefish; Project within WMA – contact LDWF for authorization; scenic river permit required; potential impacts to alligator snapping turtle and gulf sturgeon.
October 25, 2012	LA Department of Children and Family Services	No objection
October 26, 2012 February 20, 2014 March 12, 2014	USEPA Region 6	Consult with LDEQ regarding water quality; project is over a Sole Source Aquifer; project will impact wetlands; project is within 100-year floodplain; project is within the Pearl River WMA; bridges are eligible for NRHP
October 29, 2012	Coushatta Tribe of Louisiana	Thank you
October 29, 2012	Greg Cromer – State Representative	Concerns regarding closure of major highway
October 30, 2012 November 29, 2023	MDOT	Concerns expressed included road closures, longevity of project, accelerated construction schedule, Road User Cost for each alternative, review of Draft and Final EAs and Traffic Control Plans
October 30, 2012 February 13, 2014	NMFS	Potential impacts to EFH and wetlands
November 2, 2012 January 24, 2014	USFWS – Lafayette	Potential impacts to gulf sturgeon, gulf sturgeon critical habitat, ringed-necked turtle, West Indian manatee, Pearl River WMA, scenic rivers, and wetlands.
November 5, 2012 March 10, 2014 April 7, 2014	LDNR	Notice of two dry and plugged wells in Study Area; registered water wells in vicinity Coastal Use Permit Application Minimize impacts to vegetated wetlands
December 20, 2012 February 10, 2014	Jena Band of Choctaw Indians	Requested further information as it becomes available Requested cultural resources survey
December 26, 2012	Choctaw Nation of Oklahoma	Requested copy of archaeological survey
January 23, 2014	LA State Land Office	No objection
February 5, 2014	LA Department of Agriculture and Forestry	No objection

Date	Responder	Comment Summary
February 5, 2014 December 18, 2023	LA SHPO	Requested description of APE, project scope of work, maps, and photographs; HBPA for Historic bridges should be followed
February 24, 2014	NASA	Proposed two choices for replacement of East Pearl River Bridge – fixed bridge and swing/bascule bridge both with a horizontal navigation clearance of 90'
February 24, 2014 December 18, 2023	MS Department of Marine Resources	Permit will be required if project impacts coastal waters and wetlands in MS
February 25, 2014 December 4, 2023	MDAH	Concur East Pearl River Bridge is eligible for NRHP; recommend cultural resource survey; requested to be included in consultation
March 12, 2014	USEPA Region 4	East Pearl River is impaired, project should have minimal impact to East Pearl River, recognizes bridge eligible for NRHP and defers Section 106 to the appropriate agencies, advised to contact USFWS regarding ringed-map turtle
March 31, 2014	LA Department of Health and Hospitals	No objection
April 7, 2014 December 12, 2023 January 30, 2024	USACE New Orleans	Project falls within both 10/404 jurisdiction; permit may be required
December 20, 2023	MDEQ	Do not expect adverse effect to ambient air quality; need to secure any required air emissions permits prior to construction.

4.2 Agency Coordination

Individual consultation for this project has been conducted with the following agencies.

USFWS and NMFS (also known as NOAA Fisheries)

LADOTD initiated Section 7 consultation under the ESA in January 2016. Both the USFWS Lafayette, Louisiana and Jackson, Mississippi Ecological Services Offices were consulted regarding the potential presence of species within the Study Area. In addition, NOAA NMFS, Southeast Regional Office, was consulted regarding marine species and EFH. Copies of all correspondence with these agencies are provided in **Appendix G**.

NASA and the U.S. Navy

On September 24, 2015, members of LADOTD, Neel-Schaffer, and the USCG met with NASA personnel. An overview of the project was given. Items discussed included existing navigation on the East Pearl River, alternatives for the East Pearl River Bridge, and East Pearl navigation clearances.

On June 12, 2019, members of LADOTD and Neel-Schaffer met with NASA and U.S. Navy personnel. Topics of discussion included the navigation clearances of the existing US 90 East Pearl River Bridge and the I-10 crossing, the proposed bridge concepts, required navigation clearances of NASA and U.S. Navy vessels, and navigation closures as a result of construction.

USCG

On August 31, 2015, members of LADOTD, Neel-Schaffer, and Huvall & Associates met with Mr. David Frank of the USCG. An overview of the project was given. Items discussed included alternatives for each bridge, navigation clearances, the natural environment, public and agency involvement, and permitting. USCG requested to be included as a “Cooperating Agency” in development of the project.

In addition, multiple meetings have been conducted with MDOT over the course of this project to discuss alternatives for the East Pearl River Bridge.

4.3 Public Meetings

Three, open house public involvement meetings to discuss the proposed alternatives for the US 90 Bridges was conducted. The first was held from 4:00 to 7:00 PM on Thursday, September 22, 2016, at the Pearlinton Recovery Center, 5265 Highway 604, Pearlinton, Mississippi. The second was held from 4:30 to 7:30 PM on Tuesday, September 27, 2016, at the Northshore High School Library, 100 Panther Drive, Slidell, Louisiana. The third was held from 4:00 to 7:00 PM on Thursday, August 22, 2019, at the Pearlinton Recovery Center.

The purpose of the 2016 Public Meetings was to allow agencies, local representatives, and the public to review and comment on the Alternatives that were being proposed in the development of this EA for the project. The open house style meeting, with a PowerPoint presentation, allowed citizens the opportunity to receive information about the environmental process of the project, to view exhibits, ask questions, and offer comments during the scheduled hours.

In response to comments received at the 2016 meetings and further analysis, new concepts were developed for the Long Span Bridge Alternative. The purpose of the 2019 meeting was to present to the public the Gooseneck Frontage Road Option and receive public comment on all the proposed alternatives and concepts.

The methods of notification for the Public Meetings included placing a legal notice in the *New Orleans Advocate* on September 8, 15, and 22, 2016; the *Seacoast Echo* on September 10, 14, and 21, 2016 and August 7 and 14, 2019; and the *Slidell Independent* on September 8, 15, and 22, 2016 and issuance of a press release that earned both electronic and radio media attention. The September 22, 2016 Pearlinton meeting drew 60 attendees, and the September 27, 2016 Slidell meeting drew 6 attendees. A total of 18 comment communications were received including 4 written comments that were submitted at the meeting and 14 comments received by e-mail. These meetings dealt with the alternatives which included offset alignments. The only build alternatives under consideration now that the roadway and bridges are closed are the replacement of the bridges on existing alignment.

The August 22, 2019, Pearlinton meeting drew 65 attendees. Although this also occurred prior to the closure of the roadway and bridges, the alternatives in Pearlinton are still under consideration. A total of 16 written

comments were received. **Appendix K** summarize comments received from the August 2019 Public Meeting in Pearlinton. In most cases, these responses address the current status of the issue commented upon; only those commenters requesting information received individual responses.

The most extensive comment discussion was by Mr. Virle Reid. He expressed various concerns about the Long Span Loop Road Option and how that option may affect his property, which includes a National Register designated Standing Structure. His preference is for the rehab of the existing bridge. Considering replacement alternatives, Mr. Reid supports the Movable Bascule Span Alternative.

Other comments were received supporting rehab alternatives and/or replacement alternatives. Considering replacement alternatives, owners of property facing existing US 90 generally supported the Movable Span Alternatives. Other Pearlinton residents supported the Long Span Options. A Public Meeting comment was received from the Belle Isle Property Owners Association (a residential subdivision located in Pearlinton, Mississippi) indicating the association's preference for replacement alternatives on the Middle River bridges.

As a result of Executive Order (E.O.) 14148, E.O. 14154, E.O. 14173, and the removal of the Council on Environmental Quality's regulations, all federal environmental justice requirements are revoked and no longer applicable to the federal environmental review process. Accordingly, this EA does not consider public comments regarding environmental justice.

4.4 Publication of Environmental Assessment

The EA will be made available to all interested federal, state, and local agencies and the general public for a 30-day review and comment period, in compliance with NEPA and FHWA regulations. The LADOTD will published a Notice of Availability of the EA in the legal notices section of the *New Orleans Advocate*, *Seacoast Echo*, and the *Slidell Independent*. The Notice of Availability will also be mailed to interested parties and agencies. Additionally, the EA will be made available for review at the Pearlinton Public Library, 6096 First Avenue, Pearlinton, Mississippi, 39572 and the St. Tammany Parish Library, Slidell Branch, 555 Robert Boulevard, Slidell, Louisiana, 70458.

4.5 Public Hearing

Two public hearings, one in Louisiana and one in Mississippi, will be held in conjunction with the publication of this EA.

Permits and Commitments

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