

Section 404(b)(1) Analysis

1. Introduction

1.1 Project Description

The Louisiana Department of Transportation and Development (LADOTD) has submitted a Department of the Army permit application to the US Army Corps of Engineers (USACE), New Orleans District (CEMVN) to construct a high-speed, four-lane arterial highway from the southern terminus of the current, modern four-lane arterial portion of LA 21 in Bush, Louisiana, to I-12, a distance between 17.4 and 21 miles. The majority of the proposed highway would be designed as a rural arterial road RA-3 with a design speed of 70 miles per hour. The typical cross section would have two 12-foot travel lanes, an 8- to 10-foot outside shoulder, and a 4-foot inside shoulder in each direction (see EIS Figure 1-2). The median width would vary depending on highway design class used ranging between 40 and 60 feet, and a maximum ROW requirement of 250 feet. The exception to that design would be as the proposed project transitions into existing roadways (i.e. intersections), and where alternative alignments follow the existing LA 21.

To ensure an adequate foundation, existing soils could be excavated and earthen fill obtained from an undetermined source could be deposited to elevate the highway embankment over natural grades. Borrow and useable material for the project would be obtained from outside the project area (the area bounded by LA 21 to west, LA 41 to east and I-12 to south) from LADOTD-approved sites in non-wet areas. Roadway embankments would be sloped with inside slopes of approximately 6:1 for 26 feet from edge of shoulder and then 4:1 thereafter. Roadside ditches would be constructed as required to reduce ponding along the roadway. A typical design of the ditch would be 4 feet below existing grade with a width of 4 feet. Ditches would be employed to divert surface water flow to structural highway crossings as required. Drainage structures would be identified to have no net impact on the drainage of the area when considering peak runoff flows during the 25-, 50-, and 100-year storms at each of the locations. Drainage structures would include bridges, reinforced boxes, or reinforced pipes depending on the flow to be passed through the structure.

1.2 Section 404(b)(1) Guidelines

Projects subject to the individual permitting process by the USACE under the Clean Water Act (CWA) must comply with Section 404(b)(1) guidelines (40 CFR, Part 230) for discharge of dredge and fill material into waters of the U.S. Section 404(b)(1) guidelines of the CWA require that “except as provided under Section 404(b)(2), no discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.” The guidelines consider an alternative practicable “if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” Practicable alternatives under the guidelines assume that “alternatives that do not involve special aquatic sites are available, unless clearly demonstrated otherwise.” The guidelines also assume that “all

practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.”

2. Alternatives Analysis

2.1 Introduction

The alternative screening process is described in detail in Chapter 2 of the I-12 to Bush EIS. The alternatives screening process was conducted in accordance with both NEPA and Section 404(b)(1) guidelines. The identification, verification, evaluation, and screening of all known alternatives were conducted by the CEMVN, with review and input from the following consulting agencies: U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service and the Louisiana Department of Wildlife and Fisheries.

2.2 Project Purpose

Defining the project purpose is critical to the evaluation of any project’s compliance with the section 404(b)(1) guidelines. In accordance with section 404(b)(1) *Guidelines for Specification of Disposal Sites for Dredged or Fill Material*, Subpart B, Compliance with the Guidelines, [40 CFR 230.10(a)(3)], where the activity associated with a discharge which is proposed for a special aquatic site (as defined in subpart E) does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not “water dependent”), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge, which do not involve a discharge into a special aquatic site are presumed to have less adverse impacts on the aquatic ecosystem, unless clearly demonstrated otherwise.

The USACE defines two types of purposes for each project: (1) basic purpose to determine water dependency of a project, and (2) overall purpose for identifying and evaluating practicable alternatives. CEMVN defines the basic purpose of the project as to provide for regional transportation needs. As such, the proposed project does not require siting within a special aquatic site to fulfill its basic purpose. CEMVN defines the overall project purpose as to construct a four-lane arterial highway from the southern terminus of LA 21 in Bush, Louisiana, to I-12. The need for the project is to meet a legislative mandate in Louisiana Revised Statute 47:820.2B(e), which requires, “[t]he Louisiana Highway 3241 project from Interstate 12 to Bush...shall be constructed as a [four]-lane or more highway.”

LADOTD has stated that the proposed highway is needed as an alternative north-south connection that could reduce congestion and delays for those traveling from northern St. Tammany Parish and Washington Parish to I-12. The proposed highway could increase safety by reducing the amount of traffic and congestion on existing routes (LA 41 and LA 21/LA 59/US 190), and thereby reduce the potential for accidents. In addition, travel timesavings could help support and enhance potential economic development in northern St. Tammany and Washington Parishes. In addition, LADOTD is obliged to construct the proposed highway to comply with Louisiana Revised Statute 47:820.2B(e).

2.3 Alternative Screening and Selection

Several alternatives were evaluated in compliance with the Section 404(b)(1) guidelines. The Section 404(b)(1) guidelines require that the USACE permits the least environmentally damaging practicable alternative (LEDPA). The alternatives analysis required for Section 404(b)(1) guidelines can be conducted either as a separate analysis for Section 404 permitting or incorporated into the NEPA process. The CEMVN has integrated Section 404(b)(1) guidelines into the alternatives analysis to ensure that the alternatives selected for evaluation in the EIS provide a reasonable range of alternatives and that the alternatives are practicable.

In addition to the No Build Alternative, a range of reasonable alternatives to meet the purpose and need of the proposed action was formulated through input by CEMVN, LADOTD, local government agencies, the public, stakeholders, and cooperating resource and regulatory agencies. During the alternatives development process, 64 alternatives were developed. Eventually, all but four alternatives were eliminated as presented in Section 2.1 of the EIS. The four build and the “No Build” alternatives carried forward for EIS and Section 404(b)(1) analysis represent a reasonable cross section of practical alternatives. The build alternatives determined to be practicable and addressed in the EIS include:

Alternative B/O would widen LA 21 to a four-lane highway from Bush to just north of Waldheim, then continue as a new four-lane roadway about halfway between Alternatives B and O before capturing Alternative O just north of LA 435, terminating at LA 1088 near I-12. This alternative would use as much of existing highway alignments and non-wetland areas as possible to minimize impacts to the human and natural environment. The alternative would be approximately 19.5 miles long, with 7.0 miles on existing alignment and 12.5 miles on new alignment. The majority of the alignment would consist of an RA-3 typical cross section, which would have a typical ROW width requirement of 250 feet. Control of access could be provided except where the highway follows existing LA 21 and highway crossings at LA 435 and LA 36, and the connection to LA 1088.

Alternative J would be new construction of a four-lane highway following the abandoned railroad corridor from Bush to a point due north of the Slidell Municipal Airport. From that point, the proposed route would connect to Airport Road, which ties into I-12 at an existing interchange (Exit 80). This proposed route would be approximately 21.1 miles long, with 14.2 miles using the abandoned railroad embankment, 5.4 miles on new alignment, and 1.5 miles of existing roadway. The majority of the route (17.5 miles) would consist of an RA-3 typical cross section, which would have a typical ROW width of 250 feet. The northern 0.7 mile of the route would consist of a rural arterial-2 (RA-2) cross section, while the southern 1.9 miles would have suburban arterial SA-1 cross section. Control of access to the route could be provided for the section of highway classified as RA-3 (17.5 miles), except for the segment through Talisheek (2.0 miles) and where the highway crosses LA 435 and LA 36.

Alternative P is LADOTD’s preferred alignment. Alternative P would begin at the intersection of LA 41 and LA 40 in Bush and proceed southward for approximately 17.4 miles to LA 1088. The majority of the project (15.2 miles) would consist of an RA-3 typical cross section, which has a typical ROW width requirement of 250 feet. The northern 0.7 mile of the project would consist of an RA-2 cross section, which also has a ROW width of 250 feet. The exception to that design would be at the southern end of the project area. The

last 1.5 miles would be designed as a suburban arterial -1 typical section, which has a ROW width of approximately 180 feet. The proposed route would use an abandoned railroad corridor from Bush to Talisheek, a distance of approximately 2.5 miles, before turning southwesterly for approximately 13.3 miles on a new alignment to connect with LA 1088 north of I-12. Access for this route would be provided in Bush, at LA 435, at LA 36, and at the intersection with LA 1088. Crossings of existing highways would be at grade.

Alternative Q would include new construction of a four-lane highway following the abandoned railroad corridor from Bush to a point approximately 1.7 miles north of LA 36. From that point, the proposed route would leave the railroad corridor and connect to LA 434, which ties into I-12 at an existing interchange (Exit 74). This alternative would be approximately 19.8 miles long, with 9.8 miles using the abandoned railroad embankment, 8.7 miles on new alignment, and 1.3 miles on existing roadway. The majority of the alternative (17.2 miles) would consist of an RA-3 typical cross section, which would have a typical ROW width of 250 feet. The northern 0.7 miles of the route would have an RA-2 cross section, with a ROW width of 250 feet. Control of access to the route could be provided for the section of highway classified as RA-3 (17.3 miles), except for the segment through Talisheek (2.0 miles) and where the highway crosses LA 435, LA 36, and connects to LA 434.

3. COMPLIANCE WITH THE GUIDELINES

The purpose of the Guidelines is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material. Unless otherwise stated, the impacts from the discharge of dredged and fill material addressed in each of the following paragraphs are similar for each of the four alternative alignments under consideration.

3.1 RESTRICTIONS ON DISCHARGE (230.10)

3.1.1 Least Environmentally Damaging Practicable Alternative (230.10(a)1-2)

In addition to satisfying NEPA requirements, projects subject to permitting by the USACE under the CWA also must comply with the Section 404(b)(1) guidelines (40 CFR, Part 230) for discharge of dredge and fill material into waters of the U.S. The Section 404(b)(1) guidelines require that USACE permits the least environmentally damaging practicable alternative (LEDPA) to the aquatic ecosystem. These guidelines specify “no discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.” An alternative is considered practicable if “it is capable of being done after taking into consideration cost, existing technology, and logistics in the light of overall project purposes.” Practicable alternatives under the guidelines assume that “alternatives that do not involve special aquatic sites are available, unless clearly demonstrated otherwise.” The guidelines also assume that “all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.”

The CEMVN has integrated NEPA and Section 404(b)(1) guidelines into the alternatives

analyses found in Sections 2.4 and 2.5 of the EIS. Integration of both NEPA and Section 404(b)(1) guidelines ensures that the alternatives selected for evaluation in the EIS provide a reasonable range of alternatives and that the alternatives are practicable.

Impacts to the aquatic ecosystem are primarily summarized in three sections in the EIS; section 4.3 *Water Resources*, section 4.4 *Ecological Resources* and section 4.5 *Geology and Soils*. A thorough discussion of wetland impacts is included in Section 4.3 and 4.4 of the I-12 to Bush EIS, with a summary of the impacts shown in Table 1 below. Of the four alternatives considered, the Alternative Q has the least amount of direct wetland impacts, followed by Alternative P (the applicant’s preferred alternative), Alternative J, and Alternative B/O with highest. A thorough discussion of flow changes in affected drainages is in Sections 4.1.4 of this appendix. Of four build alternatives evaluated in the EIS, Alternative Q is considered the LEDPA.

**Table 1.
Summary of Impacts to Wetlands and Other Waters of the U.S.**

Alternative	Direct Impacts (acres)	Indirect Impacts (acres)
B/O	385	642
J	373	787
P	358	509
Q	305	577

3.1.2 Basic Purpose and Water Dependency (230.10(a)3)

The basic purpose of a project must be known to determine if a given project is “water dependent” and requires access or proximity to, or siting within, a special aquatic site in order to fulfill its basic purpose(40 CFR 230.10(a)(3)). Special aquatic sites include sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes. The basic purpose of this project is to provide support regional transportation needs, and since the construction and operation of a highway does not require placement of dredged or fill material into waters of the U.S., the project is not water dependent.

3.1.3 Water Quality Standards (230.10(b)1-2)

As evaluated, none of the project alternatives violate applicable state water quality standards or standards prohibited under Section 307 of the Clean Water Act. See Section 3.3.2 of the EIS. A Louisiana Pollutant Discharge Elimination System (LPDES) General Permit for *Discharges of Storm Water from Construction Activities 5 Acres or More* (General Permit for Construction Activities) is required for this project. As part of the permit, a stormwater management plan is also required and will specify Best Management Practices (BMPs) and inspections to reduce pollutants in stormwater runoff. In addition, water quality requirements will be part of the 401 Certification process.

3.1.4 Threatened and Endangered Species (230.10(b)3)

As evaluated, none of the project alternatives jeopardize the existence of federally listed endangered or threatened species or their habitats. The United States Fish and Wildlife Service (USFWS) agreed with the findings in the Threatened and Endangered Species study on April 4, 2011. See Sections 3.4.3 and 4.4 and Appendix C of the EIS.

3.1.5 Marine Sanctuaries (230.10(b)4)

Not Applicable.

3.1.6 Significant Degradation of Waters of the United States (230.10(c))

With the appropriate selection of the LEDPA along with the administration of appropriate actions to avoid, minimize and mitigate impacts, and provided the permittee follows the required permit conditions and BMPs, it is the opinion of the Corps that the activity will not cause or contribute to significant degradation of waters of the United States, including adverse impacts on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values. A thorough discussion of flow changes in affected drainages is in Water, Current Patterns and Water Circulation, and Normal Water Fluctuations, sections 4.1.3 through 4.1.5 of this appendix.

3.1.7 Avoidance and Minimization (230.10(d))

Water Quality

LADOTD would be required to implement a stormwater management plan for construction activities, which would be prepared in compliance with LDEQ's 401 Certification process. No evidence from the existing data or model predictions indicates there would be substantive water quality impacts to study area waterways from any of the alternatives. The data are limited; however, it is appropriate to maintain a monitoring program to validate assumptions and investigate possible impacts. See section 3.3.2 of the EIS.

Floodplain

Anticipated flow changes resulting from the action alternatives and the No Action Alternative are minimal based on engineering models run comparing pre- and post-construction storm event flows. Therefore, impacts on flood flows for all of the alternatives are expected to be relatively minor. See section 4.3 of the EIS.

Stream Morphology and Sedimentation

Alternatives J, P, and Q will result in changes to stream morphology. In the northern portion of the alignment where the three alternatives overlap, approximately 2,000 feet south of the intersection LA 40 in Bush, Louisiana, a section of Little Brushy Branch is proposed to be channelized along the road for approximately 2,465 linear feet. In this area, approximately 14 acres of wetlands would be removed or disturbed by road construction and channel realignment.

No work would be authorized outside the 250-foot right-of-way and the work within the right-of-way would be restricted to clearing and deposition of fill for roadway embankment for the Build Alternatives. Any deposition that occurs should be limited in extent and magnitude and should not pose significant changes to channel morphology. Structures crossing waterways and culverts through wetlands are designed such that post-construction flow volumes and patterns are essentially the same as pre-construction. Only minor amounts of localized sediment deposition

are anticipated. See section 4.4 and Appendix G of the EIS. The following recommendations are made with respect to stream morphology and sedimentation impacts:

- Various erosion protection measures should be implemented during construction and operation of the facilities, such as design of slopes with geotextile fabric, vegetation, or a combination of these.
- Visual monitoring of the facilities must be conducted to evaluate the impact of erosion and the effectiveness of erosion protection measures.
- Cut slopes should be designed to provide adequate slope stability for the anticipated construction and reduce runoff of sediment-laden waters into adjacent waterways and wetlands.

Geology

Erosion and stability of excavations associated with all road construction may be mitigated with design of erosion control and excavation stability measures. This is especially necessary where the alignment will cross drainageways.

Soils

With any alternative, the applicant will implement environmental protection measures addressing erosion and sediment control. These plans would incorporate BMPs to prevent soil losses during construction. Methods may include controlling surface water flows and installation of sediment barriers such as fences of straw bales or erosion control fabric. Erosion controls would be inspected regularly during construction, especially where construction is active and after precipitation. These controls would be installed prior to soil disturbance. Sampling and testing of fill material would be done in accordance with LADOTD's Roadway Design Procedures and Details, Erosion Control Guidance Manual, and Standard Specifications for Roads and Bridges Manual.

Vegetation

The following measures would be employed to minimize adverse impacts to vegetation, erosion, and the colonization of noxious weeds in disturbed areas.

- A revegetation plan would be developed for all areas that would be temporarily disturbed during construction in accordance with LADOTD's Policy for Roadside Vegetation Management. To increase the likelihood of successful revegetation, the plan should address the selection of site-appropriate species, including native herbaceous and/or woody species, soil preparation, seeding rates and methods, planting of shrubs, mulching and soil amendments, watering frequency and duration (if needed), and monitoring of reestablishment. With the potential for noxious weeds, seed rates should be high to load the seed bank in the soil. Forbs species would be included in the seed mixes to provide more food sources for wildlife and to improve the natural environment. Louisiana Department of Wildlife and Fisheries, Natural Heritage Program should be consulted during the preparation of seed mixes to ensure that desirable native species only are used.
- All exposed soils would be reseeded and/or planted promptly after construction completion.
- The right-of-way would be fenced or marked to confine construction activities to prevent unnecessary disturbance to soil and native plant communities outside the

- right-of-way.
- A weed management plan would be required to be implemented to control noxious weeds and to prevent degradation of habitats. The plan would identify the primary species of concern, potential method of spread, proposed methods of control, and monitoring of weed conditions.
 - All equipment (construction and maintenance) used in the project area must be weed-free. All equipment would be cleaned prior to entering the site in order to remove soil and plant parts that may contain weed seeds. Only certified weed-free mulch and bales would be used.
 - Fertilizer would not be used in seeded areas as it would enhance the growth of noxious weeds at the expense of desired vegetation.

Wetlands and Riparian Areas

To minimize adverse impacts to wetlands and other water features from sedimentation and erosion during construction:

- BMPs would be implemented during all phases of construction to reduce impacts from sedimentation and erosion, including the use of berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, silt fences, straw-bale barriers, and/or surface roughening.
- When practicable, construction in waterways would be performed during low-flow or dry periods.
- No fill material would be stored in wetlands or other water features.
- No unpermitted discharges would be allowed.
- Prior to construction, orange temporary fence and sediment control measures would be placed to protect existing wetlands that are located outside the planned area of disturbance.

Wildlife Habitat

To minimize adverse impacts to wildlife habitat from sedimentation and erosion of wetlands and other water features during construction:

- During construction, vehicle operation would be limited to designated construction areas within the project right-of-way, and the limits of the construction area would be fenced where they are adjacent to sensitive habitats including riparian areas and wetlands.
- Silt fencing, erosion logs, temporary berms, and other BMPs would be used to isolate the construction areas from adjacent wetland and riparian areas and prevent degradation of these habitats caused by transported eroded sediment.
- No work is authorized within waterways except for the deposition of fill and installation of structures per the permit drawings. To control erosion, bioengineering or the use of plants to control erosion would be preferred instead of riprap or other unnatural bank stabilization techniques. Banks would be planted with native plant species.

Migratory Birds

Destruction or disturbance of nests that results in loss of eggs or young is a violation of the Migratory Bird Treaty Act. To comply with the Act, land-clearing activities would be timed to avoid the breeding season (primarily April through August, but differs according to species) to avoid impacts to active bird nests, as described for raptors.

Aquatic Biological Resources

Practicable steps have been taken to minimize potential adverse impacts to aquatic resources resulting from construction and operation of the Project.

4. FACTUAL DETERMINATIONS (230.11)

4.1 (SUBPART C) PHYSICAL AND CHEMICAL CHARACTERISTICS

The purpose of the Factual Determinations is to determine the nature and degree of the impacts of the proposed discharge on the physical, chemical, and biological compounds that affect the aquatic environment.

4.1.1 Substrate (230.20)

The proposed project requires excavation of existing soils and the deposition and compaction of hauled-in fill material of unspecified quality, quantity, and source. Because of the low strength soils and wetness of hydric soils, a certain amount of excavation will be required to remove overburden material and replace it with higher strength soils.

Long-term direct major adverse impacts to the soil substrate would result from implementation of the Build Alternatives. Removal of surface material and placement of borrow material would directly impact soils in the project area during the construction of the new roadway. The excavation and deposition of fill material would alter natural contours and elevations, increasing slopes along the entire length of the proposed project. Additionally, native soil profiles would be altered by the redistribution of area soils and the introduction of foreign soils to the area. Compaction of the substrate would occur during the construction phase and continue over time with project use. Soil compaction would decrease surface and substrate porosity forming barriers to surface and subsurface water flow.

The excavated material would be expected to consist mostly of sandy clay loam having a low fertility and high levels of exchangeable aluminum. Because of limited gas exchange within hydric soils, this material would be primarily anaerobic. Excavation of the drainage ditches and adjacent wetlands substrate would result in modifications to the physical condition and chemical composition of the existing soil profile. Removal of the upper soil layers would expose the underlying clay substrata and because clay has binding and colloidal properties different from organic particles, localized changes in soil chemistry would be expected to occur. Soil chemistry would also be affected by the direct exposure of the anaerobic substrata to water and/or air. Most substrate elements and compounds under anaerobic conditions exist in a chemically reduced state. Interaction with the oxygenated environment would result in the conversion of soil chemicals to an oxidized state, affecting pH, redox potential, and overall chemical nature of the existing substrate (CEMVN 2008).

4.1.2 Suspended Particulate Materials/Turbidity (230.21)

Short-term and long-term moderate indirect impacts could result from the increased area of impervious surfaces affecting runoff in the project area. Degradation of receiving streams can typically be observed with less than 10 percent impervious coverage. Runoff from the roadway and compacted soils could increase the concentration of sediment, turbidity, nutrients, and temperature of receiving streams. Higher temperatures of impervious road surfaces could increase the temperature of stormwater runoff and increased concentrations of suspended sediment could absorb more sunlight energy and slightly increase temperatures in the receiving stream and wetlands.

4.1.3 Water (230.22)

Suspended solids in stormwater increase turbidity and transport other pollutants adsorbed to sediment and long-term accumulation of sediment reduces storage capacities of ponds, lakes, and wetlands. Impacts also include direct and secondary loss of area wetlands that perform water quality enhancement. Excavation and depositional activities would result in the direct loss of wetlands and the water quality enhancement provided by them.

Runoff during construction would be directed into adjacent waterways where sediment and pollutants would either remain suspended and carried downstream or fall out and settle to the bottom of the waterway where they would impact aquatic vegetation and fishery resources. After construction, contaminants would be introduced via surface runoff from the road surface and would impact adjacent wetlands and receiving waters. Stormwater runoff would carry roadway deposit containing products of vehicle emissions, oils, radiator fluid, rubber, and other contaminants into the adjacent water body. Additionally, highway maintenance includes occasional use of herbicides to control the growth of roadside vegetation. Most of this material would enter adjacent waters before it could be treated.

Fill material would be hauled in from outside the project area. This material will be from an approved LADOTD site and contamination, if present, should be minimal. However, should contaminants be present, periodic leaching could occur.

4.1.4 Current Patterns and Water Circulation (230.23)

Existing hydrology would be altered by the Build Alternatives. Roads alter the water level regime by impeding flow of surface water through it. Altered hydrology would have community-level impacts on wetter flatwoods communities. Culverts and cross drains are proposed to minimize the impact and allow surface water to move under the road.

4.1.5 Normal Water Fluctuations (230.24)

Overland sheet flow fluctuations due to roadway placement were examined in predefined wetland areas. An increase in flood potential is typically expected upstream of proposed roadways, and a decrease is expected downstream. The Build Alternatives would impede natural overland drainage patterns; however, equalizer pipes and other drainage structures are designed to be placed a maximum 1,250 feet apart to limit overland sheet flow interruptions. Headwater cutting was not examined, as it requires a velocity analysis. Velocities are sensitive to channel geometries and survey data was not collected.

Flooding potential along laterals would not significantly change due to structure crossing design parameters. Culverts were designed for a 50-year storm event and bridges were designed for a

100-year storm event. Culverts have the tendency to fill in over their design life and there is always the potential for storm-specific debris and timber buildup, particularly following tropical weather events. A detailed assessment of such variable conditions was beyond the scope of this project and might be considered in the final evaluation and design. Also, a base flood impact analysis during the design phase is required by FEMA for all structure crossings.

Changes to the water level fluctuations (WLF) patterns between the existing conditions and each alternative were determined. A change in the WLF was registered only if it exceeded an increase or decrease of one inch. The total area registering such a change was tallied up for each alternative. This tolerance was set based on the resolution and sensitivity of the numerical model. Table 2 provides the wetland areas that are expected to experience a change in the WLF.

Table 2.
Water level fluctuations impact for the 25-year storm

Alternative	Wetland Areas (acres)
Alternative B/O	1,773
Alternative J	2,700
Alternative P	1,534
Alternative Q	1,626

4.1.6 Salinity Gradients (230.25)

Not applicable.

4.2 (SUBPART D) BIOLOGICAL CHARACTERISTICS

4.2.1 Threatened, Endangered, and Candidate Species (230.30)

No direct impacts to any threatened and endangered (T&E) species would be expected under the Build Alternatives. Field surveys conducted for these species identified as potentially occurring in the project area include: red-cockaded woodpecker, Louisiana quillwort, gopher tortoise, and ringed map turtle.

Bachman’s sparrow, a candidate for T&E listing, is a resident of pine woodlands and prefers open pine woods in transition to forest. Clearing of timber areas could displace this songbird to other remaining pine woodlands (National Audubon Society 2010a). Henslow’s sparrow is a winter migratory species that could be impacted by the Build Alternatives through fragmentation of pine savanna habitat and loss of pitcher plant bogs. This species prefers those types of habitats along the southeastern coastal states and fragmentation or loss of those habitats would reduce winter habitat (National Audubon Society 2010b).

Fragmentation of the Mossy Hill and Dolly-T Mitigation Banks by Alternatives J, P, and Q could impact the ability of the bank to restore habitat for the threatened gopher tortoise or the rare Bachman’s sparrow, mud salamander, pitcher plants, pine woods lily, and bog flame flower.

Rehabilitation and management of red-cockaded woodpecker habitat relies on prescribed burning of pine forest communities which also directly benefits other pine woodland bird species such as Bachman's sparrow, brown-headed nuthatch, pine warbler, prairie warbler, and red-cockaded woodpeckers (USFWS 2003). Construction of this alternative could limit or preclude prescribed burns in wetland mitigation banks in the vicinity of the roadway. Smoke could reduce visibility along the roadway and burns could be restricted unless wind and weather conditions are favorable to minimize road hazards.

The management of habitat for red-cockaded woodpeckers could be indirectly impacted for Dolly-T Mitigation Bank and Talisheek Pine Wetlands Mitigation Bank. Both Dolly-T and Talisheek Pine Wetlands mitigation banks provide nesting and foraging habitat for the red-cockaded woodpecker and prescribed burns could be precluded with construction and operation of the proposed alignment. Impacts would be similar to those described in the paragraph above for pine forest communities.

Long-term direct minor adverse impacts to potential red-cockaded woodpecker habitat would be expected under Alternative P. Potential suitable habitat was observed in the vicinity of the ROW in along two locations along Alternative P. Detailed surveys of potential suitable habitat were performed in February 2011. One location along the northern portion of Alternative P was observed to have suitable foraging habitat, but no suitable nesting habitat. The location along the southern portion of Alternative P was observed to have suitable nesting and foraging habitat, but no cavities formed by red-cockaded woodpeckers. Appendix C of the EIS provides details of the surveys.

4.2.2 Fish, Crustaceans, Mollusks, and Other Aquatic Organisms

Aquatic organisms in the food web include, but are not limited to, finfish, crustaceans, mollusks, insects, annelids, planktonic organisms, and the plants and animals on which they feed and depend upon for their needs. Short-term localized direct minor adverse impacts to aquatic organisms could be expected during construction of the Build Alternatives. Roadway construction would leave large areas of earth unprotected and sloping work could increase the potential for erosion of the surface material during storm events. Turbid water interferes with respiration and filter-feeding behavior of macroinvertebrates as well as reduces fish feeding success due to visual impairment. Turbidity also decreases photosynthesis for primary producers. Sediment deposition fills pools and interstitial spaces in the stream bottom, choking out aquatic vegetation and reduces survival rates for macroinvertebrates and juvenile fishes. Turbidity resulting from sediment could reduce light penetration for submerged aquatic vegetation critical to stream health and could increase stream temperatures through energy generated from light reflected off suspended sediments. Sediment could physically alter habitat by destroying the riffle-pool structure in stream systems, and smothering benthic organisms such as clams and mussels. Finally, sediment transports many other pollutants that could affect aquatic organisms in receiving streams. Increased nutrients and hydrocarbons in the receiving streams could create algal blooms that deplete oxygen from the water to low levels that could become toxic to aquatic life (CEMVN 2008). BMPs would be employed to minimize sediment from entering receiving streams.

Long-term direct adverse impacts, ranging from moderate to major, to aquatic species could occur under the Build Alternatives. Increased stormwater drainage efficiency from roadsides via

ditches could affect surrounding wetlands, reducing the length of time surface water would be stored. Aquatic species found in those seasonally flooded systems have adapted life cycles that allow successful breeding and rearing of young to adulthood in normal rainfall years. If the inundation depth and duration is shortened, aquatic species may not be able to complete life cycles in adjacent wetlands and flatwoods.

4.2.3 Other Wildlife (230.32)

Other wildlife associated with aquatic ecosystems include resident and transient mammals, birds, reptiles, and amphibians. Short-term direct 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 St. Tammany Parish en route to Lake Pontchartrain. The project area is in the Mississippi flyway and the eastern portion of Louisiana is one of the principal routes for migratory birds (Birdnature 2001). Migratory birds rely on wetlands in St. Tammany for foraging, breeding, and nesting habitat including northern pintail, green-winged teal, canvasback, ring-necked, greater and lesser scaup, bufflehead northern cormorant, common loon, pied-billed grebe, and horned grebe (CWP 2006). Land clearing and noise during construction could disrupt bird stopovers, but those impacts would be temporary and localized during construction.

Wildlife inhabiting the project alignment area prior to construction include white-tailed deer, red fox, feral pig, gray squirrel, fox squirrel, eastern cottontail rabbit, swamp rabbit, opossum, raccoon, muskrat, and smaller rodents such as moles, shrews, skunks, and weasels. 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 the area is revegetated.

Additional short-term direct minor adverse impacts could be expected from noise and lights from construction activities and use of the proposed highway following construction. Light and noise could affect movement patterns, breeding, and nesting of wildlife in the vicinity of the roadway (CEMVN 2008).

4.3 (SUBPART E) SPECIAL AQUATIC SITES

4.3.1 Sanctuaries and Refuges (230.40)

Wetland mitigation banks are established by USACE for the purpose of compensating for adverse impacts associated with Department of the Army permits. The northern 4 miles of Alternatives J and Q share the same alignment which would directly impact Mossy Hill and Dolly-T mitigation banks and indirectly impact Talisheek, Mossy Hill, and Dolly-T mitigation banks. Alternative P would directly impact Dolly-T Mitigation Bank and indirectly impact Talisheek and Dolly-T mitigation banks.

Long-term direct major adverse impacts to Dolly-T and Mossy Hill mitigation banks would occur under Alternatives J and Q. Long-term direct major adverse impacts to sensitive natural communities would be expected under those alternatives. At Mossy Hill Mitigation Bank, approximately 35 acres of wet pine savanna would be removed and fragment the bank into one large 2,073 acre parcel and two smaller parcels, one approximately 108 acres and the other 536 acres (EIS Figure 4-12). Alternatives J and Q would also impact the Dolly-T Mitigation Bank. The bank consists of 1,630 acres of pine wetland habitat. Approximately 25 acres of the mitigation bank would be lost and converted to highway and ditches in the 250-foot ROW,

fragmenting 10 acres from the main parcel and reducing the bank to approximately 1,589 acres.

Alternative P would also cross the southwestern and western edges of Dolly-T mitigation bank (EIS Figure 4-13). Approximately 20 acres of the mitigation bank would be lost and converted to highway in the 250-foot ROW. The mitigation bank would be fragmented into two 10-acre parcels, reducing the original size of the mitigation bank to 1,569 acres.

Indirect impacts could also be expected to Talisheek Pine Wetlands, Mossy Hill Mitigation Bank, and Dolly-T Mitigation Bank under Alternatives J and Q. Those mitigation banks are adjacent to and west of the alternatives in the northern section of the alignment. The alternatives would be constructed over an existing abandoned railroad corridor which would have less indirect hydrological impacts to the surrounding ecosystems than a new alignment in an undisturbed area. However, enforcement activities, management, and maintenance of the mitigation banks may be impacted by affecting prescribed burn schedules for the area. Alternative P would indirectly impact Talisheek Pine Wetlands and Dolly-T Mitigation Bank in a similar manner as described above.

Additionally, safety issues associated with highway operations could prevent fire management activities near the roadway and generally limit any prescribed burns in the vicinity except under favorable wind conditions. Pine flatwood savanna mitigation banks rely on fire management as the principal tool to enhance and maintain bank lands and accrue credits to replace adverse impacts associated with department of the Army permits. The loss of ability to conduct prescribed burns could reduce the credit potential of those banks.

Fragmentation of these mitigation banks could lead to land management issues, as management of those areas close to the roadway may be limited when prescribed burning for habitat improvement occurs. Smoke from the prescribed burns could impact the visibility and safety of vehicles traversing the roadway and limit how these areas of the mitigation bank can be managed. The loss of wet pine savanna habitat could also impact restoration activities planned for the gopher tortoise and overall restoration efforts to re-establish habitat for red cockaded woodpecker, Bachman's sparrow, mud salamander, pitcher plants, pine woods lily, and bog flame flower (EIP 2010). Fragmentation could also reduce biodiversity of the ecosystem by impacting the hydrologic regime, introducing highway noise, or introducing invasive non-native species, particularly cogon grass. The impacts due to fragmentation could reduce the value of wetland credits in the mitigation bank and increase the management costs of the system.

4.3.2 Wetlands (230.41)

Long-term direct major adverse impacts to wetlands would be expected under the Build Alternatives. Wetlands in the proposed 250-ft ROW would be permanently lost to construction, clearing, and filling activities. The wetland types directly impacted are listed in Table 3. Detailed figures illustrating the wetland types directly impacted by each alternative are in Appendix I of the EIS.

**Table 3.
Direct wetland impacts**

Wetland Type	Alt B/O Area (acres)	Alt J Area (acres)	Alt P Area (acres)	Alt Q Area (acres)
Pine flatwoods (less intensively managed)	194.0	16.7	164.7	-
Pine flatwoods (intensively managed)	-	223.7	-	198.5
Pine savanna (or areas in early succession)	91.0	94.2	73.6	68.3
Bayhead or hardwood flats along stream channels	50.4	13.8	-	7.8
Slash pine/pond cypress flats	30.2	20.5	101.6	30.2
Degraded primary and secondary habitats	18.4	3.7	6.3	0.3
Total Wetland Areas	384	373	358	305

Long-term moderate indirect adverse impacts could be expected under the Build Alternatives. Changes to hydrology could reduce the ability of wetlands to provide existing functions and services. Impacts to wetland hydrology could degrade water quality, constrict flows, increase flooding, increase peak flows, increase water level fluctuations, and reduce water storage capacity. The wetland types directly impacted for each alignment are listed below in Table 4.

**Table 4.
Indirect wetland impacts**

Wetland Type	Alt B/O Area (acres)	Alt J Area (acres)	Alt P Area (acres)	Alt Q Area (acres)
Pine flatwoods (less intensively managed)	407.9	43.4	230.6	-
Pine flatwoods (intensively managed)	-	565.7	-	414.2
Pine savanna (or areas in early succession)	143.2	102.5	89.9	63.1
Bayhead or hardwood flats along stream channels	44.8	34.5	21.1	10.1
Slash pine/pond cypress flats	44.5	39.5	150.1	89.2
Degraded primary and secondary habitats	1.9	0.6	17.1	-
Total Wetland Areas	642	787	509	577

Construction of the Build Alternatives could impede channel and overland flow resulting in oversaturated and ponded areas in adjacent wetlands. Since majority of the project area has little to no slope, water tends to move via overland flow. Culverts allow surface flows to move under the roadway, however, over time culverts are the most common cause of flow constriction because of long-term loss in hydraulic capacity from sedimentation and increased peak flows (CWP 2006).

Stormwater runoff from impervious road surfaces and compacted soils could degrade water quality by increasing sediment deposition and pollutant accumulation in adjacent wetlands. Increased sedimentation could reduce light availability, temperature, and oxygen levels in the soil needed for seedling germination. Over time, increased pollutant and nutrient concentrations could reduce the ability of a wetland to break down nutrients and other pollutants in the soil causing the wetland to become a source of contamination.

Higher peak flows and improved drainage could result in a wider fluctuation of water levels in

adjacent wetlands. Those fluctuations would return to baseline conditions more quickly than in an undeveloped wetland area (CWP 2006). When the seasonal water level fluctuation is altered in a wetland, mortality of existing plant communities could occur in response to the new hydroperiod and change the wetland type.

Reduced storage capacity from wetland loss could increase the frequency and magnitude of stormwater runoff and the increased volume of water carried by area streams could result in flows beyond the *critical erosive velocity*. The increased energy resulting from more frequent bank full flow events could result in erosion, enlargement of the stream channel, and consequent habitat degradation. Reduced surface water storage capacity of wetlands could not only increase the rate of stormwater runoff during storm events, but also reduce available, near surface groundwater which is important in maintaining base stream flow during drier periods. The decline in the physical habitat of the stream, coupled with lower base flows and higher stormwater pollutant loads, could also have a severe impact on the aquatic community.

To quantify the indirect impacts to wetlands outside of the Build Alternatives ROW, models were run to evaluate the impact on inundation (ponding), hydrologic drought, and water level fluctuations. Ponding was defined as areas inundated for three consecutive days with a water depth greater than one inch. Hydrologic drought events are defined as wetland areas that remain dry for three consecutive days. Water level fluctuations are defined as the difference in maximum and minimum water levels in a wetland for a given period of time and are used to quantify a wetland's hydroperiod. For modeling purposes, analysis was performed for the 2, 25, and 100-year storm events, and a change in water level was noted only if it exceeded one inch. Results of the model analysis show that ponding duration is not a critical factor in terms of identifying the acreage of wetland impacted. In addition, no significant drought would be caused by construction of any of the alternatives.

4.3.3 Mudflats (230.42)

Not applicable.

4.3.4 Vegetated Shallows (230.43)

Not applicable.

4.3.5 Coral Reefs (230.44)

Not applicable.

4.3.6 Riffle and Pool Complexes (230.45)

Steep gradient sections of streams are sometimes characterized by riffle and pool complexes. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. Pools are characterized by a slower stream velocity, a streaming flow, a smooth surface, and a finer substrate. Riffle and pool complexes are particularly valuable habitat for fish and wildlife.

Current project information does not provide data related to the presence of riffle and pool complexes within the project area and a determination cannot be made at this time to the impact of this resource.

4.4 (SUBPART F) HUMAN USE CHARACTERISTICS

4.4.1 Municipal and Private Water Supplies (230.50)

Municipal and private water supplies consist of surface water or ground water which is directed to the intake of a municipal or private water supply system. No significant impacts to municipal and private water supplies are anticipated for any Build Alternative in the EIS. Water quality is not expected to change significantly with construction and operation of the highway.

4.4.2 Recreational and Commercial Fisheries (230.51)

Recreational and commercial fisheries consist of harvestable fish, crustaceans, shellfish, and other aquatic organisms used by man. Long-term direct moderate adverse impacts to recreational resources could result from the implementation of the Build Alternatives. The clearing of undeveloped land to construct new sections of the alignment could result in the loss or degradation of fish and wildlife habitat that are used for nature-based recreation. People traveling to the area for hunting and fishing could see a decrease in the available natural areas for those activities.

Short-term and long-term indirect minor adverse impacts to recreational resources could result from the Build Alternatives. Increased runoff and erosion could result from construction activities over the short-term, as well as an increase in impervious surfaces associated with development over the long-term. Increases in runoff and erosion could impact areas used for nature-based recreation by affecting the quality of the fish and wildlife habitat. Additionally, a long-term indirect beneficial impact could result from the implementation of this alternative as increased access opens up the area to more recreational users.

4.4.3 Water-Related Recreation (230.52)

Water-related recreation encompasses activities undertaken for amusement and relaxation. Activities encompass two broad categories of use: consumptive, e.g., harvesting resources by hunting and fishing; and non-consumptive, e.g. canoeing and sight-seeing. Impacts would be similar to those discussed in section 4.4.2 above.

4.4.4 Aesthetics (230.53)

Aesthetics associated with the aquatic ecosystem consist of the perception of beauty by one or a combination of the senses of sight, hearing, touch, and smell. Aesthetics of aquatic ecosystems apply to the quality of life enjoyed by the general public and property owners. Short-term direct minor adverse impacts to aesthetics would be experienced during construction. The clearing of land and the use and storage of construction equipment on site would temporarily decrease the aesthetic and visual value of the project area.

Short-term direct minor adverse impacts during construction could affect aesthetics and visual resources in the vicinity of this alternative with erosion and sedimentation of receiving streams. During construction of the alternative, erosion from construction activities would likely increase turbidity in receiving streams, degrading the visual appeal of waterways in the project area. An LPDES General Construction Permit is required for all construction activities, and BMPs would be employed to minimize erosion and sedimentation or silting of receiving streams.

Long-term indirect moderate adverse impacts could be expected to reduce the overall rural atmosphere of the communities along any of the proposed alignments as more traffic is introduced in the project area.

4.5 EVALUATION AND TESTING (230.60)

The purpose of these evaluation procedures and chemical and biological testing sequence in 40 CFR Section 230.61 is to determine the character of the dredged or fill material. If the evaluation indicates the dredged or fill material is not a carrier of contaminants, then the required determinations can be made without additional tests.

For the proposed highway, existing soils will be excavated in some areas, including wetlands, and off-site earthen fill obtained from an undetermined source will be deposited to elevate the highway embankment over natural grades. Borrow and useable material for the project will be obtained from outside the project area from LADOTD-approved sites in non-wet areas. Material excavated from the project area would be properly disposed.

Borrow material will be available within a 50-mile radius of the project site. Currently no registered borrow sites are within a 50-mile radius of the project site that have the capacity to supply 1-2 million cubic yards of suitable fill material for the project. Per conversations with LADOTD District 62 Engineers, it is anticipated that a contractor or materials supplier will purchase or create a site within Tangipahoa Parish, Washington Parish, St Tammany Parish, or the State of Mississippi within 50.0 miles of the project site when the project is approved for construction.

4.6 (SUBPART H) ACTIONS TO MINIMIZE ADVERSE IMPACTS AND PRACTICABLE STEPS TO MINIMIZE POTENTIAL ADVERSE IMPACTS

4.6.1 Minimization of Impacts to Wetlands

During the early stages of screening analysis, four alternatives were removed from further consideration to avoid impacts to wetland mitigation banks. Those four alternatives would have directly impacted Talisheek and Bayou Lacombe Mitigation Banks. All credits available for both mitigation banks have been purchased and direct loss of protect land would not have been feasible.

Wetlands were avoided where possible to minimize impacts. A portion of Alternative B/O overlaps with existing LA 21 and portions of Alternatives J, P, and Q are proposed to overlay an abandoned railroad bed to minimize impacts to ecological resources.

Bayou Lacombe from its headwaters to Lake Pontchartrain is included in the Louisiana Natural and Scenic River System and Alternative Q was adjusted to avoid crossing this channel.

Significant direct and indirect adverse impacts would be expected to wetlands for all alignments. The number of mitigation credits required for each alignment was calculated using the Modified Charleston Method (MCM) developed by the USACE. The MCM is an assessment model based on evaluation criteria weighted by their importance used to calculate the required amount of compensatory mitigation to offset project impacts. Table 5 lists the mitigation credits required for each alternative. It should be noted that these credits are preliminary and could increase or decrease based on final engineering design of the roadway and environmental conditions.

**Table 5.
Direct and indirect wetland mitigation acreage**

Alternative	Direct wetland impact (acres)	Preliminary MCM direct impact credits	Indirect wetland impacts (acres)^a	Preliminary MCM indirect impact credits	Preliminary Total MCM credits
B/O	385	7930.5	253	2714.4	10,644.9
J	373	6722.2	292	2297.0	9019.2
P	358	7272.4	208	2107.7	9380.1
Q	305	4945.8	231	1924.0	6869.8

^aincludes only drought and ponding indirect impacts

4.6.2 Minimization of Impacts to Aquatic Resources

Impacts to aquatic resources were minimized by reducing the overall ROW width for the alignments to a maximum of 250 feet. This minimized direct impacts to aquatic habitats, wetlands, and hydrology along each alternative’s ROW.

LADOTD’s recommendations were used as the basis for the design because of generally flat channel slopes in the project area. For major culvert crossings, the guidelines recommend a maximum allowable differential head of one foot with consideration for future land development. Additionally, a standard uniform slope of 0.1% (0.001 ft/ft) was used for all major culverts and culverts would be designed on the same slope as the natural streambed slope. A complete survey would be conducted during the design phase of this project, and major culverts would be reevaluated using the updated channel slope data. Structures with high outlet velocities (greater than 9 feet/second) will require discharge erosion protection at the time of final design.

Bridges were proposed over major stream crossings where drainage basins are greater than 2,000 acres to minimize impacts to stream flows. Minor cross drain culverts are proposed to be installed every 1,500 feet on long continuous grades as recommended by the LADOTD Hydraulics Manual. Equalizers would be 24-inch diameter pipes or round equivalent pipe arches at zero percent slopes. Those equalizer pipes would distribute flow between channels on either side of the road to allow water to move via sheet flow to mimic water flows in the project area. Table 6 describes the number of bridges, equalizer culverts, and major culverts proposed for each alternative.

**Table 6.
Bridge and culvert crossings for the build alternatives**

	Alternative B/O	Alternative J	Alternative P	Alternative Q
Bridges	7	6	7	3
Equalizer Culverts	67	78	54	71
Major Culverts	23	24	23	22

BMPs would be used before, during, and after construction to minimize environmental impacts. During construction, BMPs would be employed to minimize erosion and sedimentation in the project area and prevent sediment and other pollutants from being released and entering receiving streams and wetlands.

All construction activities are required to obtain an LPDES General Permit for Construction Activities. Each permit application requires the preparation of an SWP3 prior to the beginning of construction and is submitted to the Louisiana Department of Environmental Quality. Typically, this plan is used to prepare the erosion control table, which delineates the type and location of the required erosion control measures.

LADOTD also requires temporary and permanent erosion control during roadway construction. Details for these BMP are in LADOTD's Roadway Design Procedures, Section 4.5.2. Temporary erosion control items include bales, settling basins, temporary seeding, check dams, embankment drains, silt fencing, and embankment berms. Permanent erosion control items consist of seeding, vegetative mulch, flexible or rigid revetment, energy dissipaters, and erosion control matting.

The 2006 edition of the *Louisiana Standard Specification for Roads and Bridges* includes construction guidance for erosion control devices including rip rap, revetments, sodding, mulch and soil retention blankets.

Where wetlands could not be avoided, additional impacts were minimized by removing roadside ditches in the roadway design in wetland areas. A potential exists for roadside ditches to drain wetlands in an undesirable manner and create additional impacts. The typical roadway cross section in wetland areas would be elevated above the wetlands and constructed with equalizer pipes to minimize the disturbance of sheet flow of waters crossing the ROW.

4.6.3 Minimization of Impacts to Aquatic Recreation Facilities

Impacts to aquatic recreational facilities are expected to be temporary during construction and impacts would be minimized by employing BMPs to minimize site disturbance and runoff. Some existing fishing and hunting locations may be relocated with installation of the chosen alignment.

4.6.4 Minimization of Impacts to Federally Listed Endangered or Threatened Species

No direct impacts to federally listed species are expected. No minimization of indirect impacts is proposed for federally listed species.

4.6.5 Actions Concerning the Location of Discharge (230.70)

The discharge of dredged or fill material will be designed to minimize or prevent the creation of standing bodies of water in areas that normally have fluctuating water levels. The Hydraulics and Hydrology report analyzed water movement in the project area and details are in Appendix G of the EIS. Bridges are proposed over major stream crossings and minor cross drain culverts are proposed to be installed as discussed in Section 4.6.2 above.

4.6.6 Actions Controlling the Material to be Discharged, the Material after Discharge, and the Method of Dispersion and Related Technology (230.71, 230.72, 230.73, and 230.64)

The impacts of dredged or fill material after discharge may be controlled by selecting discharge methods and disposal sites that reduce the potential for erosion, slumping or leaching of

materials into the surrounding ecosystem. Methods include working within the 250 foot ROW and placing fill material at design slopes. The road surface will be paved and the sloped and exposed areas will be revegetated after construction to minimize erosion.

All fill material will be maintained and contained to prevent point and nonpoint sources of pollution. LADOTD will obtain an LPDES General Construction Permit and implement BMPs and conduct routine inspections of erosion control devices. The timing of the discharge will be minimized by not conducting work during periods of unusually high water levels, flows, and winds.

Fill material will be installed using appropriate construction equipment, including protective devices. Appropriate maintenance and operation on equipment will be employed including adequate training, staffing, and work procedures. Machinery and techniques will be used that are especially designed to reduce damage to wetlands. This may include machines equipped with devices that scatter rather than mound excavated materials, machines with specially designed wheels or tracks, and the use of mats under heavy machines to reduce wetland surface compaction and rutting. Access roads and channel spanning structures will be designed and constructed using culverts, open channels, and diversions that will pass both low and high water flows, accommodate fluctuating water levels, and maintain circulation and faunal movement. Additionally, appropriate machinery and methods will be employed for the transport of the material for discharge.

Fill materials will not be dispersed into wetlands or waterbodies. All fill material will remain within the 250-foot buffer for the Build Alternatives.

4.6.7 Actions Affecting Plant and Animal Populations (230.75)

The EIS addresses LADOTD's efforts to avoid and/or minimize adverse impacts to animal populations and their habitat in sections 4.21.1 and 4.21.2 for each alternative.

The EIS addresses compensation requirements for unavoidable adverse impacts in section 4.21.3. LADOTD has indicated that a mitigation bank would be their first preference for compensating for project related unavoidable wetland impacts. At this time, existing banks within the watershed would not have sufficient credits to compensate for anticipated wetland impacts. If this is the case LADOTD would be required to develop a permittee-responsible mitigation plan to fully compensate for anticipated direct, secondary and cumulative impacts associated with their project.

4.6.8 Actions Affecting Human Use (230.76)

Minimizing adverse impacts on human use potential may be achieved by selecting discharge sites and following discharge procedures to prevent or minimize any potential damage to the aesthetically pleasing features of the aquatic sites. Disposal sites will be selected that are not as valuable as natural aquatic areas. Seasons or periods when human recreational activity associated with the aquatic site shall be avoided for discharge, when feasible. Aesthetic features of aquatic ecosystems shall be avoided to minimize site disturbance. Disposal sites are located outside of a public water supply intake. Sites selected for each alignment are not expected to be detrimental or increase incompatible human activity, or require the need for frequent dredge or fill maintenance in remote fish and wildlife areas.

4.6.9 Other Actions (230.77)

In the case of fills, controlling runoff and other discharges from activities to be conducted on the fill and when a significant ecological change in the aquatic environment is proposed by the discharge of dredged or fill material, the permitting authority should consider the ecosystem that will be lost as well as the environmental benefits of the new system. Fill material will be deposited within the 250 ROW in all areas, including wetlands, to stabilize the roadbed and raise it above existing grade. Erosion from construction activities would be minimized through an LPDES General Permit for Construction Activities. Each permit application requires the submittal and maintenance of a SWP3 which would reduce erosion on the construction site and minimize the amount of sediment and potential pollution entering receiving streams.

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