Chapter 7: Bike and Pedestrian Use Enhancements at Davis Bayou, Mississippi District, Gulf Islands National Seashore

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7.1 Bike and Pedestrian Use Enhancements at Davis Bayou, Mississippi
District, Gulf Islands National Seashore

7.1.1 Project Summary

This project involves implementing roadway safety improvements in the Davis Bayou Area of Gulf Islands National Seashore (the Davis Bayou Area). Two intra-project action alternatives were proposed for consideration. The National Park Service Preferred Alternative (Alternative B in this Environmental Assessment (EA)) is to widen the existing road surface on Park Road and Robert McGhee Road to accommodate multiple-use bicycle-pedestrian lanes. The other alternative (Alternative C in the EA) would reduce the amount of automobile traffic in the park by limiting access to VFW Road during certain times of the day. If Alternative B is selected, Phase IV of early restoration would provide funding for construction along Park Road only – i.e. 2.17-miles. The 0.82-mile portion on McGhee Road would be funded – and constructed – separately, but is included here and in the EA as a “connected action.”

7.1.2 Background and Project Description

Park Road and Robert McGhee Road are both two-lane roads with no shoulders located in the Davis Bayou Area of Gulf Islands National Seashore (Figure 7-2 and Figure 7-3), managed by the NPS. The Davis Bayou Area is located in Ocean Springs, Mississippi. The first mile of Park Road was constructed over 30 years ago in an existing residential area to serve as the primary access to the William M. Colmer Visitor Center. Robert McGhee Road and Park Road south of VFW Road were in place when the park was Magnolia State Park, before the first mile of Park Road was constructed. In the past 20 years, approximately 10,000 additional residents moved into Ocean Springs. As development has increased, neighboring residents increasingly drive through the park as a shortcut to other destinations. Park Road offers an overpass over the CSX railroad line, which motorists use to avoid temporary blockages caused by passing trains. This road also provides a shorter commuter route to many residences that surround the Davis Bayou Area.

Robert McGhee Road (Route 016), previously known as Hanley Road, provides access to the Davis Bayou Area campground and public use boat dock. Robert McGhee Road also connects to a multiple-use bicycle-pedestrian trail route that extends to Hanley Road, located outside of the park. A portion of the Live Oak Bicycle Trail, a 15.5-mile route within the city of Ocean Springs, also traverses the park along the north part of Robert McGhee Road.

Members of the public – including day users, overnight campers, and commuters just passing through – use these roads as walking, jogging, bicycling, and motor vehicle traffic routes. Motorists are known to

1 The National Park Service defines connected actions as those that are “closely related” to the proposal and alternatives. Actions are connected if they automatically trigger other actions that may have environmental impacts; they cannot or will not proceed unless other actions have been taken previously or simultaneously; or they are interdependent parts of a larger action and depend on the larger action for their justification (NPS Director’s Order 12 Handbook).
drive at excessive speeds that place non-motorized visitors at risk. Simultaneous use of the roads by all user groups results in a high probability for accidents, visitor conflicts, and potentially unsafe conditions for pedestrians, bicyclists, and motorists. Pedestrians and bicyclists using the road corridors within the park area have limited space to maneuver to avoid approaching motorists, as there is little-to-no shoulder space. Additionally, wetlands adjacent to the roadway minimize the extent to which pedestrians and bicyclists can negotiate off-road to avoid collisions with motorists. Motorized traffic also poses risks to park wildlife. High speeds of the motor vehicles increase the number of wildlife collisions on Park Road and Robert McGhee Road.

As such, alternatives were developed to enhance the use of Park and Robert McGhee Roads by bicyclists and pedestrians. Public input was provided and the list of alternatives was refined into two action alternatives, described below.

7.1.2.1 Alternative A: No-action

NEPA requires a consideration of a “No Action” alternative, which has been designated “Alternative A.” See section 7.2.4.1 for more details on this alternative.

7.1.2.2 Alternative B: Construct Multiple-Use Trails (Preferred Alternative)

Under the Alternative B the road surface of Park Road (2.17 miles) and Robert McGhee Road (0.82 mile) would be widened to accommodate multi-use travel lanes on one or both sides of the road (Figures 7-1 and 7-4). The new road configuration would widen the existing 22-feet (ft) roadway to an up-to 36-ft paved surface that includes two 11-ft motor vehicle lanes flanked by 2-ft buffers and 5-ft multiple-use lanes. There would also be 4-ft non-paved shoulders flanking the multiple use lanes. Beyond the non-paved shoulders, construction would also include fill in areas, plus five additional feet of clearing, as depicted in the figure below. Retaining walls could also be constructed in areas where the road is elevated higher than the surrounding landforms. The study corridor for this project includes 50 feet from the edge of the paved surface along Park Road and Robert McGhee Road. Therefore, the total width of the study corridor is 122 feet wide. However, where Park Road and Robert McGhee Road cross east Stark Bayou and Stark Bayou, respectively, the study corridor is narrower. This is because, compared to the non-tidal marsh areas, the road is not as high relative to the adjacent landscape and the elevations of road and tidal marsh are much more uniform (flat). As such, the width will be narrower in the tidal marsh than in non-tidal marsh areas, making it easier to predict a maximum width for the project as it goes through the tidal marsh. This total width is 74 ft (26 ft out from each side plus the 22-ft wide road). The boundaries of the study corridor are considered to be the limits of construction.

Final design may result in a narrower corridor and narrower limit of construction where possible as long as the purpose and need of the proposed action is met.
The exact project schedule for the Preferred Alternative (Alternative B) is currently unknown; however, construction is expected to begin in fall of 2016 and continue into spring 2017.

Under Alternative B, project construction activities would include:

- excavating, grading, filling, and overlaying asphalt to widen the existing paved surface from 22-ft up to 36-ft paved surface with additional 4 ft non-paved shoulders, with appropriate striping;
- ground disturbance beyond the existing asphalt and up to 14 additional feet of asphalt proposed, 8 feet of non-paved shoulders, plus 5 feet from the toe of slopes for construction and heavy equipment maneuvering, thus widening the existing road corridors;
- placing and compacting fill adjacent to roadway including wetland areas;
- installing two traffic-calming medians (e.g., 10-ft wide ellipses) within the first mile of Park Road, similar to the entrance median;
- installing retaining walls along the road in areas where the road is elevated higher than the surrounding land forms;
- installing new or extending several existing culverts;
- removing woody vegetation and mature trees;
- planting native grasses on non-paved shoulders and grasses/trees on bare slopes or in new medians;
- constructing replacement boardwalk over portions of Stark Bayou on Robert McGhee Road, using cantilevers and pilings, with clearance for under-boardwalk wildlife crossings, or replacing the boardwalk with fill for the multiple-use lane; if pilings are selected to be used, 280 8-inch diameter pilings would be used across the 700-foot span on Robert McGhee Road, and 120 8-inch diameter pilings would be used across the 300-foot span on Park Road;
- replacing existing culvert bridge on Park Road over East Stark Bayou with a larger bottomless box culvert or small bridge, with restoration of water flow of wetlands on both sides of the road at culvert location, and possibly eliminating the existing cantilevered boardwalk on the west side of the road;
- conducting wetlands mitigation activities in the forested wetland and the emergent marsh;
• conducting essential fish habitat (EFH) mitigation activities in the estuary by creating one acre of emergent marsh
• avoiding most existing utilities and possible relocating some existing utilities, where needed, (e.g., light poles, cable and phone lines, water hydrants, buried electrical lines and transformers);
• relocating/replacing road signs;
• relocating/replacing guardrails to meet current standards.

Equipment likely to be used includes track hoes, backhoes, graders, dump trucks, compactors, asphalt pavers, and road striping equipment. One lane will likely remain open during the project implementation except for occasional brief closures of both lanes as needed.

In addition, as an action common to both action alternatives, formal entrance park signs will be installed at the VFW Road/Knapp Road intersection, and the entrance sign currently located 150 feet south of the Park Road/U.S. Route 90 intersection will be relocated closer to the intersection, making the sign more visible to passing motorists on U.S. Route 90.

7.1.2.3 **Alternative C: Limit Access to VFW Road**

Under Alternative C, the existing configuration of Park Road and Robert McGhee Road would remain at the current width. A gate would be installed at the intersection of Knapp and VFW Roads, and VFW Road would be closed to motorists during times of high recreational use on Park Road. Proposed closure times would be from 4pm-7pm Monday-Friday and 8am-12pm Saturday. This alternative would substantially reduce the number of motor vehicles present on the mile of Park Road between U.S. Route 90 and VFW Road during high recreational usage times (Figure 7-5). The gate would permit emergency vehicles to pass through at all hours. There would be no change to the access point off U.S. Route 90. A sign would be posted at the U.S. Route 90 entrance at the Government Street and Knapp Road intersection indicating timed closures of VFW Road, and the speed limit on Park Road would be reduced to 25 MPH from the current speed limit of 35 MPH.

The exact project schedule for Alternative C is currently unknown; however, construction would most likely occur in the fall of 2016.

Under Alternative C, project construction activities would include:

• installing two traffic-calming medians (e.g., 10-ft wide ellipses) within the first mile of Park Road, similar to the entrance median;
• widening the road at these two medians in a way that could include grading, filling, paving, installing retaining walls, and removing woody vegetation – though these would be a fraction of what would occur under Alternative B;
• planting native grasses on non-paved shoulders and grasses/trees on bare slopes or in new medians;
• minor ground disturbance on already-disturbed land to install the traffic control gate(s)
• relocating/replacing any road signs in the construction area;
• relocating/replacing guardrails to meet current standards.

Equipment likely to be used includes track hoes, backhoes, graders, dump trucks, compactors, asphalt pavers, and road striping equipment. One lane would likely remain open during the project implementation except for occasional brief closures of both lanes as needed.

In addition, as an action common to both action alternatives, formal entrance park signs will be installed at the VFW Road/Knapp Road intersection, and the entrance sign currently located 150 feet south of the Park Road/U.S. Route 90 intersection will be relocated closer to the intersection, making the sign more visible to passing motorists on U.S. Route 90.
Figure 7-4: Alternative B
Gulf Islands National Seashore
U.S. Department of Interior/ National Park Service

North

Legend
- Median
- Existing Road Area
- Proposed Road Widening
- Construction Zone
- Project Area Boundary
- Trail
- Live Oak Bicycle Route
- Railroad

Source: Esri, DeLorme, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, ITC, and the GIS User Community
Figure 7-5: Alternative C
Gulf Islands National Seashore
U.S. Department of Interior/ National Park Service
7.1.3 **Evaluation Criteria**

This project meets the evaluation criteria established for OPA and the Framework Agreement. The Preferred Alternative will enhance the public’s use and/or enjoyment of natural resources by providing a safe place to walk and cycle within the Davis Bayou Area, helping to offset adverse impacts to the recreational uses on DOI-managed lands in the five Gulf States caused by the *Deepwater Horizon* oil spill (“the Spill”). Accordingly, the project is intended to replace or provide recreational opportunities comparable to the types of opportunities lost as a result of the Spill (see C.F.R. § 990.54(a) (2) and Sections 6a-6c of the Early Restoration Framework Agreement).

In addition to enhancing the public's use and enjoyment of natural resources, the project will provide habitat benefits by increasing the capacity under the East Stark Bayou Bridge for greater water flows. Accordingly, the project also benefits more than one resource and/or service. See 15 CFR § 990.54 (a)(5). The project is technically feasible and utilizes proven road and bicycle/pedestrian path construction techniques with well-established methods and document results and can be implemented with minimal delay. For these reasons, the project has a high likelihood of success. See CFR § 990.54(a)(3) and Section 6e of the Early Restoration Framework Agreement.

A thorough environmental review, including review under applicable environmental statutes and regulations, is described in Section 7.2.7; that review shows that adverse effects from the project will largely be minor, localized, and often of short duration. In addition, the best management practices (BMPs) and measures to avoid or minimize adverse effects described for each resource topic under the Alternative B analysis will be implemented. As a result, collateral injury will be avoided and minimized during project implementation (15 CFR § 990.54(a)(4)).

Cost estimates are based on similar past projects where fill, retaining walls, a new bridge, in-water work, utility relocations, etc. are involved; based on these estimates the project can be conducted at a reasonable cost. See CFR § 990.54(a)(1). As a result, the project is considered feasible and cost effective. The project is not inconsistent with more comprehensive restoration needs for the Spill (see CFR § 990.54(a)(1),(3), and Sections 6d-6e of the Early Restoration Framework Agreement).

7.1.4 **Performance Criteria and Monitoring**

The overall goal of this project is partially restore lost recreation on DOI-managed lands in the five Gulf States caused by the Spill by improving future visitor use and experience at the Davis Bayou Area. This will be accomplished by improving the visitor safety experience on Davis Bayou Area roads by implementing the Preferred Alternative described above. The project will be deemed successful once actions are taken to enhance the use of Park Road (and later Robert McGhee Road) for bicyclists and pedestrians. This will be done by reducing the number of interactions between them and motor vehicles. As such, performance criteria for this project are: a) the project is constructed and completed as designed; and b) bicyclists and pedestrians are regularly using the enhanced areas. These criteria can be easily monitored and confirmed through site inspections, contract oversight and visual observations of use after project completion. See Appendix B for the project Monitoring Plan.
7.1.5 Maintenance

Under Alternative B, additional maintenance will be required, as the additional surface for the multiple use trails will need to be cleared of debris, and vegetation along the lanes will need to be cut back to give pedestrians and cyclists a clean and clear path. Under Alternative C, the gates that would be installed would have associated routine maintenance to ensure they remain in operable condition. Maintenance costs will not be covered by the project’s funding.

7.1.6 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the recreational use project. The natural resource damage Offsets for the Bike-Pedestrian Use Enhancements Project are $13,993,502, expressed in present value 2014 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured on lands managed by the U.S. Department of the Interior (DOI) in the five Gulf states, which will be determined by the Trustees’ assessment of lost recreational use for the Spill. Please see Section 4.4 of this document for a description of the methodology used to develop monetized Offsets.²

7.1.7 Estimated Costs

The estimated cost of Alternative B for construction of multiple-use bicycle-pedestrian lanes on both Park and Robert McGhee Roads is $11,103,928. The estimated cost of Alternative C is $668,000. If Alternative B were selected, the park will receive $6,996,751 as part of the Phase IV Early Restoration effort to construct bicycle-pedestrian lanes on Park Road only. (Funding for any work on Robert McGhee Road would come from some other source.) This cost reflects cost estimates developed from the most current information available to the Trustees at the time of project negotiation. Costs include provisions for planning, designing, and implementing.

² For the purposes of applying the natural resource damage Offsets to the calculation of injury after the Trustees’ assessment of lost recreational use for the Spill, the Trustees and BP agree as follows:

- The Trustees agree to restate the natural resource damage Offsets in the present value year used in the Trustees’ assessment of lost recreational use for the Spill.
- The discount rate and method used to restate the present value of the natural resource damage Offsets will be the same as that used to express the present value of the damages.
7.2 Bike and Pedestrian Use Enhancements at Davis Bayou, Mississippi District, Gulf Islands National Seashore: Environmental Assessment

The proposed Bike and Pedestrian Use Enhancements project involves improving the experience of bicyclists and pedestrians on Park Road and Robert McGhee Road in the Davis Bayou Area of Gulf Islands National Seashore. It would do so by implementing one of the alternatives described below.

7.2.1 Introduction and Background, Purpose and Need

7.2.1.1 Introduction

CEQ encourages federal agencies to “tier” their NEPA analyses from other applicable NEPA documents to create efficiency and reduce redundancy, and has issued new guidance on the use of programmatic NEPA documents for tiering (79 FR 76986, December 23, 2014).

Tiering has the advantage of not repeating information that has already been considered at the programmatic level so as to focus and expedite the preparation of the tiered NEPA review(s). When a programmatic environmental assessment (PEA) or programmatic environmental impact statement (PEIS) has been prepared and an action is one anticipated in, consistent with, and sufficiently explored within the programmatic NEPA review, the agency need only summarize the issues discussed in the broader statement and incorporate discussion from the broader statement by reference and concentrate on the issues specific to the subsequent tiered proposal (CEQ 2014).

A federal agency may prepare a PEIS to evaluate broad actions (40 C.F.R. §1502.4(b); see Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, 46 Fed. Reg. 18026 (1981)). When a federal agency prepares a PEIS, the agency may “tier” subsequent narrower environmental analyses on site-specific plans or projects from the PEIS (40 C.F.R. § 1502.4(b); 40 C.F.R. §1508.28). Federal agencies are encouraged to tier subsequent narrower analyses from a PEIS to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (40 C.F.R. § 1502.20). The 2014 Final Programmatic and Phase III Early Restoration Plan and Programmatic Environmental Impact Statement (Phase III ERP/PEIS) was prepared for use in tiering subsequent early restoration plans and projects, such as Phase IV.

This project is proposed as part of Phase IV of the Early Restoration program. This EA tiers from the programmatic portions of the Phase III ERP/PEIS. This EA qualifies for tiering from the Phase III ERP/PEIS in accordance with Department of the Interior regulations (43 CFR 46.140, Using tiered documents) under “b” and “c”.

This project is consistent with the Phase III ERP/PEIS’ Preferred Alternative as described in the 2014 Record of Decision (79 FR 64831-64832 (October 31, 2014)) and the Trustees find that the conditions and environmental effects described in the broader NEPA document (with updates as described in Chapter 2) are valid. Specifically, this project tiers to the analyses found in two sections of the PEIS: Development and Evaluation of Alternative, Section 5.3.5.1; and Early Restoration Programmatic Plan: Development and Evaluation of Alternatives” (Section 5.3.5.1) and “Environmental Consequences,“
Section 6.5.1, Project Type 10: Enhance Public Access to Natural Resources for Recreational Use, Improving access to natural resources for recreational use through the construction or enhancement of infrastructure. This EA incorporates by reference the analysis found in the PEIS in those sections; see specific language, by impact topic, in the Environmental Consequences section below. This EA also incorporates by reference all Early Restoration introductory, process, background, and Affected Environment information and discussion provided in the PEIS (Chapters 1 through 6). See Chapters 1-4 in this Phase IV document.

7.2.1.2 Background

Park Road and Robert McGhee Road are both two-lane roads with no shoulders located in the Davis Bayou Area of Gulf Islands National Seashore (Figure 7-2 and Figure 7-3), managed by the National Park Service. The Davis Bayou Area is located in Ocean Springs, Mississippi. The first mile of Park Road was constructed over 30 years ago in an existing residential area to serve as the primary access to the William M. Colmer Visitor Center. In the past 20 years, approximately 10,000 additional residents moved into Ocean Springs. As development has increased, neighboring residents increasingly drive through the park as a shortcut to other destinations. Park Road offers an overpass over the CSX railroad line, which motorists use to avoid temporary blockages caused by passing trains. This road also provides a shorter commuter route to many residences that surround the Davis Bayou Area.

Robert McGhee Road (Route 016), previously known as Hanley Road, provides access to the Davis Bayou Area campground and public use boat dock. Robert McGhee Road also connects to a multiple-use bicycle-pedestrian trail route that extends to Hanley Road, located outside of the park. A portion of the Live Oak Bicycle Trail, a 15.5-mile route within the city of Ocean Springs, also traverses the park along Robert McGhee Road.

Members of the public – including day users, overnight campers, and commuters just passing through - use these roads as walking, jogging, bicycling, and motor vehicle traffic routes. Motorists are known to drive excessive speeds that place non-motorized visitors at risk. Simultaneous use of the roads by all user groups results in a high probability for accidents, visitor conflicts, and potentially unsafe conditions for pedestrians, bicyclists, and motorists. Pedestrians and bicyclists using the road corridors within the park area have limited space to maneuver to avoid approaching motorists, as there is little room beyond the edge of the road to traverse. Additionally, wetland areas adjacent to the roadway minimize the extent to which pedestrians and bicyclists can negotiate off-road to avoid collisions with motorists. Motorized traffic also poses risks to park wildlife. High speeds of the motor vehicles increase the number of wildlife collisions on Park Road and Robert McGhee Road.

7.2.1.3 Purpose and Need

The purpose and need for this action falls within the scope of the purpose of and need for early restoration as described in the programmatic portions of the Final Phase III ERP/PEIS because it would accelerate meaningful restoration of injured natural resources and their services resulting from the Spill. The proposed project’s purpose is to partially restore recreation lost on DOI-managed lands in the five Gulf States as a result of the Spill. The proposed project is needed to enhance the use of the Davis Bayou
Area of Gulf Islands National Seashore by bicyclists and pedestrians in particular; this includes making their experiences safer and more enjoyable. Current use of this area is impacted in the following ways:

- The use of Park Road and Robert McGhee Road by pedestrians, bicyclists, and motorists results in visitor conflicts and potential unsafe operations for all three user groups;
- Traffic on Park Road has increased by approximately 500 cars a day since the 2010 installation of a traffic light at the US Route 90 intersection, raising safety concerns;
- The road corridor does not have a paved shoulder and therefore, there is limited space for pedestrians and bicyclists to maneuver to avoid approaching motorists;
- Adjacent wetlands minimize the extent to which pedestrians and bicyclists are able to negotiate off road attempts to avoid collisions with motorists;
- Future development, including on private properties whose only road access is via Park Road, is expected to increase the traffic on Park Road.

An EA is needed to evaluate the environmental impacts of these proposed safety improvements. This EA has been prepared in accordance with the requirements of the National Environmental Policy Act of 1969, as amended, and its implementing regulations (40 CFR 1500-1508), and NPS Director’s Order #12, Conservation Planning, Environmental Impact Analysis, and Decision-Making and accompanying DO-12 Handbook (NPS 2001).

7.2.2 Scope of the Environmental Assessment

This project is proposed as part of Phase IV of the Early Restoration program. This EA tiers from the Phase III ERP/PEIS. The broader environmental analyses of these types of actions as a whole are discussed in the Final Phase III ERP/PEIS from which this EA is tiered. The information and analyses in this document supplements the programmatic analyses with site-specific information. This EA provides NEPA analysis for potential impacts for site-specific issues and concerns anticipated from implementation of the two intra-project action alternatives and the no action alternative.

Specifically, this EA evaluates bicyclist and pedestrian use enhancements in the Davis Bayou Area of the park with three intra-project alternatives; a No-Action Alternative (Alternative A), widen the existing road surface on Park Road and Robert McGhee Roads to accommodate multiple use lanes (Alternative B, the Preferred Alternative), and reduce the amount of automobile traffic in the Davis Bayou Area by limiting access to VFW Road during certain times of the day (Alternative C). (Note: the format of this EA is different from others in the Phase IV ERP. Since there are two action alternatives for this project, the Affected Environment section comes first, separate from the Environmental Consequences section. After that, the environmental consequences of each alternative are presented separately. The action alternatives were initially developed by GUIS staff, presented to the public for review and comment, and refined by GUIS staff into the two action alternatives.)

The following options were considered during the early stages of the planning process but were dismissed because they 1) do not meet the purpose and need and/or the objectives of the project, 2) would violate law or policy, or 3) would contribute to other resource concerns. Not all of these options encompass an entire alternative, but rather were components of the alternatives.
Installation of traffic-calming devices only - As a means to reduce traffic speeds in the park, one alternative considered was to exclusively utilize traffic-calming devices. During early planning stages, the National Park Service decided to incorporate the use of traffic-calming devices into both action alternatives rather than carry this option forward as a standalone alternative.

Changes to the park entrance - An alternative to establish an entrance fee (residents excepted) and construct a manned entrance station just south of the island at the north end of Park Road (off of US Route 90) was considered in the early planning stages as a way to reduce traffic volume and safety concerns. VFW road would become a one-way street for exiting the park only (excluding emergency vehicles that would have been granted two-way access). This alternative was not considered further due to concerns addressed during scoping regarding the visitor experience, community relations, and park operations.

Work with other agencies to establish an alternate route to highway 90 - An alternative was proposed to construct a two-way ramp in the southwest quadrant of the intersection of Park Road and Pabst Road. The ramp would have provided access to Pabst Road without having to use the at-grade railroad crossing at Ocean Spring Road. This alternative would have also worked with the Federal Highway Administration and the state of Mississippi to develop a route to Highway 90 that kept community residents and Gulf Coast Research Laboratory personnel off Park Road. Due to the fact that this alternative would have required the use of lands outside the boundary and beyond the jurisdiction of Gulf Islands National Seashore, these actions would have been dependent upon cooperation with other agencies, outside funding, and additional permitting concerns and was therefore not considered further.

Construct a multi-use trail separate from Park Road - An alternative to construct a multi-use trail separate from Park Road was considered. This alternative was not carried forward due to the potential for substantial adverse impacts to wetlands in the area proposed for the trail configuration and due to the fact that the projected costs would be prohibitive and dependent upon outside funding sources.

One-way traffic routes - Two alternative variations were considered that would have established one-way traffic on the major park roadways and opened Hanley Road as an exit route for traffic on Park Road. It was anticipated that these configurations would result in traffic increases on Robert McGhee and Hanley Roads, which would have adversely impacted visitor safety and park operations and caused controversy in the community. Due to these concerns and the fact that these alternatives did not best meet the project purpose and need, they were not considered further.

Multiple use lanes from VFW Road to the visitor center and on Robert McGhee Road - An alternative was considered to construct a multi-use trail along Robert McGhee Road and on Park Road between VFW Road and the visitor center. Due to the similarity between this alternative and the proposed Alternative B, this alternative was not considered further.

7.2.3 Project Location

Gulf Islands National Seashore encompasses barrier islands and coastal mainland and surrounding waters in Mississippi and Florida and includes 12 separate land areas stretching along 160 miles from
Cat Island in Mississippi to the eastern end of Santa Rosa Island in Florida. The Davis Bayou Area of Gulf Islands National Seashore, which encompasses approximately 470 acres, is located in Ocean Springs, Jackson County, Mississippi (Figure 7-2).

7.2.4 Project Scope

7.2.4.1 Alternative A: No-Action/Continue Current Management

Under the No-Action Alternative, the National Park Service would continue to use and maintain the existing configuration (i.e., two 11-foot [ft] one-way lanes with no paved shoulder) of Park Road and Robert McGhee Road within the Davis Bayou Area of the park. There would be no changes to NPS maintenance, enforcement, and operating activities and no anticipated changes to traffic levels or community and visitor use. Alternative A represents a continuation of the existing condition and provides a baseline for evaluating impacts of the action alternatives.

7.2.4.2 Alternative B: Construct Multiple Use Trails (Preferred Alternative)

Under Alternative B, the road surface of Park Road (2.17 miles) and Robert McGhee Road (0.82 mile) would be widened to accommodate multiple use travel lanes on one or both sides of the road (Figure 7-4). The new road configuration would widen the existing roadway from 22-ft to up to 36-ft paved surface to include two 11-ft motor vehicle lanes flanked by 2-ft buffers and 5-ft multiple use trails (Figure 7-1). There would also be 4-ft non-paved shoulders flanking the multiple use lanes. In areas where fill is added along the existing road, the footprint of that slope would extend out the least extent possible (distance is currently unknown due to uncertainty of design), and there would be a 5-ft equipment work area extending out from the toe of the slope. Retaining walls could also be constructed in areas where the road is elevated higher than the surrounding landforms. For a description of project details, see the Timelines and Methodology section above. The study corridor for this project includes 50 feet from the edge of the paved surface along Park Road and Robert McGhee Road. Therefore, the total width of the study corridor is 122-ft wide (i.e., 50 ft plus 22 ft of existing pavement plus 50 ft). However, where Park Road and Robert McGhee Road cross east Stark Bayou and Stark Bayou, respectively, the study corridor is narrower. This is because, compared to the non-tidal marsh areas, the road is not as high relative to the adjacent landscape and the elevations of road and tidal marsh are much more uniform (flat). As such, the width will be narrower in the tidal marsh than in non-tidal marsh areas and it’s easier to predict a maximum width for the project as it goes through the tidal marsh. This total width is 74 ft (26 ft out from each side plus the 22-ft wide road). The boundaries of the study corridor are considered to be the limits of construction.

Note: Consultation with NOAA NMFS pursuant to the Magnuson-Stevens Fishery Conservation and Management Act for potential impacts to essential fish habitat (EFH) resulted in the addition of a mitigation element to the project scope after the Draft Phase IV ERP/EA was publicized. A one-acre marsh creation project within the NPS boundary of the Davis Bayou Area has been added to the scope to offset potential adverse impacts to essential fish habitat from construction. Consultation found that the project could destroy up to 0.69 acres of EFH. To mitigate these impacts 1.5 times the area being
adversely impacted—(i.e., 1.035 acres, or one acre) will be created. For the impacts along Park Road, this equals 0.35 acres (i.e., 1.5 x 0.23), and for the impacts assumed along Robert McGhee Road, this equals 0.69 acres (i.e., 1.5 x 0.46). The Park Road section would be accomplished under the NRDA funded portion of the project, and the remainder when the Robert McGhee Road portion of the project is funded, designed, and implemented. Approximately three acres of sediment material borrow areas will be needed to provide material to create the entire one acre of marsh for mitigation.

Revegetation details for the created marsh will be determined before mitigation is implemented; however, some details can be prescribed now. Plant material will come from plant donor sites in the park or be purchased from nurseries and will be planted on no greater than six-ft centers. Only species and forms (e.g., sprigs, bare roots, plugs, gallon containers) that are appropriate for the sites will be planted. Plant material will meet the required genetic specifications. Planting will occur after the dredged material has had time to consolidate sufficiently (approximately three months).

The potential impacts from the marsh creation project are included in the project’s environmental consequences analyses below.

### 7.2.4.3 Alternative C: Limit Access to VFW Road

Under Alternative C, the existing configuration of Park Road and Robert McGhee Road would remain at the current width. A gate would be installed at the intersection of Knapp and VFW Roads. During times of high recreational use on Park Road, VFW Road would be closed to motorists (Figure 7-5). Proposed closure times would be from 4pm-7pm Monday-Friday and 8am-12pm Saturday. This alternative would substantially reduce the number of motor vehicles present on the mile of Park Road between U.S. Route 90 and VFW Road during high recreational usage times. The gate would permit emergency vehicles to pass through at all hours. There would be no change to the access point off U.S. Route 90. A sign would be posted at the U.S. Route 90 entrance and Government Street / Knapp Road Intersection indicating timed closures of VFW Road.

### 7.2.4.4 Elements Common to Action Alternatives B and C

Under each of the action alternatives, NPS would implement the following actions:

- The speed limit throughout the park would be reduced to 25 miles per hour or less;
- Two traffic-calming medians (e.g., 10-ft diameter ellipses) would be installed along the first mile of Park Road;
- All proposed infrastructure and improvements would be handicapped accessible and comply with the Americans with Disabilities Act of 1990;
- The project would address and comply with all appropriate Federal Highway Administration safety recommendations in the Safety Study for Gulf Islands National Seashore Davis Bayou Area dated March 2014;
- Access would continue to be provided to all private residences, buildings, and private roads that stem off of Park Road within the park, including Gollott Avenue, Laurel Oak Drive, Quave Road, and Eagle Point Road;
• NPS road maintenance activities would increase. Maintenance actions would include such things as sweeping the multiple use lanes to remove gravel and sand, and trimming of vegetation encroachment along the roadways to reduce safety conflicts with pedestrians, bicyclists, and motorists as well as wildlife;
• Additional signage to increase public awareness regarding the Davis Bayou Area's status as a NPS unit would be increased. Signage would be installed at the Park Road entrance off of U.S. Route 90 and at the VFW Road entrance.

7.2.5 Operations and Maintenance

Under Alternative B, additional maintenance would be required, as the additional surface for the multiple-use lanes would need to be cleared of debris, and vegetation along the road would need to be cut back to give pedestrians and cyclists a clean and clear path. Eventual re-paving and re-striping of the multiple-use lanes would also be needed. Under Alternative C, the gates that would be installed would have associated routine maintenance to ensure they remain in operable condition.

Project funds would not be used for future operation and maintenance costs.

7.2.6 Affected Environment

Under the National Environmental Policy Act, federal agencies must consider environmental effects of their actions that include, among others, impacts on social, cultural, and economic resources, as well as natural resources. The following sections describe the affected resources of the project. For more detailed discussions of impact topics throughout Gulf Islands National Seashore, refer to the 2014 Final General Management Plan/Environment Impact Statement, or click on 2014 GMP (NPS 2014a).

7.2.6.1 Physical Environment

7.2.6.1.1 Geology and Substrates

The proposed project area is the Davis Bayou Area of the park near Ocean Springs, Mississippi (Figure 7-3). The Mississippi Sound separates the Mississippi mainland from the offshore barrier island chain. The Davis Bayou shoreline is relatively young in age and formed during the late Pleistocene and Holocene Epochs (approximately 11,000 years ago to present). The surface formations include the Prairie formation, which formed the level floodplains, and the Gulfport Formation, which formed a wide belt of beach ridges.

In general, the soil at Gulf Islands National Seashore can be described as greatly weathered and leached, with little organic material, low natural fertility, and highly acidic (NPS 2014a). The Prairie Formation, in most cases, underlies the Mississippi Marshes and is a thick (14.7-39 feet) blanket of alluvial deposits composed of muddy and clayey fine sands and moderately silty, fine, and very fine sands (Otvos 2001). Near the surface, the soil is very pale orange, yellowish-orange, and medium-orange oxidation colors. The Gulfport formation grades upward from muddy, poorly sorted sandy near shore neritic deposits to subtidal shoal sands to higher intertidal and finally eolian sands (Otvos 2001). Shoreline ridge deposits were mainly caused by ocean and wind, so they are devoid of clay and silt. Soils in the Davis Bayou Area
were generally formed under well-drained upland forests of oak, pine, holly, and magnolia as well as cordgrass and blackrush marshes. These soils are still forming as grassy vegetation and wetland plant material accumulates and decomposes (NPS 2014a).

The climate is warm with abundant rainfall. The soil in the project area retains moisture throughout the year creating favorable conditions for decomposition as well as increased chemical processes in the soil. The high rainfall also leaches soluble bases and nutrients downward. The general topography of the area is nearly level with some gentle sloping areas. Sandy and loamy marine deposits have given rise to similar texture soils. On the sand ridges where the water table is deep and soils are leached, plant nutrients and organic matter are carried rapidly downward through the sandy soils. Topography immediately adjacent to Park Road associated with the bridge approaches north of VFW Road is steep with a 20% grade over a distance of approximately 70 feet.

7.2.6.1.2 Hydrology, Water Quality, and Floodplains

Hydrology

This section looks at the movement and distribution of surface water and groundwater in the study area. The Davis Bayou Area, which encompasses approximately 470 acres, empties fresh water into Davis Bayou and eventually the Mississippi Sound by draining adjacent marshes, including Halstead and Stark bayous (NPS 2005). The study area overlies the coastal lowlands aquifer system. This large aquifer system ranges from Texas into Mississippi (USGS 2009). Water in the aquifer becomes increasingly saline as it moves toward the coast mainly due to an increase in dissolved solids. The aquifer ranges in age from Oligocene to Holocene (USGS 2009). The NPS reported a well, located in the Davis Bayou Area of the National Seashore, which measured water levels below the land surface from 1938 to 1990 (NPS 2014a). The well recorded the water level at 2-4 feet below the land surface in the middle of the last century and 70-80 ft toward the end of the data collection period. A hydrologic study was conducted in the project area that determined ground and surface water flow toward the wet pine savanna and southward (NPS 2002).

Surface and Ground Water Quality

Mississippi Department of Environmental Quality (MDEQ) reports on surface and ground water quality by providing technical reviews of physical/chemical, bacteriological, biological, and/or toxicological data. MDEQ provides this information to the U.S. Environmental Protection Agency and it is available to the public. A list of “impaired waters” is prepared every two years, the most recent report was 2014 and none of the waters associated with the study area (Figure 7-4) were listed (MDEQ 2014). As in all areas of human development, there are water quality concerns related to erosion of exposed soil, deterioration of riparian vegetation, and runoff from paved areas where pollutants can be transported (oil, etc.) into low-lying areas and eventually to surface and ground water.

Floodplains

Flooding in the Davis Bayou Area of Gulf Islands National Seashore can range from minor events from high tides to major flooding from hurricanes and other coastal storms. Heavy precipitation can also flood
low elevation areas. As demonstrated by Hurricane Katrina, the area is extremely vulnerable to coastal flood events. In Mississippi, the Katrina storm surge was 25 to 28 feet above normal tide and the surge damage reached several miles inland (NOAA 2012). The Davis Bayou Area of Gulf Islands National Seashore supports a number of natural features that reduce the severity of flooding. For example, coastal wetlands and bayous provide various functions, such as storage and sediment retention and dissipation of energy during flooding events. Wetlands and other depressions also function to store water during overwash or heavy precipitation.

Portions of the project area are within the mapped 100-year and 500-year floodplains, as shown on Federal Emergency Management Agency Flood Insurance Rate Map numbers 28059C0292G, 28059C0293G, and 28059C0294G (FEMA 2009). The Federal Emergency Management Agency defines geographic areas as flood zones according to varying levels of flood risk. Each zone reflects the severity or type of flooding in the area, as depicted on Figure 7-6. The first zone, labeled “AE” on the Federal Emergency Management Agency maps, is within the 100-year floodplain and the base flood elevation ranges from 16-18 ft National Geodetic Vertical Datum of 1988 (NAV88). This zone encompasses mostly the southern portion of the Davis Bayou Area. The major source of flooding in this area would be flooding from overwash in the bayous. This zone would contain Class I floodplains. The second zone on the Federal Emergency Management Agency mapping is zone “X (Other Flooded Areas),” designated for areas of 0.2% annual chance flood or areas of 1% annual chance flood with average depths of less than 1 feet or less of drainage areas less than 1 square mile. The third zone is also zone “X (Other Areas),” areas determined to be outside the 0.2% annual chance floodplain and less likely to flood than the 100-year floodplain or the Other Flooded Areas. Zone “X (Other Areas)” occurs in the northern portion of the study area (Figure 7-6). The final zone, VE (Coastal Flood Zone), extends from offshore to the inland limit of a primary frontal dune along an open coast and any other area and is subject to high velocity wave action from storms. No project activities are proposed in zone VE.

A Floodplain Statement of Findings was prepared in accordance with Executive Order 11988 (Floodplain Management), NPS Director’s Order #77-2, and Floodplain Management and Procedural Manual #77-2. See Appendix E.
7.2.6.1.3 Air Quality and Greenhouse Gas Emissions

Gulf Islands National Seashore is subject to both federal and Mississippi air regulations. The Federal Clean Air Act (42 U.S.C. 7401-7671q) requires the U.S. Environmental Protection Agency (USEPA) to establish a series of national Ambient Air Quality Standards (NAAQS) for air quality throughout the United States. Individual states can adopt the NAAQS or establish state ambient air quality standards, which cannot be less stringent than the NAAQS. The Mississippi Department of Environmental Quality is responsible for ensuring the Mississippi District of Gulf Islands National Seashore meets federal obligations of the Clean Air Act. The Mississippi Department of Environmental Quality uses the NAAQS as duly promulgated by the USEPA (11 Mississippi Administrative Code Pt. 2 Chapter 4).

Both the State of Mississippi and federal primary ambient air quality standards for criteria air pollutants are presented in Table 7-1.

Table 7-1. State and Federal Ambient Standards for Criteria Air Pollutants

<table>
<thead>
<tr>
<th>POLLUTANT</th>
<th>AVERAGING PERIOD</th>
<th>FEDERAL AND STATE STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>8-hour</td>
<td>0.075 ppm</td>
</tr>
<tr>
<td>PM 2.5</td>
<td>Annual (Arithmetic Mean)</td>
<td>15.0 µg/m³</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>35 µg/m³</td>
</tr>
<tr>
<td>PM 10</td>
<td>Annual (Arithmetic Mean)</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>150 µg/m³</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>8-hour</td>
<td>9 ppm</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>35 ppm</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>Annual (Arithmetic Mean)</td>
<td>0.053 ppm</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>0.100 ppm</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Annual (Arithmetic Mean)</td>
<td>0.03 ppm</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>0.14 ppm</td>
</tr>
<tr>
<td>Lead</td>
<td>Annual (geometric mean)</td>
<td>0.15 µg/m³</td>
</tr>
<tr>
<td></td>
<td>24-hour</td>
<td>1.5 µg/m³</td>
</tr>
</tbody>
</table>

Source: USEPA 2014, 11 Mississippi Administrative Code Pt. 2 Chp. 4

Under the terms of the 1990 Clean Air Act amendments, the National Seashore is designated as a Class II airshed. By definition, Class II areas of the country are set aside for protection under the Clean Air Act. Protection is somewhat less stringent than in Class I areas. Under Class II, modest increases in air pollution are allowed beyond baseline levels for particulate matter, sulfur dioxide, nitrogen, and nitrogen dioxide, provided the NAAQS are not exceeded (NPS 2008).
Greenhouse gases (GHG) consisting primarily of water vapor, carbon dioxide, methane, nitrous oxide, and ozone absorb and trap heat in the atmosphere. In the U.S., the primary source of GHG is the burning of fossil fuels for electricity and transportation. Carbon dioxide is the main GHG emitted and accounted for 82% of U.S. GHG emissions in 2012 (USEPA 2012). The Council on Environmental Quality has requested that federal departments and agencies consider the effects of GHG emissions in their National Environmental Policy Act reviews. The proposed Council on Environmental Quality screening level is 25,000 metric tons of carbon dioxide-equivalent emissions annually. If this level is exceeded, an assessment of GHGs should be included in the National Environmental Policy Act assessment. Currently, GHG emissions are not monitored or collected at the park.

The proposed action area is located in Jackson County, Mississippi, which is currently in attainment for all criteria air pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, particulate matter equal to or less than 10 microns in size, fine particulate matter equal to or less than 2.5 microns in size, and lead) (USEPA 2015).

### 7.2.6.1.4 Noise

Noise can be defined as unwanted sound, and noise levels and impacts are interpreted in relationship to its effects on nearby residents or organisms. The existing background noise environment is known as ambient noise and can be generated by a number of sources, including mobile (airplanes, motor vehicles) and stationary sources (industrial operations). The Noise Control Act of 1972 (42 U.S.C. 4901 to 4918) was enacted to establish noise control standards and to allow the federal government to regulate noise emissions from commercial products such as transportation and construction equipment. Noise levels are measured in A-weighted decibels, a logarithmic scale that approaches the sensitivity of the human ear across the frequency spectrum.

The primary sources of ambient (background) noise in the project area are the operation of motor vehicles and voices and natural sounds such as wind and wildlife. The levels of noise in the project area vary, depending on the season and/or the time of day, the number and types of sources of noise, and distance from the sources of noise.

Noise-sensitive receptors include sensitive land uses and those individuals and/or wildlife that could be affected by changes in noise sources or levels due to the project. Noise-sensitive land uses in the project area include residences and campground visitors.

### 7.2.6.2 Biological Environment

#### 7.2.6.2.1 Living Coastal and Marine Resources

The Davis Bayou Area is approximately 470 acres (including water body acreage). Three marshy bayous, including Halstead, Stark (crossed by Robert McGhee Road), and East Stark Bayou (crossed by Park Road) flow through the study area and discharge into Davis Bayou to the south and eventually to the Mississippi Sound. Elevations in the Area range from sea level to over 20 ft; vegetative cover varies from tidal herbaceous plants to upland hardwoods (Mississippi State University 2002).
Seven major vegetated habitat types were identified as occurring within the Davis Bayou Area. The southern mixed hardwood forest occupies the high sandy ridges located throughout the southern portion of the unit. Interspersed between these ridges are bayhead swamp wetlands that subsequently flow into tidal marshes that are part of the Davis Bayou watershed. Where southern mixed hardwood forested areas lie adjacent to tidal marshes, a transitional wet forest occurs on the sloping areas between them where soils are hydric. Hydric soils are defined as those soils that are sufficiently wet in the upper part to develop anaerobic conditions during the growing season. The maritime forest habitat type lies directly adjacent to Davis Bayou. Wet pine flatwood and wet pine savanna habitats occupy the relatively flat topography of the northern portion of the unit, largely on either side of the entrance road (Park Road). Bayhead swamps are interspersed within this area as well (Mississippi State University 2002). No seagrass beds occur in the project area (NPS 2014a).

**Wetlands**

Much of the vegetation between the ocean and the uplands at Gulf Islands National Seashore is considered tidal marsh, discussed below, and analyzed within the “Terrestrial Vegetation and Wildlife” section of this EA. According to NPS Director’s Order 77-1, the wetlands procedural manual, the National Park Service adheres to the Cowardin et al. 1979 wetlands classification scheme. In the Mississippi District, wetlands are found in the Davis Bayou Area that are dammed or blocked by roadways and culverts, resulting in the unnatural ponding and retention of water. The National Park Service adheres to a “no net loss” of wetlands policy, as well as other federal and agency policies.

In December 2013 and March 2015, wetlands scientists with the assistance of personnel from the Gulf Islands National Seashore Science and Resources Stewardship Division and the NPS Southeast Regional Office conducted field delineations of wetland features within a 50-ft buffer of the proposed project area (Figure 7-4). The wetlands delineation was conducted in accordance with the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987), Regional Supplement to the U.S. Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0), and the National Park Service Procedural Manual #77-1: Wetland Protection (National Park Service 2012). (A Wetlands Statement of Findings was prepared in accordance with Executive Order 11900 (Protection of Wetlands), NPS Director’s Order #77-1, and Wetland Protection Procedural Manual #77-1. (See Appendix E).)

Wetland boundaries were determined by evaluating the presence or absence of wetland indicators at two or more “observation points” (OP). The boundary was mapped between an OP evaluated as an upland location and an OP evaluated as a wetland. Delineated wetlands were identified using the Cowardin classification system (Cowardin et al. 1979). Under this classification, the wetlands present in the Davis Bayou Area were placed into estuarine (non-oceanic wetlands influenced by tidal flows) intertidal emergent, palustrine (fresh water wetland systems) emergent, palustrine scrub shrub, and palustrine forested.
The field delineation efforts mapped 7.3 acres of wetlands within 50 feet of the existing Park Road and Robert McGhee Road (i.e., the 122 foot study corridor) except over the estuary crossings where the study corridor width was 74 ft. (26 ft. out from each side plus the 22-ft wide road). Of the 7.3 acres of delineated wetlands, up to 2.9 acres of potentially U.S. Army Corps of Engineers jurisdictional wetlands could be impacted by the proposed actions (Figure 7-7). Table 7-2 depicts the amount of wetlands delineated in the study corridor by Cowardin classification.

Table 7-2. Wetland amounts by classification within the study corridor

<table>
<thead>
<tr>
<th>WETLAND CLASSIFICATION</th>
<th>AREA IN 122-FT STUDY CORRIDOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estuarine Intertidal Emergent (E2EM1)</td>
<td>0.69 acres</td>
</tr>
<tr>
<td>Palustrine Emergent (PEM1)</td>
<td>0.4 acres</td>
</tr>
<tr>
<td>Palustrine Scrub-Shrub (PSS1)</td>
<td>0.1 acres</td>
</tr>
<tr>
<td>Palustrine Forested (PFO1 &amp; PFO4)</td>
<td>6.1 acres</td>
</tr>
</tbody>
</table>

The boundaries of the wetlands identified in this study are not fully contained within and extend outside the study corridor. The areas that extend outside the study corridor are similar in biological and physical characteristics as the areas delineated in the study corridor. Therefore, tidal marsh is present beyond the study corridor where estuarine emergent wetlands were identified and wet pine flatwoods are present beyond the study corridor where palustrine forested wetlands were identified. The Davis Bayou Area is estimated to have approximately 164 acres of wetlands and 120 acres of bayou (NPS 2000).

Wetland habitat types delineated include tidal marshes (salt and brackish) located along tidal bayous, bayhead swamps that constitute the upper reaches of small drainage systems, wet pine savannas located within flat, poorly drained sites, and transitional wet forest located on the sloping wet soil areas between tidal marsh and adjacent upland areas. The acreage of each of these types of wetland found in the Davis Bayou Area is presented in Table 7-3.

Table 7-3. Acreage of Wetland Types present in the Davis Bayou Area

<table>
<thead>
<tr>
<th>WETLAND TYPE</th>
<th>AMOUNT IN DAVIS BAYOU AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estuarine Intertidal Emergent (E2EM1)</td>
<td>52 acres</td>
</tr>
<tr>
<td>Bayhead Swamp (PFO1)</td>
<td>20 acres</td>
</tr>
<tr>
<td>Wet Pine Savanna (PFO4)</td>
<td>74 acres</td>
</tr>
<tr>
<td>Transitional Wet Forest (PFO1)</td>
<td>18 acres</td>
</tr>
</tbody>
</table>

Source: NPS 2000
Estuarine Intertidal Emergent Wetlands

The salt marsh community in the Davis Bayou Area is comprised of the three arms of Stark Bayou. Within the study corridor, the tidal salt marshes of East Stark Bayou crossed by Park Road, and Stark Bayou crossed by Robert McGhee Road. These estuarine emergent wetlands are composed of wet and salt tolerant grasses and sedges growing along the fringe of intertidal flats that are exposed to the ebb and flow of the daily fluctuating ocean tides (NPS 2014a). This community occurs in relatively protected niches and drainage basins and creates a transition from open water to the emerging land. Because this vegetation community must tolerate daily flooding and saline conditions, relatively few species grow in this environment, and the subtypes or zones within this community are often composed of nearly pure stands of a single species (NPS 2014a). 52 acres of tidal marsh is present in the Davis Bayou Area (NPS 2000).

Palustrine Forested Wetlands

Bayhead swamps occur on mucky silt loams within the Davis Bayou Area. These areas are forested wetlands found at or near the heads of smaller tributaries of large drainage basins or as the main part of smaller or local drainage systems. These wetlands drain quickly following rains. Commonly occurring trees include sweet bay magnolia, swamp black gum (Nyssa biflora), red bay (Persea palustris), red maple (Acer rubrum), slash pine (Pinus elliioti), and sweetgum (Liquidambar styraciflua). Common shrubs include wax myrtle, large gallberry (Ilex coriacea), and swamp titi. The ground or herb layer commonly consists of cinnamon fern (Osmunda cinnamomea), royal fern, netted chain fern (Woodwardia areolata), lizard’s tail (Saururus cernuus), sphagnum moss (Sphagnum spp.), with occasional grasses and sedges. This habitat typically drains almost completely after rain events. Fire is not an apparent controlling factor in this habitat type, occurring only in dry conditions. Soils are hydric, composed primarily of sand with varying smaller amounts of silt and clay (NPS 2014a).

Freshwater marshes include the freshwater entrance ponds at the north end of the Davis Bayou Area that were created when soil was removed from those areas to construct the first mile of Park Road in the early 1980s. These areas are permanently flooded to intermittently exposed wetland depressions. The relatively high water table and associated lateral seepage through the coarse sandy soils is the primary source for the water that fills and maintains these wet depressions. Frequent rains also play an important role in recharging water levels in these depressions and providing an additional fresh water source. Soils are predominantly sandy, oftentimes with muddy and organic deposits on the bottom. Water depths tend to be relatively shallow, averaging 1 to 3 feet deep, although depths as much as 9 feet were observed in some ponds (NPS 2014a).

Vegetation in these ponds can vary considerably from densely vegetated to sparse, depending on history of formation and frequency of disturbance. Salinity levels can also be a determining factor in species variances. Most emergent species are restricted to the shallow margins at the edges of these ponds. The most common species include rushes and sedges along with marsh pennywort (Hydrocotyle umbellate), cattail (Typha spp.), sawgrass (Cladium jamaicensis), marsh fleabane (Pluchea odorata), royal fern (Osmunda regalis), swamp rose mallow (Hibiscus moscheutos), and Carolina redroot.
Woody species may include buttonbush (*Cephalanthus occidentalis*), marsh elder, gallberry (*Ilex glabra*), swamp titi (*Cyrilla racemiflora*), sweetbay magnolia (*Magnolia virginiana*), wax myrtle (*Myrica cerifera*), and groundsel (NPS 2014a).

Wet pine savannas are open grasslands with scattered pines that occur on poorly drained, flat terraces of the lower coastal plain region of the southeast. This habitat belongs to a broad group of pine-dominated forests referred to as “flatwoods” that include pine flatwoods, southern mixed hardwood forest, and longleaf pine-turkey oak forest. In the study corridor within the Davis Bayou Area, this habitat can be found north of Park Road between VFW Road and Gollott Avenue. As with all flatwood habitat types, longleaf pine is the dominant tree, and a periodic fire (three- to five-year cycle) helps to maintain this and numerous other fire-adapted species. Trees are typically widely spaced or absent in the wettest sites. In absence of fire, slash pine may become more dominant and, along with shrubs, create a dense canopy that limits understory vegetation. Although large individual slash pines can survive “cool” ground fires, this species does not have a fire resistant “grass” stage like the longleaf pine. Under natural conditions of periodic fire, longleaf pine is the only common tree species that thrives. In the absence or suppression of fire, slash pine, red maple, sweet bay magnolia, and red bay may become more common, as well as shrubs like common gallberry (*Ilex glabra*), large gallberry, yaupon, wax myrtle, and swamp titi (NPS 2014).

Transitional wet forests occupy a zone of transition from one habitat type to another. In the case of the Davis Bayou Area, this community occupies the wet soil slopes between upland ridges and Davis Bayou intertidal areas. In the study corridor, these areas are palustrine wetlands found along the perimeter of the estuarine emergent wetlands at the Robert McGhee Road crossing of Davis Bayou. This habitat designation was recognized to account for the wet soil areas delineated up slope of the adjacent tidal marshes that were clearly not affected by the normal tidal action. Groundwater seeping from the upland ridges is the apparent source of water responsible for the wet soil conditions. Although similar to bayhead swamps in general characteristics, this habitat type can also include vegetation found in the adjacent mixed hardwood forest. The effect of fire in this habitat is unknown. Although similar to bayhead swamps in vegetation and soil characteristics, the upland proximity to fire-susceptible southern mixed hardwood forest may expose them to periodic fire. As with bayhead swamps, these habitats may support fire only under dry conditions (NPS 2014).

**Emergent and Terrestrial Habitat**

*Southern mixed hardwood forest*

The southern mixed hardwood forest community is a pine-dominated upland habitat commonly occupying sites on high sandy ridges that includes a variety of hardwood species and a varied assemblage of understory trees and shrubs. This habitat is the typical upland habitat found in the Davis Bayou Area. In addition to longleaf pine (*Pinus palustris*) and loblolly pine (*Pinus taeda*), the canopy layer of the mixed hardwood forest may include beech (*Fagus grandifolia*), laurel oak (*Quercus hemispherica*), southern magnolia (*Magnolia grandiflora*), live oak (*Quercus virginiana*), white oak (*Quercus alba*), sweetgum, water oak (*Quercus nigra*), southern red oak (*Quercus falcate*), pignut hickory (*Carya glabra*), black gum (*Nyssa sylvatica*), and post oak (*Quercus stellata*). Sweetgum, water oak, and black gum are
commonly understory trees, particularly as saplings, along with flowering dogwood (*Cornus florida*), tree huckleberry (*Vaccinium arboreum*), American holly (*Ilex opaca*), red maple, and black cherry (*Prunus serotina*). Common shrubs include yaupon (*Ilex vomitoria*), squaw huckleberry (*Vaccinium stamineum*), and horse sugar (*Symlocos tinctoria*). Poison ivy (*Toxicodendron radicans*), catbrier (*Smilax spp.*), and grape (*Vitis spp.*) are also common (NPS 2014a).

There are many large, mature live oak trees along Park Road and Robert McGhee Road. These large trees provide canopy over the roads in some locations, and carry an aesthetic value.

**Wildlife and Wildlife Habitat**

Smaller native mammal species with the potential to be found in the Davis Bayou Area include marsh rabbit (*Sylvilagus palustris*), eastern cottontail rabbit (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), squirrels, skunks, gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), eastern wood rats (*Neotoma floridana*), hispid cotton rats (*Sigmodon hispidus*), eastern moles (*Scalopus aquaticus*), southeastern pocket gophers (*Geomyos pinetis*), short-tailed shrews (*Blarinus carolinensis*), nine-banded armadillo (*Dasypus novemcinctus*), and a variety of bats. River otters (*Lontra canadensis*) can also be found in Davis Bayou.

Common amphibians and reptiles found in the National Seashore include several species of frogs and toads, Gulf Coast Salt Marsh snake (*Nerodia clarkia*), corn snake (*Pantherophis guttatus*), Gulf Coast box turtle (*Terrapene carolina major*), Diamondback terrapins (*Malaclemys terrapin*), eastern glass lizard (*Ophisaurus ventralis*), anoles (*Anolis spp.*), five lined skink (*Plestiodon fasciatus*), and American alligator (*Alligator mississippiensis*) (NPS 2014a).

Approximately 150 bird species were identified at the Davis Bayou Area in 2013 and 2014 (ebird.org 2015). Birds use the area for loafing, nesting, feeding, wintering, or migratory rest stops. These birds include songbirds, waterfowl, wading birds, birds of prey, marine birds, and shorebirds. Clapper rails (*Rallus crepitans*), which are indigenous to salt marshes, and night herons nest and roost in Davis Bayou.

Nonnative wildlife species found in Davis Bayou include Norway rat (*Rattus norvegicus*), nine-banded armadillo (*Dasypus novemcinctus*), wild hogs, and black rat (*Rattus rattus*). Nonnative aquatic organisms, including certain species of jellyfish, clams, crabs, fish, and snails were introduced and continue to be introduced to Gulf waters from discharged ballast sediment and water used in the shipping industry. This practice presents international issues for exotic, nonnative introductions of potentially invasive and/or harmful organisms. Similar to the management of nonnative plant species, nonnative wildlife species are managed to benefit overall ecosystem health, and impacts on individual species are considered where appropriate (NPS 2014a).
Fish and Fish Habitat

The Davis Bayou Area serves as an important nursery for saltwater fish, shrimp, mullet, blue crabs and other species and is influenced by tidal flows. More than 200 species of fish have been observed in waters surrounding the park. The most abundant fish species are the anchovy (*Anchoa* spp.) and the silverside (*Menidia* spp.); both species are also abundant in the shallow nearshore waters. Myriad larval and young fish occupy the shallow waters around the bayou shoreline and find food and protection in estuarine vegetation (NPS 2011).

Silversides are abundant in the shallow nearshore waters of the Davis Bayou Area. These small species, among others, provide food for larger predators. Killifish, sailfin molly, and mosquito fish live in ponds and lagoons, and along Davis Bayou. Myriad larval and young fish occupy the bayou and shallow waters around the shore. These include most of the important sport and commercial species that spawn farther offshore and spend the early parts of their lives in estuarine nursery areas. Several commercially and recreationally important species are within the waters of Davis Bayou. Speckled seatrout (*Cynoscion nebulosus*) spawn in the bayou and are often the most sought-after sport fish. Red Drum (*Sciaenops ocellatus*), sand seatrout (*Cynoscion arenarius*), flounder (*Paralichthys albigutta*), are other species often found in the waters surrounding the Davis Bayou Area. Several species of shellfish that are of commercial, recreational, and ecological importance are in the bayou waters, including blue crabs (*Callinectes sapidus*), shrimp, and stone crabs (*Menippe mercenaria*) (NPS 2014a).

Other invertebrates of ecological importance exist within the waters of Gulf Islands National Seashore, although EFH has not been designated for these species. These species include horseshoe crab (*Limulus polyphemus*), mole crab (*Emerita benedicti*), fiddler crab, hermit crab, coquina, several species of conch, oyster drill, and various copepods, isopods, and amphipods.

Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth a mandate for NMFS, regional Fishery Management Councils (FMC), and other Federal agencies to identify and protect EFH of economically important marine and estuarine fisheries. To achieve this goal, suitable fishery habitats need to be maintained. EFH in the area of proposed action is identified and described for various life stages of managed fish and shellfish in the northern Gulf (GMFMC 1998). A provision of MSFCMA requires that FMC's identify and protect EFH for every species managed by a Fishery Management Plan (FMP) (U.S.C. 1853(a)(7)). There are FMP's in the Gulf region for shrimp, red drum, reef fishes, coastal migratory pelagics, and highly migratory species (e.g., sharks). Table 7-4 includes species from Ecoregion 3 that will be found in emergent marsh and soft bottom habitat (<1m deep) – the two relevant EFH within the area of proposed action.
Table 7-4. EFH within the vicinity of the Proposed Area of Effect – Emergent Marsh and Soft Bottom habitat

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SPECIES</th>
<th>LIFESTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Drum</td>
<td>Sciaenops ocellatus</td>
<td>Larvae – Adults</td>
</tr>
<tr>
<td>Gray Snapper</td>
<td>Lutjanus griseus</td>
<td>Adults</td>
</tr>
<tr>
<td>Lane Snapper</td>
<td>Lutjanus synagris</td>
<td>Early and Late Juvenile</td>
</tr>
<tr>
<td>Brown shrimp</td>
<td>Penaeus aztecus</td>
<td>Early Juvenile</td>
</tr>
<tr>
<td>White shrimp</td>
<td>Penaeus setiferus</td>
<td>Early Juvenile</td>
</tr>
</tbody>
</table>

**Tidal Salt Marshes (includes emergent marsh and soft bottom)**

The salt marsh community (E2EM1) in the Davis Bayou Area is comprised of the three arms of Stark Bayou. Within the study corridor, the tidal salt marshes are East Stark Bayou crossed by Park Road, and Stark Bayou crossed by Robert McGhee Road. These estuarine emergent wetlands are composed of wet and salt tolerant grasses and sedges growing along the fringe of intertidal flats that are exposed to the ebb and flow of the daily fluctuating ocean tides. This community occurs in relatively protected niches and drainage basins and creates a transition from open water to the emerging land. Because this vegetation community must tolerate daily flooding and saline conditions, relatively few species grow in this environment, and the subtypes or zones within this community are often composed of nearly pure stands of a single species (NPS 2014). 52 acres of tidal marsh is present in the Davis Bayou Area (NPS 2000).

**7.2.6.2.2 Protected Species**

**Federally Listed Threatened and Endangered Species**

The U.S. Fish and Wildlife Service (USFWS) lists species as threatened or endangered when they meet criteria detailed under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 et seq.). Additionally, Mississippi Wildlife Fisheries and Parks (MWFP) and NOAA National Marine Fisheries Service (NMFS) identify and list protected species. Section 7(a)(2) of the ESA requires that each federal agency ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of those species. Harming such species includes not only directly injuring or killing them, but also disrupting the habitat on which they depend. When the action of a federal agency may affect a protected species or its critical habitat, that agency is required to consult with either the NMFS or the USFWS, depending upon the protected species that may be affected. Endangered Species Act Section 7 consultations have been completed with both USFWS (USFWS 2015) and NMFS (NOAA 2015b). The appropriate recommendations will be incorporated into the proposed project.
This section fulfills the National Park Service’s obligation under Section 7 of the Endangered Species Act to document federally listed species and impacts of the Preferred Alternative (Alternative B) to these species via a biological evaluation form submitted to the USFWS for informal consultation and conference (DOI 2015) and used for coordination with NMFS. Table 7-5 lists the species of concern known to be present in the Davis Bayou Area of the National Seashore. Additional species are found throughout Gulf Islands National Seashore, but are not present in the study corridor and would not be affected by the proposed action. For a list of these species refer to the 2014 Final General Management Plan/Environment Impact Statement, or click on [2014 GMP](NPS 2014a). Different agencies have different categories for classification of species, as indicated in the heading and columns of Table 7-5.

Table 7-5. List of Protected Species known to be present within the Davis Bayou Area of Gulf Islands National Seashore

<table>
<thead>
<tr>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>FEDERAL STATUS</th>
<th>MS RANK</th>
<th>PREFERRED HABITAT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Bald Eagle</td>
<td>DM</td>
<td></td>
<td>In the vicinity of lakes, rivers, marshes, and along sea coasts. Nesting usually occurs in areas with mature trees near large bodies of water. No nest in the Davis Bayou Area</td>
</tr>
<tr>
<td><em>Pelecanus occidentalis</em></td>
<td>Brown Pelican</td>
<td>S1</td>
<td></td>
<td>Feed in shallow waters within 20 miles of the shoreline.</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Alligator mississippiensis</em></td>
<td>American Alligator</td>
<td>SAT</td>
<td></td>
<td>Present in wetlands in the study corridor.</td>
</tr>
</tbody>
</table>

SAT = Similarity of Appearance (Threatened); DM = Delisted, Monitored; S1 = critically imperiled


The bald eagle (*Haliaeetus leucocephalus*) is found in the vicinity of marshes and along the coast in the Mississippi District of the National Seashore; however, there are no known nests there. The bald eagle is no longer listed as threatened. The final rule for delisting was published in the Federal Register on July 9, 2007. While no longer protected by the Endangered Species Act, the bald eagle continues to be managed under two federal laws: the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. As a result, seasonal closures to protect eagles at the park, and the subsequent impact analysis to bald eagles are discussed further below.

The brown pelican (*Pelecanus occidentalis*) is a year-round resident of the Mississippi District in the National Seashore. The brown pelican was recently delisted, but it continues to be monitored. It is a state-endangered, critically imperiled (nonbreeding) species in Mississippi (NPS 2014a).
In the Mississippi District of the National Seashore, the brown pelican inhabits the Davis Bayou Area, East Ship and West Ship islands, Horn Island, Petit Bois Island, and Cat Island. The brown pelican feeds primarily in shallow waters within 20 miles of the shoreline, rests during the day, roosts at night on sand spits and offshore sandbars, and nests on small coastal islands that provide protection from mammal predators and have sufficient elevation to prevent flooding the nests (NPS 2014a).

Although the population of American alligator (Alligator mississippiensis) is considered fully recovered from its federal listing as an endangered species, it remains on the threatened species list due to its similarity of appearance with the endangered crocodile; its official listing status is “Threatened (Similarity of Appearance).” Because of its similarity in appearance to the crocodile, the U.S. Fish and Wildlife Service regulates the hunting and legal trade of alligator skins and products (NPS 2014a). Alligators inhabit the wetland areas within the study corridor, especially those areas along near Stark Bayou at the Robert McGhee Road crossing.

Marine mammals are not found in the project area due to the shallowness of the water.

**Other Special Status Species**

Mississippi maintains a list of protected species of state concern. The saltmarsh topminnow is described below as it is found within the waters of the Davis Bayou Area. Also included are species of concern to the U.S. Fish and Wildlife Service and National Marine Fisheries Service, and those listed by the U.S. Fish and Wildlife Service as Birds of Conservation Concern, but are not federally listed species to which Section 7 of the Endangered Species Act applies. These species, termed “consideration encouraged” or “species of concern” are recommended for consideration by federal agencies undertaking management actions. They are not species officially designated as candidate species for ESA Section 7 protection.

The saltmarsh topminnow is a small fish native to the north-central coast of the Gulf of Mexico of the southern United States, from Galveston Bay, Texas, eastward through Louisiana, Mississippi, Alabama, and parts of western Florida. It is a federal species of concern managed by the National Marine Fisheries Service. Because the saltmarsh topminnow lives in salt marshes and brackish water, coastal erosion and conversion of marshes to deeper, open water eliminates the marsh surface that, when flooded, provides important foraging, shelter, and possible breeding areas for saltmarsh topminnows. The saltmarsh topminnow is believed to live in the Pensacola Bay system (NMFS 2003) and is also likely to occupy the wetlands and marshes of the Mississippi barrier islands. However, presence of this species in the Davis Bayou Area is unknown.

The Mississippi diamondback terrapin (Malaclemys terrapin pileata) is a medium-sized brackish-water turtle. The Mississippi diamondback terrapin is found from the Florida Panhandle to eastern Louisiana. A resident of coastal salt marshes, estuaries, and tidal creeks, it is restricted to the Gulf Barrier Islands and Coastal Marshes ecoregion. In Mississippi, terrapins typically build nests above the high tide mark on beaches backed by marshes. The marsh provides habitat for hatchlings. Nesting beaches may range from “pocket” beaches several yards long to more extensive beaches several hundred yards long. In Mississippi, terrapins are designated as a non-game species in need of management, are ranked as an S2 species, and are monitored as a species of special concern (Gulf Coast Research Laboratory 2007). The presence of this terrapin within the Davis Bayou Area was confirmed by NPS biologist in 2014.
The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) of 1940 (BGEPA) prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald eagles, including their parts, nests, or eggs. BGEPA provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” Golden eagles are not present along the Gulf Coast. Bald eagles have been sighted in the Davis Bayou Area but are not known to nest there.

The Trustees have reviewed the project site and determined that migratory bird nesting is not known or likely, but is possible. The Migratory Bird Treaty Act (MBTA) requires the protection of all migratory bird species and protection of ecosystems of special importance to migratory birds against detrimental alteration, pollution, and other environmental degradation. Coordination under MBTA is ongoing between the Trustees and the U.S. Fish and Wildlife Service.

Migratory birds anticipated in the project area include the following:

- Raptors, including: osprey, hawks, American kestrel, bald eagle, and kites;
- Seabirds and shorebirds, including: plovers, black skimmer, sandpipers, the gull-billed tern, and the least tern;
- Wading birds, including: herons, egrets, American oystercatcher, American bittern, least bittern, lesser yellowlegs, long-billed curlew, and yellow rail;
- Waterfowl, including: geese, swans, ducks, loons, and grebes;
- Songbirds, including: warblers, sparrows, wrens, blackbirds, thrush, woodpeckers, and doves.

NPS staff implement seasonal closures to protect nesting osprey (Pandion haliaetus) and bald eagles (Haliaeetus leucocephalus) from visitor disturbance. These closures are necessary to protect osprey and bald eagle adults, eggs, and juveniles. These birds are subject to human disturbance, which can cause the adults to leave the nests and chicks to die from overheating and dehydration. From March 1 through July 31, areas within 300 yards of each osprey nest that contains adult or juvenile osprey are closed to all public use. These closures usually occur on the barrier islands, but could also occur along the coastline in the Davis Bayou Area (NPS 2014a).

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973”. Birds of Conservation Concern 2008 is the most recent effort to carry out this mandate. Birds of Conservation Concern include:

- nongame birds;
- gamebirds without hunting seasons;
- subsistence-hunted nongame birds in Alaska; and
- Endangered Species Act candidate, proposed, and recently delisted species.
According to the U.S. Fish and Wildlife Service and positive sightings posted on ebird.org, 27 bird species of conservation concern have ranges that include the Davis Bayou Area of Gulf Islands National Seashore (USFWS 2015).

7.2.6.3 Human Uses and Socioeconomics

7.2.6.3.1 Socioeconomics and Environmental Justice

The Mississippi portion of Gulf Islands National Seashore is located in Jackson County, Mississippi and is recognized as a major contributor to the state’s recreation and tourism industry. In 2013, the Mississippi portion of Gulf Islands National Seashore had approximately 1 million visitors who spent nearly $39 million near the park supporting 514 jobs in the local area (NPS 2014b). Visitor spending supports jobs predominantly in the services sector, including restaurants, grocery and convenience stores, hotels, and recreational businesses.

According to the U.S. Census Bureau, Jackson County’s minority and low-income population were similar to the national average and lower than the state average as shown on Table 7-6.

Table 7-6. Minority and Low Income Populations Jackson County, Mississippi, and U.S. Averages, 2009-2013

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>MINORITY (PERCENT)</th>
<th>INDIVIDUALS BELOW THE POVERTY LEVEL (PERCENT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson County</td>
<td>26.9</td>
<td>15.9</td>
</tr>
<tr>
<td>Mississippi</td>
<td>40.5</td>
<td>22.7</td>
</tr>
<tr>
<td>United States</td>
<td>26.0</td>
<td>15.4</td>
</tr>
</tbody>
</table>


Residents within the surrounding communities of the park are not disproportionately minority or low-income.

7.2.6.3.2 Cultural Resources

Cultural resources include historic properties listed in, or eligible for listing in the National Register of Historic Places (36 C.F.R. §60[a-d]). The National Historic Preservation Act of 1966, as amended (NHPA; 16 U.S.C. §470[f]), defines an historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register [of Historic Places].” The definition of historic properties also includes significant traditional religious and cultural properties important to Indian tribes. Historic properties include built resources (bridges, buildings, piers, etc.), archaeological sites, and Traditional Cultural Properties, which are significant for their association with practices or beliefs of a living community that are both fundamental to that community’s history and a piece of the community’s cultural identity. Although often associated with Native American traditions, such properties also may be important for their significance to ethnic groups or communities. Historic properties also include submerged resources.
The National Historic Preservation Act of 1966 (NHPA) charges the federal government with protecting the cultural heritage and resources of the nation. A complete review of this project under Section 106 of the NHPA would be completed as environmental review continues. This project would be implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources. As part of the Section 106 process, any necessary surveys or field studies would be conducted to document resources, develop avoidance procedures, and/or implement mitigation measures for the project.

The current span of known human occupation within the areas of the National Seashore extends from the Woodland Period (starting approximately 2000 years ago) to 1971, when Gulf Islands National Seashore was created. Most prehistoric archeological sites within the boundaries of the national seashore in both the Florida and Mississippi districts have been identified as Woodland or Mississippian period midden sites. European settlements in the Florida District area started around 1559. European settlements around the MS District area started around 1699. Both districts have had a large military presence since historic contact, have been used as state parks and/or resorts, or have been settled by private citizens. In addition to artifacts from these prehistoric eras, historic archeological resources from French and Spanish occupations may also be found within the National Seashore. Finally, the forts found within Gulf Islands National Seashore constitute the most notable historic structures in the area, spanning almost 150 years from the Spanish colonial to World War Two eras (NPS 2014a).

Archeological surveys were conducted in 2011 and 2014 in association with the proposed project. These surveys complemented a previous 1982 survey. Together, the surveys indicate the presence of four archeological sites within or overlapping the project study area. Although these sites have not been evaluated for NRHP eligibility, the National Park Service will formally determine their status during further field evaluation in late 2015 or early 2016. Furthermore, the 2014 survey revealed a low probability of the presence of unknown resources in the project area. Consultation with the Mississippi State Historic Preservation Officer (SHPO) is ongoing in regard to determining NRHP eligibility for the four sites. For the purposes of this EA, the sites will be treated as NRHP-eligible until the National Park Service formally determines their status and subsequently receives concurrence thereof from the Mississippi SHPO. Otherwise, the project study area contains no additional known cultural resources currently listed in or determined eligible for listing on the National Register of Historic Places (NRHP).

7.2.6.3.3 Infrastructure

Infrastructure for the purpose of this analysis includes both roadways and utility networks.

Roadways

Park Road, also known as Route 15, is a two-lane paved undivided roadway 2.17 miles long. It is the main access to the Davis Bayou Area from the U.S. 90 highway and provides access to a variety of users, park visitors, residents, and school buses. It, along with Robert McGhee Road, is the main access to the Davis Bayou Area campground, William M. Colmer Visitor Center, and boat ramp. Additionally, Park Road serves as the only access route to several residential areas near the park and is the primary access
to the Gulf Coast Research Laboratory Cedar Point Campus. Along its alignment, it has six intersections with the following access roads:

- VFW Road - connects park road with adjacent community via Knapp Road and Government Street;
- Laurel Oak Drive – University of Southern Mississippi Gulf Coast Research Laboratory (GCRL) Cedar Point Campus entrance;
- Gollott Avenue - Residential and GCRL access;
- Quave Road – Residential access;
- Robert McGhee Road - Campground access;
- Eagle Point Road - Residential access.

Park Road has 11-ft lane widths, minimum to no shoulders, and a curvilinear alignment. The posted speed limit is 35 mph north of VFW Road, 25 mph from VFW Road to Eagle Point Road, and 15 mph as vehicles approach the visitor center. It is continuously striped for no passing with double yellow centerline and white edge lines. There is little turf shoulder throughout its entire length. Additional attributes along Park Road include a special “Share the Road” sign with pedestrian and bicycle symbols advising motorists to share the road with the other transportation modes, wildlife crossings warning signs, and timber guardrails in several locations (USDOT FHWA EFLHD 2014).

Robert McGhee Road, also known as Route 16, is a two-lane paved undivided roadway 0.82 miles long. It provides access to the Davis Bayou Area Campground from Park Road. The posted speed limit for this road is 25 mph and changes to 15 mph near the Gator Pond and Nature’s Way Trail entrance area. There is a “congested area” warning sign on top of the speed limit sign where this change occurs. The road is continuously striped for no passing with double yellow centerline and white edge lines. This road has little grass/ turf shoulder throughout its entire length. Additional attributes along Robert McGhee Road include a special “Share the Road” sign with pedestrian and bicycle symbols advising motorists to share the road with the other transportation modes and a pull off area at the intersection of the Nature’s Way Trail and Gator Pond area. Some locations along Robert McGhee Road exhibit pavement edge drop offs higher than two inches. Such drop-offs are linked to serious crashes, including fatal collisions (USDOT FHWA EFLHD 2014), though none have yet occurred in the park.

The Davis Bayou Area trail goes along the right side of Robert McGhee Road, and Robert McGhee Road is part of the Live Oak Bicycle Route. The Davis Bayou Area trail is a 1-mile trail from the William M. Colmer Visitor Center to the picnic area. This trail provides a connecting link with the Nature’s Way Trail and the CCC trail. It is an approximate 3-ft wide gravel trail for pedestrian use only. The 15-mile Live Oak Bicycle Route, two miles of which are in the park, connects the Davis Bayou Area with the town of Ocean Springs, Mississippi. There are no sidewalks or bicycle lanes within the Davis Bayou Area; however, a series of pedestrian trails connect the William M. Colmer Visitor Center to different observation areas: Davis Bayou Trail, CCC Spur Trail, Nature’s Way Loop Trail, and Visitor Center Trails.

At the intersection of Knapp Road and VFW Road, where Alternative C would be implemented, the two roads are small, narrow two-lane roads. There are no sidewalks or walking trails present in this area, and the roads have little grass/ turf shoulder.
Public Utilities

Various utilities are located along the road corridors within the Davis Bayou Area. These include electric, water, sewer, cable, and phone lines. Electrical lines are located on the east side of Park Road between Knapp Road and the William M. Colmer Visitor Center. Water and sewer lines run beneath Park Road and buried cable and phone lines are located on the west side of Park Road. Some utility lines are also present within the Robert McGhee Road corridor (Figure 7-8). Fiber optic lines are not currently present, though the park anticipates they will be installed in the future. The electrical company has mentioned upgrading the lines that run through the park. Any such upgrade would be done in conjunction with park planning efforts. Both the fiber optic and electric lines would be buried.

Figure 7-8: Project Area Utilities Map
Gulf Islands National Seashore
U.S. Department of Interior/ National Park Service

Note: Utility data not complete and should not be used as survey-grade utility data.
7.2.6.3.4  Land and Marine Management

The project area within the Davis Bayou Area of Gulf Islands National Seashore is devoid of commercial or private development and consists of the Park Road and Robert McGhee Road corridors. While there are a few residential and academic areas interspersed along the Park Road corridor the project area is largely bordered by U.S. Route 90 to the north, residential development to the east and west, and Davis Bayou and the Gulf of Mexico to the south. The proposed project is consistent with the Gulf Islands National Seashore General Management Plan completed in 2014 (NPS 2014a). The proposed project area is currently used as an access route and for recreational activities and is managed by the National Park Service. The area is currently zoned for diverse visitor opportunities, and land use and management authority at the Davis Bayou Area is under the purview of the National Park Service.

Under the Coastal Zone Management Act of 1972, proposed actions must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. Before project implementation, a consistency determination would be submitted for state review and concurrence. Federal Trustees are submitting consistency determinations for state review coincident with public review of this document.

7.2.6.3.5  Aesthetics and Visual Resources

The project area primarily consists of a two-lane, asphalt roadway. The road corridors were designed with winding curves to provide visitors with glimpses of open vistas and a scenic approach through the national park and to the William M. Colmer Visitor Center. As one travels the length of the corridor, the road is bounded by a closed canopy of mixed pine and hardwood species, a relatively diverse assemblage of shrubs and saplings, wetlands, and some pedestrian walkways. This canopy is enjoyed by motorists and pedestrians. The topography of the area is flat to very gently sloping. Vehicular traffic, pedestrians, bicyclists, and the roadway itself detract somewhat from the natural landscape and soundscape within the project area.

7.2.6.3.6  Tourism and Recreational Use

Tourism / Visitation

Gulf Islands National Seashore is the largest seashore in the national park system. The park provides the public with access to barrier islands, historic coastal fortifications, a bayou, and recreational opportunities from Florida to Mississippi. The waters, beaches, fertile coastal marshes, forests, submerged lands, and wildlife in the National Seashore provide a stark contrast to the rapidly growing coastal communities and major population centers along the northern Gulf of Mexico coastline. The National Seashore is the most heavily visited seashore and one of the 10 most visited park units in the national park system. Most visitors to the National Seashore come from within a 500-mile radius, including the states of Georgia, Alabama, Florida, Mississippi, Tennessee, Louisiana, Texas, and Arkansas.

Changes in annual visitation and visitation patterns to the National Seashore are influenced by hurricanes and other strong coastal storms. Hurricanes can close bridges and destroy piers, beaches,
and visitor facilities. The National Seashore was impacted by several hurricanes over the years, including Hurricane Opal in 1995; four hurricanes and two tropical storms in 2004; Hurricanes Katrina and Dennis in 2005; and Hurricane Isaac in 2012. Following the storms in 2004, visitation numbers were lower for four years in a row. For the period between 2010 and 2014, the average visitation to the National Seashore was 4.8 million visitors (NPS 2015).

Although the National Seashore is open year-round, the highest visitor use occurs from May through August (nearly 50% of annual recreation visits). June and July generally receive the highest levels of visitation, while December and January generally have the lowest visitation. On average, the Florida District receives about 75% of the recreation visitors, although visitation fluctuates from year to year (NPS 2014a). Between 2010 and 2013, the Davis Bayou Area averaged about 1 million annual visitors (NPS 2014b).

**Recreational Use**

Within the Davis Bayou Area, visitors have access to the William M. Colmer Visitor Center to learn about the historic and natural resources and recreational opportunities available at this portion of Gulf Islands National Seashore. Recreational fishing occurs in the Davis Bayou Area and the rebuilt fishing pier near the visitor center is open to the public. Camping is available year-round at the Davis Bayou Area Campground (a 51-site campground). Between 2010-2013, there was an average of 26,500 overnight stays at the campground. The National Seashore also has a small boat launch and formal picnicking opportunities in the Davis Bayou Area.

Over the course of the past 20 years, about 10,000 additional residents have moved into Ocean Springs, mostly in areas east of the Davis Bayou Area and accessible from Park Road. Park Road serves as the only access route to several residential areas near the park, is the primary access to the Gulf Coast Research Laboratory Cedar Point Campus, and provides an overpass over Pabst Road and the railroad tracks. As a result, traffic on Park Road between the park entrance and VFW Road has increased significantly.

Many local residents use the Davis Bayou Area of the park, and the roads within, for walking, bicycling, and commuter traffic routes. Without a consistent shoulder, all of these user groups share the use of the road surface within the park. A safety study of the park completed in 2014 by the U.S. Department of Transportation Federal Highway Administration Eastern Federal Lands Highway Division, reported that the peak use times for pedestrians and bicyclists are between 4:00 pm and 6:00 pm on weekdays and between 10:00 am and 12:00 pm on weekends with as many as 140 pedestrians and bicyclists using the roads at one time. The weekday peak bicycle hours coincide with peak vehicular times for those area residents who use the park roads to commute home after work (USDOT FHWA EFLHD 2014).

There are five trails that are part of the recreational and educational opportunities in the Area. The Davis Bayou Area Visitor Center Trail provides visitors with terrific views of Davis Bayou and ends at an overlook on the shore of the Mississippi Sound. The Nature’s Way Trail is a short loop interpretive trail that traverses a maritime forest, an ancient dune system, and an adjacent salt marsh. Connecting the Davis Bayou Area with the town of Ocean Springs, Mississippi, is the 15-mile Live Oak Bicycle Route, two miles of which are within the park. A short Civilian Conservation Corps (CCC) trail follows along a
former CCC roadbed, which leads to an overlook of the salt marsh and CCC-built features. The Davis Bayou Area Trail is a 1-mile trail from the William M. Colmer Visitor Center to the picnic area. This trail provides a connecting link with the Nature’s Way Trail and the CCC trail.

**Climate Change**

Climate change may affect visitor experience at the National Seashore, ranging from altered timing of visitation to restrictions on public access. Longer, hotter summers may shift the spring and fall visitation seasons, and visitation may decline during the hottest summer months or during months with increased storms. Visitor facilities, such as campgrounds or picnic shelters, may need to be upgraded or moved to be more resilient to severe weather like flooding or hurricanes. Energy expenditure for cooling buildings may increase in the summer and decline in the winter. Pollen-based allergies and outbreaks of mosquito-borne diseases may also increase. Visitation for birding and fishing may change if new species from the south shift northward into the National Seashore or if extant species move northward or have dramatic declines in population. Sea level rise and erosion, or the need to protect certain areas, may alter visitor access to certain parts of the National Seashore such as fortifications and marsh areas.

**7.2.6.3.7 Public Health and Safety and Shoreline Protection**

Many local residents use the Davis Bayou Area of the park, and the roads within, for walking, bicycling, and commuter traffic routes. Without a consistent shoulder, all of these user groups share the use of the road surface within the park. Additional residential development is expected in the areas surrounding the Davis Bayou Area in the near future. Additionally, the Gulf Coast Research Laboratory has plans to extend their public services in the near future. Both of these factors will likely increase vehicular traffic on Park Road.

A safety study of the park completed in 2014 by the U.S. Department of Transportation Federal Highway Administration Eastern Federal Lands Highway Division identified speeding as being a significant safety problem in the Davis Bayou Area. According to the park’s law enforcement officers, in 2010 and 2011, there were over 200 warnings issued for minor (5-10mph) speeding violations each year respectively. In 2010, over 50% of all speeding tickets issued in the Davis Bayou Area were for between 16-20 mph over the 25MPH speed limit on Robert McGhee Road or the 35 MPH speed limit on Park Road. Just fewer than 25% were between 21-25 mph over the speed limit. Speed is a contributing factor for 46% of all crashes in the park between 2011 and 2014. Between 2009 and 2014, National Park Service enforcement in the Davis Bayou Area issued 78 speeding tickets, 25 driving while suspended violations, 14 driving while under the influence operations, and 11 unsafe operations (USDOT FHWA EFLHD 2014).

While no pedestrian-related crash was reported within this unit of the park, near misses were observed numerous times by NPS law enforcement personnel and visitors. The high volume of pedestrian and bicycle activity on the park roads, combined with vehicular speeding issues on Park Road, represent a safety risk for these users.

As stated in the American Association of State Highway and Transportation Officials *Guide for the Development of Bicycle Facilities*, road width is the most critical design element affecting the ability of a roadway to accommodate bicycle traffic. The roadway should provide sufficient paved width to
accommodate both motorized and non-motorized traffic without compromising the level of service and safety for either user (AASHTO 1999). Park and Robert McGhee Roads each have 11-ft lane widths, minimum to no shoulders, and curvilinear alignments. Current configuration of the roads, with the mixture of uses, leaves virtually no space on the road surface for pedestrians and bicyclists when two vehicles in opposing lanes meet each other, thus creating a dangerous situation.

The safety study identified the peak weekday pedestrian and bicyclist use period within the park between 4:00 PM to 6:00 PM. On weekends, pedestrian peak activity is higher between 8:00 – 10:00AM and for bicyclists peak activity occurs between 10:00-11:00 AM (USDOT FHWA EFLHD 2014). The weekday peak pedestrian and bicyclist use time period coincides with high vehicular use of Park Road during the evening workday commute.

No hazardous materials currently exist at the project site where the potential for human exposure presents a substantial risk. The Davis Bayou Area is situated along an area of stable coastline not prone to significant shoreline erosion under normal conditions. Other natural hazards do not occur in any great abundance within the boundaries of the Davis Bayou Area of Gulf Islands National Seashore.

7.2.7 Environmental Consequences

Under the NEPA, federal agencies must consider environmental effects of their actions that include, among others, impacts on social, cultural, and economic resources, as well as natural resources. The following sections describe the environmental consequences of the project.

In order to determine whether an action has the potential to result in significant impacts, the context and intensity of the action must be considered. Context refers to area of impacts (local, state-wide, etc.) and their duration (e.g., whether they are short- or long-term impacts). Intensity refers to the severity of impact and could include the timing of the action (e.g., more intense impacts would occur during critical periods like high visitation or wildlife breeding/rearing, etc.). Intensity is also described in terms of whether the impact would be beneficial or adverse.

For purposes of this document, impacts are characterized as minor, moderate or major, and temporary or long-term. The analysis of beneficial impacts focuses on the duration (short- or long-term), without attempting to specify the intensity of the benefit. The definition of these characterizations is consistent with that used in the Phase III ERP/PEIS, and can be found in Table 6-2, of Section 6.1 of that document, and in Appendix D of this document.

The programmatic analysis looked at a series of resources as part of the biological, physical, and socioeconomic environment. As appropriate in a tiered analysis, the evaluation of each project focuses on the specific resources with a potential to be affected by the proposed project.

7.2.8 Environmental Consequences of Alternative A: No-Action Alternative

Both the Oil Pollution Act and National Environmental Policy Act require consideration of the No-Action Alternative. For this Draft Phase III ERP proposed project, the No-Action Alternative assumes the Trustees would not pursue this project as part of Phase IV Early Restoration.
Under this alternative, Park Road and Robert McGhee Road would continue to be used for both vehicular and recreational purposes. Motorists, pedestrians, and bicyclists would continue to use the same pavement surface, with limited space for either user group to maneuver around the other. No additional safety precautions to be constructed or implemented are proposed. Existing trails within the National Seashore (CCC Spur Trail, Nature’s Way Trail, and the Davis Bayou Trail) would remain in use along their current routes. There would be no restrictions on traffic flow on VFW Road.

7.2.8.1 Physical Environment

7.2.8.1.1 Geology and Substrates

Under the No-Action Alternative, there would be no fundamental change to geology and substrates. There is no shoulder on the roadways, so vehicles and recreational users have to share the roadways. During times where there is heavy use by both vehicles and recreational users, visitors would continue to walk and/or cycle off the roadways. These activities exacerbate erosion and compaction of soils along the roadways causing minor, adverse impacts to soil. Debris and foreign material from the roadways would continue to be integrated into the natural soil regimen.

7.2.8.1.2 Hydrology, Water Quality, and Floodplains

There would be no impacts to the hydrology, water quality, or floodplains under the No-Action Alternative beyond the present baseline conditions because there would be no new construction-related actions and no changes made within the study area.

7.2.8.1.3 Air Quality and Greenhouse Gas Emissions

Under the No-Action Alternative, it is assumed the level of use by motor vehicles in the Davis Bayou Area of the park would increase slightly over time as housing developments in the area increase. A small increase in air emissions is permissible under the qualifications of a Class II airshed and this slight increase would not affect the area’s attainment for all criteria pollutants. Impacts would be minor, adverse, and long-term.

The continued use of gasoline and diesel-powered vehicles, including cars and trucks would continue to contribute to GHG emissions and result in long-term adverse impacts. However, it is not anticipated that emissions from an increase in traffic through the park would exceed the 25,000 metric tons per year threshold established by CEQ as a level above which a detailed analysis of emissions would be required. Impacts would be minor, adverse, and long-term.

7.2.8.1.4 Noise

Under Alternative A, it is assumed that the level of use by motor vehicles in the Davis Bayou Area of the park would increase slightly over time as housing development in the area increased. This increase in vehicular traffic within the area could contribute minor, long-term impacts to the natural soundscape depending on the time of day, the time of year, and the level of congestion within the Davis Bayou Area.
7.2.8.1.5 Summary of Impacts to the Physical Environment

Impacts to the physical environment under Alternative A would include:

- Adverse impacts to soil would be minor from the continued erosion and compaction of soils resulting from visitors walking and/or cycling off the roadways during times of heavy use;
- There would be no impacts to the hydrology, water quality, or floodplains under because there would be no new construction-related actions and no changes made within the study area;
- Long-term impacts to air quality and greenhouse gas emissions would be minor and adverse from the continued and assumed slight increase in gasoline and diesel-powered vehicle use in the Davis Bayou Area;
- Long-term impacts to the natural soundscape could be minor from an increase in vehicular traffic in the Davis Bayou Area depending on the time of day, time of year, and level of congestion.

7.2.8.2 Biological Environment

7.2.8.2.1 Living Coastal and Marine Resources

Wetlands

Under the No-Action Alternative, there would be no new construction-related activity and no changes made to existing conditions within the study area. Continued use of the park roads by pedestrians, bicyclists, and motor vehicles would contribute minor, long-term adverse impacts to the living coastal and marine resources as a result of runoff into wetlands and other water bodies from minor spills of automotive fluids; stormwater runoff from existing roadways into wetlands and other water bodies; and disturbance resulting from the presence of people.

Emergent and Terrestrial Habitat

Under the No-Action Alternative, there would be no new construction-related activity and no changes made to existing conditions within the study area. Continued use of the park roads by pedestrians, bicyclists, and motor vehicles would contribute minor, long-term adverse impacts to the living coastal and marine resources as a result of runoff into emergent habitats from minor spills of automotive fluids; stormwater runoff from existing roadways into wetlands and other water bodies; and disturbance resulting from the presence of people.

Wildlife and Wildlife Habitat

Under the No-Action Alternative, there would be no new construction-related activity and no changes made to existing conditions within the study area. Continued use of the park roads by pedestrians, bicyclists, and motor vehicles would contribute minor, long-term adverse impacts to the living coastal and marine resources as a result of potential collisions with wildlife; the potential for runoff into wetlands and other water bodies from minor spills of automotive fluids; stormwater runoff from existing roadways into wetlands and other water bodies; and disturbance resulting from the presence of people.
**Fish and Fish Habitat**

Under the No-Action Alternative, there would be no new construction-related activity and no changes made to existing conditions within the study area. Continued use of the park roads by pedestrians, bicyclists, and motor vehicles would contribute minor, long-term adverse impacts to the living coastal and marine resources as a result of runoff into wetlands and other water bodies from minor spills of automotive fluids; stormwater runoff from existing roadways into wetlands and other water bodies; and disturbance resulting from the presence of people.

**Essential Fish Habitat**

The impacts to EFH would be similar to those stated above for “Fish and Fish Habitat.”

### 7.2.8.2.2 Protected Species

**Federally Listed Threatened and Endangered Species**

There would be no impacts to federally listed species under the No Action Alternative because the only federally listed species that is known to occur in the project corridor is the American alligator. The alligator is considered fully recovered from its listing as an endangered species and only remains on the threatened species list due to its similarity of appearance with the endangered crocodile. The U.S. Fish and Wildlife Service regulates the hunting and legal trade of alligator skins and products, but it no longer considers alligator populations to be imperiled (NPS 2014a).

**Other Special Status Species**

Under the No-Action Alternative, there would be no new construction-related actions and no changes made within the study area. Motor vehicles would be expected to continue exceeding the speed limits within the park thereby increasing the potential for collisions with wildlife. Continued use of the park roads by pedestrians, bicyclists, and motor vehicles would contribute minor, long-term adverse impacts to some of the special status species within the park because of potential collisions with wildlife, the potential for runoff into wetlands and other water bodies from minor spills of automotive fluids, and disturbance resulting from the presence of people.

**Bald and Golden Eagles, Migratory Birds, and Other Birds of Conservation Concern**

Under the No-Action Alternative, there would be no new construction-related actions and no changes made within the study area. Continued use of the park roads by pedestrians, bicyclists, and motor vehicles could contribute minor, long-term adverse impacts to bald and golden eagles, migratory birds, and other birds of conservation within the park as a result of potential collisions, the potential for runoff into wetlands and other water bodies from minor spills of automotive fluids, and disturbance resulting from the presence of people.
7.2.8.2.3 Summary of Impacts to the Biological Environment

Impacts to the biological environment under Alternative A would include:

- Impacts to living coastal and marine resources would be minor, adverse and long-term from the runoff from minor spills of automotive fluids and stormwater, and disturbance from the continued use of the park roads by pedestrians, bicyclists, and motor vehicles;
- There would be no impact to federally listed threatened and endangered species. Impacts to other special status species, bald and golden eagles, migratory birds, and other birds of conservation would be minor, adverse and long-term from the continued potential for the following: collisions, runoff into wetland and other water bodies from minor spills, and disturbance from people.

7.2.8.3 Human Uses and Socioeconomics

7.2.8.3.1 Socioeconomics and Environmental Justice

There would be no ground disturbance under the No-Action Alternative. As such, there would be no impacts to cultural resources as a result of implementation of Alternative A.

7.2.8.3.2 Cultural Resources

There would be no disturbances to either archeological resources or historic structures under the No-Action Alternative. As such, there would be no impacts to cultural resources because of implementation of Alternative A.

7.2.8.3.3 Infrastructure

Under the No-Action Alternative, there would be no changes to infrastructure or additional public utility requirements. Park Road and Robert McGhee Road would remain at their current width (22 ft) with no shoulder. Through traffic on Park Road would remain high or would likely continue to increase. Roads in the park would continue to be used by pedestrians, bicyclists, and motor vehicles. Park Road would continue to serve as the principal access for private subdivisions and the University of Southern Mississippi Gulf Coast Research Lab off Eagle Point, Gollott, Quave, and Laurel Oak Roads. Commuter traffic would continue on Park Road connecting to the local community road network via VFW Road. Impacts to the public utilities from their continued use would be minor. Impacts to the park roadways would be long-term, minor, and adverse depending on the amount of through traffic using the park roads, time of day, and the number of user groups sharing the roadways.

7.2.8.3.4 Land and Marine Management

Under the No-Action Alternative, no changes would occur to the current land use at the project site or the adjoining shoreline areas. The area would remain zoned for diverse visitor opportunities and land use and management authority at the Davis Bayou Area would remain under the purview of the
National Park Service. Thus, no impacts would occur to land and marine management under Alternative A.

7.2.8.3.5 Aesthetics and Visual Resources

Under the No-Action Alternative, the road corridor would remain in its current condition. The presence of vehicular traffic, pedestrians, bicyclists, and the roadway itself would continue to detract somewhat from the natural landscape and soundscape within the project area. Use of the northern portion of Park Road as a throughway for commuter traffic would continue to increase the amount of vehicles along this portion of road in comparison to the remainder of the park. During times of heavy traffic, this increased presence of vehicles would result in a long-term, minor adverse impact to the aesthetics and visual resources within this portion of the park.

7.2.8.3.6 Tourism and Recreational Use

There would be no change in the fundamental nature and quality of the tourism or recreational use of the Davis Bayou Area under the No-Action Alternative. Roads would remain accessible and in their current condition and traffic patterns would remain consistent, although traffic volume would be expected to increase. Visitors and local residents would continue to have access to the roads and the areas and resources they service. Bicyclists and pedestrians would continue to traverse Robert McGhee Road and Park Road for recreational purposes and pedestrians, bicyclists, and motorists would continue to share the road surface at all times. Existing trails within the National Seashore would remain in use along their current routes.

There would be adverse impacts to tourism and recreational use depending on the time of day, location within the park, and level of congestion between the various user groups. Minor adverse impacts to recreational users on foot or bicycle would result from increased risks associated with sharing the road with vehicular traffic, impacts to the viewshed and natural soundscape resulting from traffic, and insecurity resulting from the proximity of vehicular traffic. With the potential for traffic in the park to increase, conditions could deteriorate to the point where the quality of the visitor experience would be diminished for visitors who favor this area. For visitors/local residents who utilize the park roads as a commuter route, adverse impacts would result from the need to reduce driving speeds during heavy bicycle-pedestrian congestion and the increased risk associated with passing these user groups on the roads’ many curves.

Adverse impacts on tourism and recreational use under the No-Action Alternative would be long-term, and could range from minor to moderate, depending on the time of day, level of congestion, and the potential for increased park traffic volume in the future.

7.2.8.3.7 Public Health and Safety and Shoreline Protection

Under the No-Action Alternative, visitors and local residents would continue to have access to the roads and the areas and resources they service. Bicyclists and pedestrians would continue to traverse Robert McGhee Road and Park Road for recreational purposes and pedestrians, bicyclists, and motorists would continue to share the road surface at all times. There would be adverse impacts to public health and
safety depending on the time of day, location within the park, and level of congestion between the various user groups. Minor to moderate adverse impacts to public health and safety would result from increased risks associated with pedestrians sharing the road with vehicular traffic.

The speed limit on Park Road would remain at 35 miles per hour and it is anticipated that vehicle speed would continue to be a safety concern and could possibly worsen with the potential for traffic in the park to increase with expected future development in the surrounding areas. For visitors/local residents who utilize the park roads as a commuter route, minor to moderate adverse impacts to public health and safety would result during heavy bicycle-pedestrian congestion and the increased risk associated with passing these user groups on the roads’ many curves.

7.2.8.3.8 Summary of Impacts to the Human Uses and Socioeconomics

Impacts to the human uses and socioeconomics from Alternative A would include:

- There would be no impacts to socioeconomics and environmental justice because there would be no actions to alter the existing socioeconomic conditions in the vicinity of the Davis Bayou Area.
- There would be no impacts to cultural resources because there would be no disturbances to either archeological resources or historic structures.
- Impacts to infrastructure from the continued use of public utilities and park roadways would be minor and adverse.
- There would be no impacts to land and marine management because there would be no changes to the current land use at the project site or the adjoining shoreline areas.
- Long-term impacts to the aesthetics and visual resources within the Davis Bayou Area would be minor and adverse from the continued presence of vehicular traffic, pedestrians, bicyclists, and the roadway itself.
- Adverse impacts to tourism and recreational use of the Davis Bayou Area would be minor to moderate depending on the mode of transportation, the time of day, level of congestion, and the potential for increased park traffic volume in the future.
- Adverse impacts to public health and safety would be minor to moderate from increased risks associated with pedestrians sharing the road with vehicular traffic. These impacts could possibly worsen with the potential for traffic in the park to increase with expected future development in the surrounding areas.

7.2.9 Environmental Consequences of Alternative B: Construct Multiple Use Lanes (Preferred Alternative)

7.2.9.1 Physical Environment

7.2.9.1.1 Geology and Substrates

Sections 6.5.1.1 and 6.7.1.2 of the Final Phase III ERP PEIS describe the impacts to geology and substrates from early restoration projects intended to enhance public access to natural resources for
recreational use. Section 6.5.1.1 states that these types of projects... “Could require work with heavy equipment in construction or staging areas that would temporarily disturb soils and sediments in upland, shallow water areas or nearshore habitats. These construction activities could result in the local removal, compaction, and erosion of upland, shallow-water, and nearshore substrates in construction/development areas. These would be minor to moderate short- to long-term adverse effects because they would be localized and could have readily apparent effects on local soils, substrates and/or geologic features, with some effects lasting only during the construction period (heavy equipment use) and others extending beyond the construction period (compaction and displacement resulting from infrastructure)”.

For this project type, impacts to geology and substrates were analyzed adequately within the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative B, anticipated activities during construction of the multiple use lanes that may impact geology and substrates include ground disturbance from soil removal, grading, and vegetation clearing. Widening Park Road and Robert McGhee Road would require placement of structural fill in certain areas. Impacts from construction would be moderate, adverse, and short-term. The estimated ground disturbance area encompasses up to 14 ft of new asphalt area, 8 ft of non-paved shoulders, plus 5 ft from the toe of slopes for construction and heavy equipment maneuvering along Park Road and Robert McGhee Road.

Along the first mile of Park Road, there would be additional excavation, disturbance, and possible fill placement for the traffic-calming medians and if needed, the retaining wall. Soil would need to be removed and vegetation cleared to lay the foundation for both projects. The project may also require the extension, widening, or addition of culverts that would disrupt and displace soil. There would also be some soil disturbance around the intersection of VFW Road and Knapp Road where an automatic gate and park signs would be placed and at the intersection with Highway 90 where park signs would be relocated.

Areas disturbed during construction would have increased erosion potential especially if it requires cutting into existing slopes. Soil exposed during the clearing of vegetation would be susceptible to increased erosion until vegetation was re-established. The amount of erosion would be dependent on the amount of ground disturbance, weather, and any erosion control measures in place. Tire tracks from construction equipment would potentially erode and move soil from the project area to other locations. Heavy construction equipment would also lead to increased soil compaction in and near the project site. The degree of compaction is typically greater in soil with higher moisture content. Measures would be taken to minimize soil disturbance, transfer, and compaction from any construction equipment.

The excavated soil would be stockpiled for reuse as clean fill and would be properly stored and stabilized. Restoration and revegetation efforts would be in accordance with NPS policies. Storage would be for as short a time as possible to prevent loss of seed, root viability, and degradation of the soil microbial community.

The new road configuration would have minor, adverse, and long-term impacts to geology and substrates. The expanded roadway would increase the potential for foreign material to integrate into
the natural soil regimen. New material may not have the same consistency of the existing naturally
developed soil and adversely impact natural geologic processes. The EFH mitigation project of creating
one acre of marsh will require dredging sediment from approximately three acres (for a full discussion of
this mitigation project and why it is needed, see the “Essential Fish Habitat” section under section
7.2.9.2.1 below). Sediment to be dredged will be below low low tide and will be unvegetated. This
would cause minor to moderate long-term adverse effect to submerged geology and substrates. Over
time, however, “borrow areas” are expected to fill in as benthic sediments get re-distributed during
storm events and/or as suspended sediments in bayou waters settle out in these areas and natural
aggradation processes occur.

Mitigation measures for impacts to geology and substrates are found on page 13 of Appendix 6A of the
Final Phase III ERP/PEIS. Measures that would apply to and be implemented for the proposed Bike and
Pedestrian Use Enhancements at Davis Bayou Project include:

- Employment of standard BMPs for construction to reduce erosion;
- Employment of temporary erosion controls prior to any land clearing or land disturbance on the
  project site, which would be monitored during construction to ensure proper function. Turbidity
curtains, hay bales, and erosion mats would be used where appropriate;
- Existing access ways would be used whenever possible;
- Soil disturbance would be to the minimum area and the minimum length of time necessary to
  complete the action;
- Seasonal rainfall would be factored into the construction timeline to reduce ground disturbance
during raining or flood seasons;
- Selection and operation of heavy equipment to minimize adverse effects to the environment
  (e.g., minimally sized, low-pressure tires, minimal hard turn paths for tracked vehicles,
temporary mats or plates within wet areas or sensitive soils).

7.2.9.1.2 Hydrology, Water Quality, and Floodplains

Sections 6.5.1.2 and 6.7.2.2 of the Final Phase III ERP PEIS describe the impacts to Hydrology and Water
Resources from early restoration projects intended to enhance public access to natural resources for
recreational use. Section 6.5.1.2 states that these types of projects... “Recreational enhancement
projects have the potential to have minor to moderate long-term beneficial effects on water quality
depending on the proposed activity. If recreational enhancements occurred at an existing site where
ongoing degradation is occurring (e.g. unimproved or failing parking areas with poor stormwater
management near coastal waters), there could be long-term benefits to water quality. Equipment usage
and other construction activities in wetland recharge areas could result in short-term minor to moderate
adverse impacts to surface water related to sediment compaction, disturbance, and erosion. Conversion
of natural areas to impervious surfaces could increase, which could increase stormwater runoff and
carryover to the receiving water body and cause minor long-term adverse effects. Long-term decreases
in surface water quality could occur from increased use and presence of equipment within the project
area, which would be minor and long-term because the effects would be localized and would extend
beyond the construction period. Equipment usage and other construction activities in wetland recharge
areas could result in short-term adverse impacts to surface water related to sediment compaction, disturbance, and erosion.”

For this project type, impacts to hydrology, water quality, and floodplains were analyzed adequately within the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under alternative B, impacts to hydrology, water quality, and floodplains would be associated with construction and mitigation activities. Best management practices and mitigation measures that would be applied are identified below.

Impacts to surface hydrology under Alternative B would be site-specific and limited to areas where wetland hydrology would be altered and where marsh creation would occur associated with mitigation of impacts to EFH. Impacts to hydrology would be moderate since they would be permanent. However, these impacts would occur over a very small area relative to the total hydrological resources in Davis Bayou Area. Additionally, impacts to hydrology in the marsh in east Stark Bayou would be long-term beneficial due to the new larger culvert that will be installed in Park Road.

The addition of additional culverts to the East Stark Bayou crossing on Park Road would increase tidal flow to and from the areas upstream of the crossing. Some of the wetlands in the study area exist because the ground water elevations are high (e.g., wet pine savannah). Though construction in these areas may reach groundwater due to the existing high water table indicative of the gulf coast area, it is not likely to impact groundwater hydrology at larger depths where aquifers are located.

Construction activities may impact surface and groundwater quality due to erosion. The release of sediments during construction would be controlled using best management practices and mitigation as described below to protect soil resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. Further, revegetation of disturbed sites would be started as soon as practical after work in an area was completed. A loss of up to 7.3 acres of wetlands may lead to a loss of water quality functions such as groundwater discharge/recharge, sediment/toxicant retention, and nutrient removal. However, depending on the acreage of wetlands surrounding the filled areas, minor long-term adverse impacts could occur but would not create a noticeable difference in water quality functions. If pilings are used to construct the trail across the estuaries on Park Road and Robert McGhee Road, sediment disturbance would increase during construction increasing the turbidity of surrounding surface water. Areas where emergent marsh would be created would experience similar minor, short-term adverse impacts to surface water quality with the addition of sediment. Long-term beneficial impacts to water quality would occur due to the filtering effects of the intertidal emergent wetlands that will be created.

Because of the proven effectiveness of best management practices, discharge of sediment to waterways that would impact surface and groundwater quality would be minor and short term. Additionally, best management practices, along with other avoidance, mitigation and permit conditions required by state and federal regulatory agencies would be used to minimize water quality and sedimentation impacts. As such, impacts to surface and groundwater water quality in this area would be both short-term adverse and long-term beneficial.
Activities under Alternative B would occur in the 100-year floodplain and in Zone “X (Other Areas),” Compacting and filling up to 7.3 acres of wetlands adjacent to the existing roadway will reduce the natural features of the floodplain and could increase flooding severity since these habitats provide a valuable ecological service (e.g., water storage and storm buffering; see wetlands sections of this EA). However, due to the large acreage of wetlands surrounding the proposed fill areas, the impacts may not create a noticeable difference in the benefits to the natural function of the floodplain. Because of a) BMPs that will be implemented during construction, and b) the limited acreage of impacts to wetlands, relative to the total wetlands acreage in the Davis Bayou Area, impacts to the natural functioning of the floodplain under Alternative B would be minor.

Mitigation measures for impacts to hydrology, water quality, and floodplains are found on page 14 of Appendix 6A of the Final Phase III ERP/PEIS. BMPs that would apply to and be implemented for the proposed project include:

- Buffers between areas of soil disturbance and wetlands or waterways would be planned and maintained as possible;
- Erosion-control practices such as sediment traps, erosion check screen filters, and hydro mulch would be used;
- Any hazardous waste that is generated in the project area would be promptly removed and properly disposed of;
- Equipment would be inspected for leaks of oil, fuels, or hydraulic fluids before and during use to prevent soil and water contamination. Contractors would be required to implement a plan to promptly clean up any leaks or spills from equipment, such as hydraulic fluid, oil, fuel, or antifreeze;
- Onsite fueling and maintenance would be minimized. If these activities could not be avoided, fuels and other fluids would be stored in a restricted/designated area, and fueling and maintenance would be performed in designated areas that are bermed and lined to contain spills. Provisions for the containment of spills and the removal and safe disposal of contaminated materials, including soil, would be required;
- Action would be consistent with state water quality standards and Clean Water Act Section 401 certification requirements;
- Slopes of newly filled areas would be vegetated and properly maintained to avoid adverse impacts on aquatic environments;
- Selection and operation of heavy equipment to minimize adverse effects to the environment (e.g., minimally-sized, low-pressure tires, minimal hard-turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils).

7.2.9.1.3 Air Quality and Greenhouse Gas Emissions

Sections 6.5.1.3 and 6.7.3.2 of the Final Phase III ERP/PEIS describe the impacts to air quality and greenhouse gas emissions from early restoration projects intended to enhance public access to natural resources for recreational use. Section 6.5.1.3 of the PEIS states, “During construction activities, short-term impacts to air quality and GHGs would occur from the use of gasoline and diesel powered
construction vehicles and equipment, including barges, and exhaust produced by the use of this equipment. Examples of project-specific projected emissions are located in Chapters 8 through 12. The severity of impacts would be highly dependent on the length and type of construction required and the location of the project. There is a slight potential for fugitive dust creation from construction activities, resulting in minor to moderate adverse impacts. Long-term minor adverse effects from these enhancements due to increased recreational use and associated vehicle traffic may occur."

For this project type, air quality impacts were analyzed adequately within the Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative B, emissions of particulates that could affect air quality, including visibility in the general vicinity of the project areas, could temporarily increase during construction activities from the use of motorized equipment at the site and from exhaust from gasoline- or diesel-powered vehicles and equipment. This equipment would also temporarily emit air pollutants. However, activities requiring the use of machinery would not be expected to be long-term. Because of the short-term and localized nature of the operation, impacts to air quality from construction activities would be minor. The area is in attainment for all criteria pollutants and under the qualifications of a Class II airshed, small increases in air emissions are allowed. Because of the localized and short-term use of construction equipment, any emissions would not be expected to exceed the NAAQS as a result of implementation of the proposed action.

The proposed action would not have a significant impact on GHG emissions because the construction associated with the alternatives would occur over a short period of time and within an area less than two square miles and would therefore not be considered a large-scale project. Furthermore, following the construction, a large change in the number of vehicles using the Gulf Islands National Seashore roadways in the project area would not be expected. Actions proposed under Alternative B would not be anticipated to change the level of motor vehicle traffic within the park, the local area, or the region and therefore impacts to GHG emissions would be minor. In addition, with the provision of multiple use bicycle-pedestrian lane, some visitors would be more likely to travel through the park by foot or by bicycle, thereby reducing the amount of emissions in the David Bayou area.

The main purpose and need for the proposed actions under Alternative B would be to improve safety and the flow of traffic, not to alter the amount of traffic. Any potential changes in GHG emissions would be well below the CEQ screening threshold.

Available mitigation measures would be employed to reduce the release of GHG during project implementation. The following mitigation measures have been identified in the Final Phase III ERP/PEIS to reduce or eliminate GHG emissions from the construction phase of the proposed project:

- Shut down idling construction equipment, if feasible;
- Locate staging areas as close to construction site as practicable to minimize driving distances between staging areas and construction site; and
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
7.2.9.1.4 Noise

Section 6.5.1.4 of the Final Phase III ERP/PEIS states that “During the construction period, adverse impacts to ambient noise levels could occur, particularly along shorelines where construction activities would take place. The severity of impacts would depend to a large degree on the location of the project and the amount of noise that these activities would generate and the distance to sensitive receptors such as recreational users or wildlife. Installation activities, equipment operation, and vehicle or boat traffic associated with the construction activities could result in short-term minor to major adverse impacts to noise, especially if they occurred in natural areas. For example, during the use of motorized heavy equipment such as cranes and barges, noise would be created which would be readily apparent and attract attention. Although such changes would not dominate the soundscape and some sounds could be dampened or masked by ambient wave or ship noise, these actions could detract from the current user activities or experiences and create audible contrast for visitors in the project area.”

For this project type, noise impacts were analyzed adequately within the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative B, sounds from equipment and work crews would increase during construction associated with road safety improvements, the potential placement of pilings, and the creation of emergent marsh. Construction noise would not contribute substantially to long-term average noise levels, but could consist of some intrusive sounds. Noise levels from typical construction equipment such as road graders, backhoes, heavy trucks, and bulldozers range from 80 A-weighted decibels to 85 decibels at 50 ft (USDOT 2011). Noise associated with construction under Alternative B could affect residents, park users, and wildlife in the area. However, best management practices would be employed during these activities to minimize noise. Sounds generated from these activities would be temporary, lasting only as long as the construction activity was occurring and would be limited to daytime working hours. During construction of multiple use lanes and other traffic-calming devices, impacts to the natural soundscape would be short-term and minor. Noise in the aquatic habitat would have a greater effect on wildlife as the sounds associated with placement of the pilings and creation of the emergent marsh would travel farther than noise associated with construction equipment in terrestrial habitats. These impacts are expected to be moderate, short-term and adverse.

Beyond the construction timeframe, use of the park roads with proposed improved safety features would not measurably increase sound levels from those produced under the No-Action Alternative.

7.2.9.1.5 Summary of Impacts to the Physical Environment

Impacts to the physical environment from implementation of Alternative B of the Bike and Pedestrian Use Enhancements at Davis Bayou Project would include:

- Short-term impacts to geology and substrates would be moderate and adverse as a result of ground disturbance from soil removal, grading, and vegetation clearing. Over the long-term, the new road configuration would have minor, adverse impacts to geology and substrates from the increased potential for foreign material to integrate into the natural soil regimen. Impacts to
submerged geology and substrate from the pilings and dredging in the marsh and bayou would be minor to moderate, long-term, and adverse.

- Short-term impacts to hydrology, water quality, and floodplains would be associated with construction activities, placement of pilings, and creation of emergent marsh. Impacts to surface hydrology would be moderate and long-term but would also be site-specific and limited to areas where wetland hydrology would be altered. Impacts to hydrology at east Stark Bayou would be long-term and beneficial. Impacts to surface and groundwater water quality in this area would be minor. Impacts to the natural functioning of the floodplain would be minor.
- Short-term impacts to air quality and green house gas emissions would be localized and minor during construction as a result of emissions produced from the use of machinery. Actions proposed under Alternative B would not be anticipated to change the level of motor vehicle traffic within the park, the local area, or the region and therefore, over the long-term, impacts to GHG emissions would be minor.
- Short-term impacts to the natural soundscape would be minor and adverse during construction of multiple use lanes and other traffic-calming devices from the use of equipment and noise from construction activities. Short-term moderate impacts are also expected in aquatic environments during the placement of pilings and the creation of emergent marsh.

7.2.9.2 Biological Environment

7.2.9.2.1 Living Coastal and Marine Resources

The Final Phase III ERP/PEIS states, “Some recreational enhancement projects may have long-term beneficial effects on wetlands, barrier islands, beaches, coastal transition zones, SAV and shallow water habitats. For example, enhancement projects could reduce degradation and recreation use in habitats in settings where recreation usage that is currently diffuse is redirected to a site that is more appropriate and conducive to recreational activities”. Impacts discussed in the Final Phase III ERP/PEIS that are relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou Project include: “Soil erosion, vegetation trampling, vegetation removal, or other human activity from project staging or construction, or implementation of recreational enhancements” and “Localized plant species displacement or loss, introduction of invasive species, and degradation of habitats including potential habitat fragmentation as a result of an increased recreational activity and human encroachment in habitats, such as beaches or wetlands”. It also states that “These effects would depend on the size and scale as well as the location of facilities. Effects would also vary depending on presence of sensitive habitats and availability of other similar sensitive habitats in the project vicinity”.

Wetlands

For this project type, impacts to habitats were analyzed adequately within the PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. None of the areas associated with construction of a multiple use travel lane contain submerged aquatic vegetation such as seagrass. However, the construction of multiple use lanes would adversely affect wetlands adjacent to the proposed project area in the Davis Bayou Area. Impacts are expected to be minor due to the small
size of the project footprint in relation to the amount of surrounding wetlands and the mitigation measures that would be in place (see below). Long-term, minor, adverse direct impacts are expected to wetlands due to the permanent loss of up to 7.3 acres of wetlands for the new multiple use lanes. Impacts to wetlands are discussed in greater detail in the Wetlands Statement of Findings in Appendix E.

For the in-water portion of this project, the proposed discharge of dredged or fill material into waters of the United States, including wetlands, or work affecting navigable waters associated with this project will continue to be coordinated with the USACE pursuant to the Clean Water Act Section 404 and Rivers and Harbors Act (CWA/RHA). The Mobile Corps District was contacted in 2014 for a preliminary discussion of the permitting process. Continued coordination with USACE and final authorization pursuant to CWA/RHA will be completed prior to project implementation once final design is completed.

The Trustee would apply for a Mississippi Coastal Wetland Protection Act Permit and authorization by the USACE. Pursuant to the Coastal Zone Management Act of 1972, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. Federal Trustees are submitting consistency determinations for state review coincident with public review of this document. The Trustee would adhere to all conditions of the Mississippi Coastal Wetland Protection Act permit and the USACE permit.

Construction activities, the placement of pilings, and the creation of emergent marsh habitat may affect wetlands and aquatic habitat due to fill and erosion. The release of sediments during construction would be controlled using best management practices and mitigation as described below to protect soil resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. Further, revegetation of disturbed sites would be started as soon as practical after work in an area was completed.

Because of the proven effectiveness of best management practices, discharge of sediment to waterways that would impact aquatic habitat quality would be minor and short term. Additionally, best management practices, along with other avoidance, mitigation and permit conditions required by state and federal regulatory agencies would be used to minimize impacts to habitat. As such, impacts to living coastal and marine resources in this area would be minor.

Since the final design has not been completed for the project, the exact extent of mitigation required is unknown. A wetland mitigation plan would follow the “Required Components of a Mitigation Plan” (33 CFR (c)(1)(i)). The mitigation plan would be expected to include prescribed burns of wetland areas outside the study corridor in the Davis Bayou Area to mitigate for loss of function to palustrine wetlands. Many of the wetland areas in the Davis Bayou Area have extremely thick understory of loblolly pine saplings, sweetgum saplings, swamp titi, green briar, wax myrtle, and red maple. This understory limits the regeneration of the longleaf pine, and limits the availability of longleaf pine savannas that were once prevalent in the area. Prescribed burns would help to remove the thick understory, allow for longleaf pine regeneration, and improve the functional value of the existing wetlands.
Mitigation proposed for impacts to tidal wetlands would include improvements to tidal flow to the 4.95-acre part of east Stark Bayou that lies east of Park Road. This will be done by installing a bottomless, 20-ft-wide culvert under Park Road, replacing the 3x3-ft square concrete culvert that is there currently. This will improve the hydrologic regime in that area significantly, allowing the marsh to function more naturally. The current culvert and roadbed is a bottleneck to both the free sheet flow of water and the free movement of fish, wildlife, and aquatic organisms between the 4.95-acre area east of Park Road and the rest of Stark and Davis Bayous. Restoring the natural flow by installing a larger bottomless culvert would improve wetland habitat east of Park Road by improving water quality and water levels by increasing both the degree and the rate of exchange of water in/out of this area. Restoring the free movement of fish, wildlife, and aquatic organisms would improve wetland habitat east of Park Road by allowing a much greater and more natural interaction of fauna with the physical and floral components of that habitat, thus helping shape it and improve it. Additionally, during tropical storm events, the road frequently is underwater and stormwater movement is often restricted by the existing culvert. The new bottomless culvert would lessen the opportunities for stormwater to inundate the road.

Mitigation proposed for impacts to EFH would include the creation of approximately one acre of marsh. The marsh creation activities would result in long-term and beneficial impacts to the wetlands resources in Stark Bayou.

Additionally, BMPs would be implemented during construction to help reduce impacts to wetlands during construction. These would include:

- Buffers between areas of soil disturbance and wetlands or waterways would be planned and maintained.
- Soil erosion best management practices such as sediment traps, erosion check screen filters, and hydro mulch to prevent the entry of sediment into wetlands would be used.
- Any hazardous waste that is generated in the project area would be promptly removed and properly disposed of.
- Equipment would be inspected for leaks of oil, fuels, or hydraulic fluids before and during use to prevent soil and water contamination. Contractors would be required to implement a plan to promptly clean up any leaks or spills from equipment, such as hydraulic fluid, oil, fuel, or antifreeze.
- Onsite fueling and maintenance would be minimized. If these activities could not be avoided, fuels and other fluids would be stored in a restricted/designated area, and fueling and maintenance would be performed in designated areas that are bermed and lined to contain spills. Provisions for the containment of spills and the removal and safe disposal of contaminated materials, including soil, would be required.
- Actions would be taken to minimize effects on site hydrology and fluvial processes, including flow, circulation, water level fluctuations, and sediment transport. Take care to avoid any rutting caused by vehicles or equipment.
• Measures would be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering wetland areas. Action would be consistent with state water quality standards and Clean Water Act Section 401 certification requirements.
• Appropriate erosion and siltation controls would be maintained during construction.
• Fill material would be properly maintained to avoid adverse impacts on aquatic environments.

**Emergent and Terrestrial Habitat**

The construction of multiple use lanes would expand the development footprint in the Davis Bayou Area, resulting in a localized loss of terrestrial vegetation and habitat, as well. Vegetation would be removed for the construction of the new multiple use lanes. Where plantings or seedlings are required for construction of new lanes, native plant material must be obtained and used in accordance with NPS policies and guidance. Removal of the large mature pines and oaks growing close to Park Road and Robert McGhee Road would be avoided to the extent possible. Impacts to aesthetics associated with these trees are discussed in Section 7.2.7.3.5. Removal of these trees would have minor, long-term adverse impacts to the southern mixed hardwood forest. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species. Construction vehicles will abide by controls for invasive species and mitigation measures would be similar to those described above under the wetlands section and below within the wildlife and wildlife habitat section.

For a discussion on the possible effects of invasive species, see the Wildlife and Wildlife Habitat section below.

**Wildlife and Wildlife Habitat**

Under Alternative B, in the short-term, construction activities, placement of pilings, and mitigation for EFH would likely impact wildlife in the area due to general human disturbance, increased noise, and the potential for erosion. Project activities could result in the temporary displacement, injury, or death of wildlife. However, avoidance of the area by wildlife during construction would be anticipated and there is sufficient suitable feeding and resting habitat available in the Davis Bayou Area surrounding the project areas to support additional wildlife use. Wildlife would be expected to move away from areas of active construction and resume normal foraging, and resting behaviors. In addition, conservation measures would be implemented to minimize impacts to wildlife from the project to the maximum extent practicable (see below). The release of sediments during construction would be controlled using best management practices and mitigation as described below. Any adverse effects are anticipated to occur on an individual level rather than a population level. Overall, construction activities would be expected to have short-term, minor impacts on wildlife.

Project activities would expand the footprint of the existing road infrastructure into wildlife habitat, and this permanent loss of habitat would result in long-term adverse impacts. However, since the footprint increase would be relatively small compared to the available habitat in the entire Davis Bayou Area, sufficient habitat could remain functional at both the local and regional scales to maintain the viability of the species living there. As such, impacts to wildlife habitat would be minor, adverse, and long-term.
The potential introduction of terrestrial and aquatic non-native invasive species of plants, animals, and microbes is a concern for any proposed project. Non-native invasive species could alter existing terrestrial or aquatic ecosystems, may cause economic damages and losses, and are the second most common reason for protecting species under the Endangered Species Act. The species that are or may become introduced, established, and invasive are difficult to identify. The analysis focuses on pathway control or actions/mechanisms that may be taken or implemented to prevent the spread of invasive species on site or introduction of species to the site. Some plant surveys have been conducted in the Davis Bayou Area.

This project involves the removal of some vegetation and the placement of fill and some retaining walls along the existing road into or adjacent to areas that are currently forests, forested wetlands, and intertidal marsh. A variety of construction equipment would be used. Each of these actions and pieces of equipment serve as a potential pathway to introduce or spread invasive species. BMPs would be implemented to ensure these pathways are “broken” and do not spread or introduce species (See BMPs listed below). The implementation of these BMPs meets the spirit and intent of EO 13112. Due to the implementation of BMPs, the Trustees expect risk from invasive species introduction and spread to be short-term and minor.

The Phase III ERP/PEIS provided mitigation measures in Appendix 6A. The following mitigation measures and environmental review would result in the avoidance and minimization of the introduction and spread of invasive species:

- All equipment to be used during the project, including personal gear, would be inspected and cleaned such that there is no observable presence of mud, seeds, vegetation, insects, and other species;
- Fill material would be locally sourced if possible and properly maintained to avoid adverse impacts on wildlife and aquatic environments or public safety.

**Fish and Fish Habitat**

Under Alternative B, increased erosion caused by construction activities could result in indirect impacts to fish and fish habitat. The placement of fill and the release of sediments during construction and mitigation activities associated with EFH would be controlled using best management practices, avoidance, and mitigation, as described below, to protect aquatic resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. These measures would minimize impacts to fish habitat. Further, revegetation of disturbed sites would be started as soon as practical after work in an area was completed. Because of the proven effectiveness of best management practices, short-term impacts to fish and fish habitat during construction would be minor.

As part of construction, fill or pilings placed in Stark Bayou at the Robert McGhee Road crossing and East Stark Bayou at the Park Road Crossing would permanently remove a small portion of aquatic habitat, which would result in long-term, minor, adverse direct impacts to fish and fish habitat. It is expected that fishes that utilize the areas to be altered would be permanently displaced, and would use the other available habitats in the Davis Bayou Area. Impacts are expected to be realized on an individual level and
The marsh creation mitigation project would have minor, short-term adverse effects on fish and fish habitat during project implementation, but long-term beneficial impacts later due to the creation of this new marsh habitat that fish will utilize.

Specific provisions would be identified in construction contract(s) to prevent storm water pollution during construction activities, in accordance with the National Pollutant Discharge Elimination System permit program of the Clean Water Act and all other federal regulations, and in accordance with the storm water pollution prevention plan to be prepared for this project. The following mitigation measures and environmental review would protect aquatic resources:

- Buffers between areas of soil disturbance and wetlands or waterways would be planned and maintained.
- Soil erosion best management practices such as sediment traps, erosion check screen filters, and hydro mulch to prevent the entry of sediment into waterways would be used.
- Any hazardous waste that is generated in the project area would be promptly removed and properly disposed of.
- Equipment would be inspected for leaks of oil, fuels, or hydraulic fluids before and during use to prevent soil and water contamination. Contractors would be required to implement a plan to promptly clean up any leaks or spills from equipment, such as hydraulic fluid, oil, fuel, or antifreeze.
- Onsite fueling and maintenance would be minimized. If these activities could not be avoided, fuels and other fluids would be stored in a restricted/designated area, and fueling and maintenance would be performed in designated areas that are bermmed and lined to contain spills. Provisions for the containment of spills and the removal and safe disposal of contaminated materials, including soil, would be required.
- Actions would be taken to minimize effects on site hydrology and fluvial processes, including flow, circulation, water level fluctuations, and sediment transport. Care would be taken to avoid any rutting caused by vehicles or equipment.
- Measures would be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering wetland areas. Action would be consistent with state water quality standards and Clean Water Act Section 401 certification requirements.
- Appropriate erosion and siltation controls would be maintained during construction.
- Fill material would be properly maintained to avoid adverse impacts on aquatic environments or public safety.
- All contractors and their employees would be trained regarding safety protocols, and food storage regulations. Storage and handling of food, fuel, and other attractants would be required to minimize potential conflicts with wildlife. All project crews would be required to meet standards for sanitation, attractant storage, and access.
- Construction workers and supervisors would be informed about the potential for special status species in the work area. Contract provisions that require a stop in construction activities if a
special status species is discovered until NPS staff members evaluate the situation would be included. Protection measures would be modified as appropriate to protect the discovery.

- Measures would be implemented to reduce adverse effects caused by nonnative plants and wildlife on candidate, threatened, and endangered species.

**Essential Fish Habitat**

Impacts to EFH from the project could be caused by impacts to water quality, surface water hydrology, and available emergent marsh and soft bottom habitat. Impacts to water quality could be caused by erosion from construction activities (ground disturbance, the addition of fill, or the placement of pilings) and by leaks or spills of fuels or fluids from construction equipment and vehicles. Because of the proven effectiveness of BMPs, the impacts to water quality from the discharge of sediment to waterways and contamination from equipment and vehicles would be short-term, minor and adverse. BMPs that will be employed to protect water quality are listed in the Hydrology, Water Quality, and Floodplains section above.

Impacts to hydrology could be caused by the footprint of the newly added fill in the emergent marsh adjacent to the roads. Fill could be placed on both sides of each road. The actual amount of estuarine emergent marsh to be covered with fill is up to 0.69 acres – 0.46 acres at Robert McGhee Rd and 0.23 acres at Park Rd. These impacts would be long-term, minor and adverse. The impacts to EFH would be minor because a) such a small area – 1.2% of the entire tidal marsh acreage in the Davis Bayou Area (52 acres) – would be covered, and b) the impacts will be mitigated.

The mitigation being proposed for impacts to EFH is within the NPS boundary of the Davis Bayou Area. Since up to 0.69 acres could be destroyed, 1.5 times that – i.e., 1.035 acres, or one acre – would be created to mitigate those impacts (see Figure 7-9 below). For the impacts along Park Road, this equals 0.35 acres (i.e., 1.5 x 0.23), and for the impacts assumed along Robert McGhee Road, this equals 0.69 acres (i.e., 1.5 x 0.46). NPS proposes to mitigate the impacts from the current phase of the project – i.e., along Park Road – now, and mitigate the remainder when the Robert McGhee Road portion of the project is funded, designed, and implemented. Approximately three acres of sediment material borrow areas will be needed to provide enough material to create 0.35 and 0.69 acres of marsh.
Figure 7-9 - Proposed locations for marsh creation mitigation project (red line is park boundary).

Planting Plan details for the created marsh will be determined before mitigation is implemented; however, some details can be prescribed now. Plants material will come from plant donor sites in the park or be purchased from nurseries and will be planted on no greater than six-ft centers. Only species and forms (e.g., sprigs, bare roots, plugs, gallon containers) that are appropriate for the sites will be planted. Plant material will meet the required genetic specifications. Planting will occur after the dredged material has had time to consolidate sufficiently (approximately three months). Performance criteria include: 1) having 80% or more of the created marsh to be within six inches of the desired elevation one calendar year and three calendar years after placement; 2) having at least 75% vegetative coverage one year after planting and 90% or higher coverage within three years. Vegetative coverage assessments will be designed later, but would involve something in the range of 20 two-meter randomly distributed plots over the one-acre area. Photo-monitoring of plots should also occur and any use of the area by animals would be reported.

Should pilings be installed rather than fill, impacts to EFH would still be minor, short-term and adverse, but even less impactful than fill because the footprint would be so much smaller. NMFS concurred with this EFH assessment on June 2, 2015 (NOAA 2015a).
7.2.9.2.2 Protected Species

Through coordination with the U.S. Fish and Wildlife Service and management agencies for Mississippi, listed species were identified that may be in or near the Davis Bayou Area as described in Section 7.2.6.2.2. Information on each species, including their preferred habitat, prey, and foraging areas, was gathered. Impacts on special status species were determined based on the following criteria:

- Species are found in areas likely to be affected by management actions or associated activities described in the alternatives;
- Potential impacts on wildlife species from management actions or visitor use include inducing flight and alarm responses, disrupting normal behaviors and causing stress, degrading habitat quality, and potentially affecting reproductive success;
- Displacement and disturbance potential of the actions, and the species’ potential to be affected by project activities;
- Plant species at risk from direct and indirect impacts associated with proposed development;
- Mitigation measures designed to lessen impacts on special status species.

Federally and state-listed threatened and endangered species are addressed together in this section, because many of these species (1) have dual federal and state special status, (2) occur in the same habitats, or (3) would be impacted similarly under each alternative.

Potential impacts to protected species and their critical habitat, and to species of concern, is presented in Table 7-7 and discussed below.

**Table 7-7. Potential Impacts from Alternatives B to Protected Species at the Davis Bayou Area of Gulf Islands National Seashore**

<table>
<thead>
<tr>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>FEDERAL STATUS</th>
<th>MS RANK</th>
<th>DETERMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haliaeetus leucocephalus</td>
<td>Bald Eagle</td>
<td>DM</td>
<td></td>
<td>Minor impacts</td>
</tr>
<tr>
<td>Pelecanus occidentalis</td>
<td>Brown Pelican</td>
<td>S1</td>
<td></td>
<td>Minor impacts</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alligator mississippiensis</td>
<td>American Alligator</td>
<td>SAT</td>
<td></td>
<td>Minor impacts</td>
</tr>
</tbody>
</table>

SAT = Similarity of Appearance (Threatened); DM = Delisted, Monitored; S1 = critically imperiled


There would be no impacts to federally listed threatened or endangered species under Alternative B because no currently listed threatened or endangered species are known to occur in the project area. The only species known to occur in the project corridor that is protected under the Endangered Species Act is the American alligator. The alligator is considered fully recovered from its listing as an endangered species and only remains on the threatened species list due to its similarity of appearance with the endangered crocodile. The U.S. Fish and Wildlife Service regulates the hunting and legal trade of alligator skins and products, but it no longer considers alligator populations to be imperiled (NPS 2014a).
In general, impacts to protected species from the installation of a multiple use lane would be minor due to the small size of the project footprint in relation to available habitat, the mitigation measures in place, and the ability of most of these species to avoid disturbed areas. Development of the multiple use lane would require clearing of vegetation and filling of up to 7.3 acres of wetlands. This permanent loss of habitat would result in long-term, direct, minor, adverse impacts to protected species.

Potential indirect, adverse impacts on protected species from the proposed action mainly would involve displacement of wildlife populations from the project area. Most wildlife would be already accustomed to traffic and visitors along the road adjacent to the project area. Movement of the limited numbers of wildlife that currently inhabit this small area into surrounding, unaffected habitats would not be expected to result in exceedances of the carrying capacity of the extensive, adjacent habitats. Therefore, impacts would be minor.

Best management practices, along with other avoidance, mitigation, and permit conditions required by state and federal regulatory agencies would be used to minimize impacts to habitat. Mitigation measures to protect federally listed threatened and endangered species would be the same as those described above for wildlife, fish, and their habitats.

The Trustees have determined that the proposed project would have no effect on the threatened and endangered species potentially found in the project area. In May 2015, the Trustees requested concurrence from the USFWS regarding this determination (DOI 2015). The U.S. Fish and Wildlife Service provided concurrence with this determination on June 1, 2015 (USFWS 2015). Coordination with NOAA took place and no effect for species under NOAA’s jurisdiction was determined (NOAA 2015b).

*Bald and Golden Eagles, Migratory Birds, and Other Birds of Conservation Concern*

The Trustees have reviewed the project site and determined that bald eagles use areas near the project area for foraging and resting, but not nesting. Golden Eagles will not be affected since they do not occur in the project area.

The Trustees have reviewed the project site and determined that migratory bird nesting occurs in the Davis Bayou Area, but is not likely to occur within the project area. Coordination under MBTA is ongoing between the Trustees and the U.S. Fish and Wildlife Service. Pre-construction nesting surveys would be conducted; if evidence of nesting were found, coordination with the U.S. Fish and Wildlife Service would be initiated to develop and implement appropriate conservation measures.

Short-term construction activities taking place outside the nesting season would likely impact migratory birds, including bald eagles, and other birds of conservation concern, due to general human disturbance and increased noise. These species would be expected to move away from areas of active construction to other adjacent areas and resume normal foraging, resting, and loafing behaviors. There is sufficient suitable feeding and resting habitat available in the Davis Bayou Area surrounding the project areas to support additional bird use. In addition, the conservation measures listed below would be implemented to minimize impacts to migratory birds and other birds of conservation concern from the project to the maximum extent practicable. Therefore, impacts from the noise and disturbance of construction activities would be short-term and minor.
The following conservation measures would be implemented specifically for bald eagles, including in the unexpected event that a nest were found in the project area:

- If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is no line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months);
- If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity;
- If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity;
- In some instances, activities conducted within 660 feet of a nest may result in disturbance, particularly for the eagles occupying the Mississippi barrier islands. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

Impacts to migratory birds and other birds of conservation concern would be minimized using applicable mitigation measures listed in the Final Phase III ERP/PEIS Chapter 6, Appendix 6-A, page 3. Additionally, measures that would be implemented for this project include:

- Using care to avoid birds when operating machinery or vehicles near birds;
- Surveys for nests prior to construction activities;
- USFWS Bald Eagle Management Guidelines and Conservation Measures would be followed during implementation of the proposed action;
- No work would occur within 660 feet of any bald eagle or osprey nests. Care would be taken to avoid working near other raptor nests, and to minimize noise and vibration in their vicinities. A staff biologist would advise the contractor of the nesting status of all identified raptor nests near the project area and approve of work in the vicinity;
- Care would be taken to minimize noise and vibration near areas where foraging or resting birds were encountered;
- Tree removal would be timed to occur outside of nesting seasons. Care would be taken to minimize noise and vibration near areas where foraging or resting birds are encountered.

7.2.9.2.3 **Summary of Impacts to the Biological Environment**

Impacts to the biological environment from implementation of Alternative B of the Bike and Pedestrian Use Enhancements at Davis Bayou Project would include:

- Short-and long-term impacts to living coastal and marine resources would be minor and adverse and would result from the use of fill, the placement of pilings, creation of emergent marsh
habitat, the potential for erosion, and the disturbance during construction activities, the resulting expanded development footprint, and the removal of vegetation. Removal of some mature trees would have minor, long-term adverse impacts to the southern mixed hardwood forest. There would be long-term beneficial impacts to wetlands and EFH from mitigation projects.

- There would be no impacts to federally threatened or endangered species under Alternative B. Short-term impacts to protected species would be minor and adverse due to general human disturbance and increased noise during construction. Long-term impacts would be minor and adverse from displacement resulting from the permanent loss of wildlife habitat from the clearing of vegetation and the loss wetlands.

### 7.2.9.3 Human Uses and Socioeconomics

#### 7.2.9.3.1 Socioeconomics and Environmental Justice

Section 6.6.1 of the Final Phase III ERP/PEIS states that project types that contribute to providing and enhancing recreational opportunities “are not, in general, expected to create a disproportionately high and adverse effect on a minority or low-income population...” “Project spending would also benefit regional economies. Project construction or implementation spending is likely to occur under projects to enhance public access to natural resources for recreational use and to enhance recreational experiences...” “Project spending would support workforce to design, engineer, manage, and carry out the projects. Additionally, locally purchased (or rented) equipment and materials would also benefit the regional economy.”

“Short-term beneficial impacts to the local and regional economy would occur from construction jobs and workforce. These jobs would support income, sales, and downstream economic activity in the regional economy. The level of regional benefit would vary by project and would depend on the magnitude and level of effort necessary for each project, the sourcing of labor and materials, and the size of the economy in which the project is located.”

For this project type, socioeconomics and environmental justice impacts were analyzed adequately within the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative B, temporary employment generated by construction activities would result in wages paid as well as an increase in sales and expenditures for local and regional services, materials, and supplies. Temporary jobs would be created mainly in the construction services sector for design and completion of the proposed improvements. Additional temporary jobs may also be created in landscaping and or consulting services for projects related to any tree and vegetation removal, wetland mitigation, and the proposed signage and safety improvements along the route. All jobs created would be temporary and limited to the construction phase of the project. Greater impacts would be realized should the project move forward with the installation of a multiple use lane and widening of Park and Robert McGhee Roads. These short-term construction-related economic impacts would all be considered beneficial.
During road-safety improvement activities, some visitors could avoid the Davis Bayou Area because of perceived reductions in experience quality and could choose alternative locations in or outside of the National Seashore. However, these construction activities would take place before the height of the visitor season and alternative routes would remain open and accessible. A loss of these visitors and their expenditures would represent an unnoticeable impact on the economy of the county. Following the completion of the project, there may be increased visitation at the park due to the improvements. This may result in some increased spending near the park.

Although there may be additional noise, traffic, and dust during the constriction that may affect residents and users, construction standards would be in place to minimize impacts. It is not anticipated that impacts would be any greater or more severe on minorities or individuals below the poverty line than non-minorities and those who are above the poverty line. None of the road safety improvements or associated activities would disproportionately affect low-income populations or minority populations. Impacts would also be localized and short-term.

Impacts to socioeconomics and environmental justice would be minimized using applicable mitigation measures listed in the Final Phase III ERP/PEIS Chapter 6, Appendix 6-A, page 20. Measures that would be implemented for this project include:

- Local companies and workforces should be used for construction or implementation the project if possible to support local economic benefits.

### 7.2.9.3.2 Cultural Resources

Section 6.6.2 of the Final Phase III ERP/PEIS states that project types that contribute to providing and enhancing recreational opportunities “could potentially have a minor to moderate, long-term adverse impact on cultural resources from ground and substrate disturbing construction activities and dredging activities...” In addition, these project types could have “long-term beneficial impacts through the identification of cultural resources. Cultural or historical sites that may otherwise have been unknown or unprotected may benefit from the NHPA Section 106 review process that could require it be avoided and preserved in its natural state.”

For this project type, socioeconomics and environmental justice impacts were analyzed adequately within the Final Phase III ERP/PEIS. For the proposed project, under Alternative B, ground disturbance would occur in existing road corridors to accommodate up to 14 additional feet of asphalt, 8 feet of non-paved shoulders, plus, if fill material is added, the footprint of that, plus 5 feet from the toe of slopes for construction and heavy equipment maneuvering. The four known archeological sites lie within or overlap areas that would include ground disturbance during construction activities proposed in alternative B. In accordance with Section 106 of the NHPA, the National Park Service is consulting with the Mississippi SHPO. If the National Park Service determines that ground disturbance would lead to a substantial loss of important cultural information potential contained in a NRHP-eligible site, it would implement mitigation measures deemed appropriate to offset any potential loss. Such mitigation could range from documentation and curation of artifacts to creation and placement of interpretive signage and would be arrived at through consultation with the Mississippi SHPO. If previously unknown
archaeological resources are discovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented. If the resources could not be preserved in situ, an appropriate mitigation strategy would be developed in consultation with the SHPO and, as necessary, American Indian tribes. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001) of 1990 would be followed. If non-Indian human remains were discovered, standard reporting procedures to the proper authorities would be followed, as would all applicable federal, state, and local laws.

While the project has the potential to cause a loss of important cultural information potential, appropriate implementation of mitigations developed in consultation with the Mississippi SHPO would ensure that any adverse impacts to cultural resources under Alternative B would not exceed a minor degree of intensity. Because of their irreplaceable nature, all impacts to cultural resource are considered long-term. For the purposes of NHPA Section 106, ‘adverse effect to historic properties’ would be the determination submitted to the Mississippi SHPO for actions associated with implementation of Alternative B should any of the four sites be determined NRHP-eligible. Should all four be determined ineligible for NRHP listing, the NHPA Section 106 determination of effects submitted to the Mississippi SHPO would be ‘no historic properties affected.’

Impacts to cultural resources would be minimized using applicable mitigation measures listed in the Final Phase III ERP/PEIS Chapter 6, Appendix 6-A, page 19. The primary measure that would be implemented for this project is:

- Conducting preconstruction surveys for the presence of cultural resources and/or monitoring cultural resources during construction in the vicinity of the development.

A Section 106 review of this project is currently underway. If any historic properties are determined to be in the project’s area of potential effect, all adverse effects would be resolved prior to construction in that vicinity.

7.2.9.3.3 Infrastructure

Section 6.6.3 of the Final Phase III ERP/PEIS states this project type “would involve the transport of construction vehicles, equipment, and materials. These project types, which include techniques such as construction of boardwalks and trails, could lead to short and long-term minor to major impacts on infrastructure. The impacts associated with these projects would result from increases in construction traffic; temporary or permanent closure of roads, parking lots, or facilities; or damage to roadways or other infrastructure that provides access to the shoreline. The impacts to existing infrastructure, such as roadways, could also occur from increased vehicle use as a result of increased visitor use over time. These impacts would range in intensity based on the duration of road, parking lot or public access closure, the importance of individual roadways as regional transportation arterials; and the extent and duration of damage to roadways, facilities, or access points. Future infrastructure improvements or increased maintenance could be necessary to address impacts to infrastructure.”
“Projects that upgrade existing infrastructure or add new infrastructure, such as …trails, boardwalks, and similar types of public access; and many of the other project types discussed above, would have long-term beneficial impacts to infrastructure”.

For this project type, the impacts to infrastructure are adequately analyzed in the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis.

**Roadways**

The addition of two 10-ft elliptical traffic-calming medians within the first mile of Park Road would result in minor impacts to traffic patterns and road infrastructure by slowing traffic speeds within this area. Installation of multiple use travel lanes along Park Road and Robert McGhee Road would add additional infrastructure to the Davis Bayou Area. During construction, existing roads would be used to access the project areas and there would be short-term minor to moderate impacts to infrastructure as a result of any temporary closures and/or minor traffic jams resulting from equipment transiting the roadways. Following construction, long-term direct impacts to traffic patterns and the roadway infrastructure would be beneficial due to a reduction in user conflicts along the roadways. While it is anticipated that road bicyclists would continue to use the roadways, other recreational users would likely utilize the multiple use lanes and thereby reduce the potential for accidents caused by cars passing recreational users, with resulting beneficial impacts. Additionally, during tropical storm events, the road frequently is underwater and stormwater movement is often restricted by the existing culvert. The new bottomless culvert would have a long-term beneficial impact because it would lessen the chances of stormwater inundating the road.

**Public Utilities**

There is the potential, depending on the design layout, that electrical utility lines within the park would need to be replaced/relocated during construction of the multiple use lanes. Any replacement would be done with limited or no disruption to service. This would result in short-term minor impacts to utilities depending on the location and timing of construction and planning efforts of the utility provider. It is not anticipated that there would be any impacts to any of the other utilities within the park. No other utilities would be affected.

**7.2.9.3.4 Land and Marine Management**

The Final Phase III ERP/PEIS states that this project type “would have varying impacts on land and marine management depending on the type of management or land ownership applicable to the project site. Projects would generally be consistent with the prevailing management plans and direction governing the use of the land and marine areas where the projects would take place; therefore,...are generally expected to have no adverse impacts to land and marine management”.

“Projects implemented at national, state, and local parks, wildlife refuges, and wildlife management areas could have short-term minor to moderate adverse impacts to land and marine management.
These impacts would be temporary, and would occur as a result of construction activities related to projects such as the construction of new roads, trails, boardwalks, and other public access improvements; or the construction of boat ramps, piers, lodging facilities, public restroom, campgrounds, and similar facilities. Impacts would be related to temporary, full, or partial closures of parks and refuges. In the long-term, projects...would have beneficial impacts on land and marine management at parks and wildlife refuges, and wildlife management areas because these activities would improve public access and amenities, helping park management and staff fulfill their obligations to manage these properties for the benefit of the environment and human enjoyment.”

For this project type, the impacts to land and marine management are adequately analyzed in the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative B, a Coastal Zone Management Act consistency determination would be submitted for state review and concurrence before project implementation. No changes would occur to the current land use at the project site or the adjoining shoreline areas. The area would remain zoned for diverse visitor opportunities and land use, and management authority at the Davis Bayou Area would remain under the purview of the National Seashore. Thus, no impacts would occur to land and marine management under Alternative B.

7.2.9.3.5  Aesthetics and Visual Resources

The Final Phase III ERP/PEIS states that this project type “would have minor to moderate short-term adverse impacts from the temporary landscape during the construction period from the presence of bulldozers, front-loaders and other large earth moving equipment required for upgrades or new facilities. These impacts would constitute a change in the viewshed that is readily apparent and which would attract attention in the short-term. Although such changes would not dominate the viewscape, they could detract from the current user activities or experiences. Over the long-term, the addition of infrastructure and facilities into the existing setting would present some degree of visual contrast. Long-term adverse effects of these enhancements would range from minor to moderate, depending on the existing aesthetic character of the surrounding landscape. Where the addition of these facility enhancements into the existing setting would present a large degree of visual contrast, impacts would be moderate because they would detract from the current user activities or experiences.”

For this project type, impacts to aesthetics and visual resources were analyzed adequately within the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative B, the existing road corridor would be altered to accommodate up to 14 additional feet of asphalt, and 8 ft of non-paved shoulders. In areas where fill is added along the existing road, the footprint of that slope would extend out the least extent possible (distance is currently unknown due to uncertainty of design), and there would be a 5-ft equipment work area extending out from the toe of the slope. In addition, new signage and traffic-calming devices would be installed along portions or Park Road. Short-term adverse impacts could result from the temporary presence of construction equipment along the roads, and in the estuary where intertidal emergent marsh creation would occur as mitigation for impacts to EFH. Mature tree canopy would be avoided to the greatest extent possible; however, some mature trees would be removed. Views of the bayou would
remain intact. The natural landscape and soundscape in the project area would not be appreciably altered by changes in vehicular traffic or other intrusions. Additional signage and traffic-calming elements, as well as any necessary retaining walls, would reflect a context-sensitive design. As such, long-term impacts to aesthetics or visual resources resulting from Alternative B would be minor.

7.2.9.3.6 Tourism and Recreational Use

Section 6.6.5 of the Final Phase III ERP/PEIS states, “Recreational enhancement project types that include techniques such as beach re-nourishment, placing materials to create reef structures, and enhancing recreational infrastructure could provide long-term benefits to tourist and recreational uses by improving wildlife habitat, and increasing recreational amenities (such as beach facilities). As a result, these types of projects would enhance wildlife viewing, hunting, beach and waterfront visitors, fishing and tourist experiences and provide additional areas in which to experience these opportunities”.

For this project type, the impacts to tourism and recreation are adequately analyzed in the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. During construction of the multiple use lanes, recreational experience would be impacted from noise and visual disturbances associated with the use of heavy equipment. Use of and access to some park areas could be impacted by temporary closures. These temporary inconveniences would result in moderate short-term impacts on tourism and local recreational use during construction. While much of the road-based recreational use of the Davis Bayou Area comes from local residents, short-term impacts during construction would be kept slightly lower by implementing construction during the slowest part of the tourist season.

Over the long-term, it is expected that the installation of multiple use lanes would result in beneficial impacts to the overall visitor experience by providing a travel corridor throughout the park free from motor-vehicles. Benefits to recreational use would be expected from non-motorized access to the trail networks within the park, improved safety from the separation of motorized and non-motorized use, and a more pedestrian friendly experience. Additional benefits would result from increased NPS road maintenance activities and compliance with appropriate Federal Highway Administration safety recommendations.

The addition of two traffic-calming medians within the first mile of Park Road would result in long-term benefits to the overall visitor experience by slowing traffic in this area and improving safety for both drivers and recreationalists. While residents utilizing the park roads on their daily commute may need to adjust to the traffic-calming medians, they would encourage drivers to follow the speed limit, thereby improving safety and reducing traffic violations, which would result in a long-term benefit.

Impacts to tourism and recreational use would be minimized using applicable mitigation measures listed in the Final Phase III ERP/PEIS Chapter 6, Appendix 6-A, page 17. Measures that would be implemented for this project include:

- Local companies should try to work with project leads to establish construction work times that overlap with off-season tourism schedules.
7.2.9.3.7 Public Health and Safety and Shoreline Protection

Section 6.6.9 of the Final Phase III ERP/PEIS states that this project type “involving construction and construction activities would result in short-term minor adverse impacts to public health and safety as a result of the operation of heavy equipment and construction materials as well as the potential of hazardous waste and materials contaminating soils, groundwater, and surface waters. Projects would be designed using similar safety-related BMPs to reduce hazards”.

For this project type, the impacts to public health and safety and shoreline protection are adequately analyzed in the Final Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. No hazardous waste would be created during the installation of multiple use lanes and traffic-calming medians. All hazardous materials (e.g., diesel fuels) handled during construction would be contained and appropriate barriers would be in place to ensure the protection of adjacent water resources from potential spills and leaks. Personal protective equipment would be required, as appropriate, for all construction personnel and authorized access zones would be established, if needed, at the perimeter of the project site during construction. Signage would be posted and areas deemed unsafe for the public would be temporarily closed. As a result, short-term impacts to public health and safety during construction of the multiple use lanes would be minor.

Over the long-term, the installation of multiple use lanes would widen the paved surface and would result in beneficial impacts to public health and safety by providing a travel corridor throughout the park free from motor vehicles. Benefits to public health and safety would be expected from non-motorized access to the trail networks within the park, separation of motorized and non-motorized use, and increased pavement width. While it is expected that road bicyclists may still chose to ride on the roadway surface, there would still be a benefit to public health and safety from a reduction in the amount of non-motorized use of the roadway.

The addition of two traffic-calming medians within the first mile of Park Road and a reduction in the speed limit throughout the park would result in long-term benefits to overall public health and safety by slowing traffic and improving safety for both drivers and recreationalists. Additional benefits to public health and safety would result from increased NPS road maintenance activities and compliance with appropriate Federal Highway Administration safety recommendations.

7.2.9.3.8 Summary of Impacts to the Human Uses and Socioeconomics

Impacts to the human uses and socioeconomics from implementation of Alternative B of the Bike and Pedestrian Use Enhancements at Davis Bayou Project would include:

- Short-term impacts to socioeconomics and environmental justice would be beneficial as a result of the addition of temporary jobs in the area during construction.
- While the project has the potential to cause a loss of important cultural resource information, appropriate implementation of mitigations developed in consultation with the Mississippi SHPO would ensure that any adverse impacts to cultural resources under Alternative B would not exceed a minor degree of intensity.
• Short-term impacts to roadway infrastructure would be minor to moderate as a result of any temporary closures and/or minor traffic jams during construction. Long-term impacts would be beneficial as a result of a reduction in user conflict on the roadways and because the larger bottomless culvert would help keep the road from becoming inundated and damaged during storm surge events. Short-term, minor impacts to public utilities could result if any replacement were necessary.

• There would be no impacts to land and marine management because there would be no changes to the current land use at the project site or the adjoining shoreline areas.

• Long-term impacts to the aesthetics and visual resources within the Davis Bayou Area would be minor and adverse from the additional signage and traffic-calming elements. Short-term, minor adverse impacts would result from the temporary presence of equipment during construction.

• Short-term impacts to tourism and recreational use of the Davis Bayou Area would be moderate and adverse as a result of the temporary inconvenience from noise, the visual disturbance of heavy equipment, and temporary closures during construction. Long-term impacts would be beneficial from the creation of a safer and more pedestrian friendly experience by establishing a motor-vehicle-free travel corridor.

• Short-term impacts to public health and safety would be minor during construction as a result of protection measures put in place to protect construction personnel and the public. Long-term impacts to public health and safety would be beneficial because of decreased potential for collisions and conflict resulting from a travel corridor free from motor vehicles and traffic-calming medians.

7.2.10  Environmental Consequences of Alternative C: Limit Access to VFW Road

7.2.10.1 Physical Environment

7.2.10.1.1 Geology and Substrates

As stated under the analysis for Alternative B, for this project type, geology and substrates impacts were analyzed adequately within the Phase IIIERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under this alternative, automatic gate and park signs would be placed around the intersection of VFW Road and Knapp Road. Along the first mile of Park Road, two traffic-calming medians would be installed. Anticipated construction activities include ground disturbance, soil excavation, grading, fill activities, and vegetation clearing. During the construction, there may be increased erosion from exposed soil and compaction from equipment, but the impacts would be minor, short-term, and localized.

There would be increased potential for foreign material to integrate into the natural soil regimen especially along the portions of Park Road where the new traffic-calming medians would be placed. New material may not have the same consistency of the existing naturally developed soil and adversely impact natural geologic processes. Any impacts would be minor, adverse, and short-term.

Mitigation measures for impacts to geology and substrates would be the same as those discussed under the analysis for Alternative B in Section 7.2.9.1.1.
7.2.10.1.2 Hydrology, Water Quality, and Floodplains

As stated under the analysis for Alternative B, for this project type, hydrology, water quality, and floodplains impacts were analyzed adequately within the Phase IIIEP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Impacts to hydrology, water quality, and floodplains would be associated with construction activities. Best management practices and mitigation measures that would be applied are the same as those identified for Alternative B in Section 7.2.9.1.2.

Impacts to surface hydrology under Alternative C would be site-specific and limited to areas where wetland hydrology would be altered associated with the installation of the medians. Some of the wetlands in the study area exist because the ground water elevations are high (e.g., wet pine savannah). Though construction in these areas may reach the elevation of groundwater, it is not likely to impact groundwater hydrology due to the larger depth of the aquifer below.

Construction activities may impact surface and groundwater quality due to erosion. The release of sediments during construction would be controlled using best management practices and mitigation as described in 7.2.9.1.2 to protect soil resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. Further, revegetation of disturbed sites would be started as soon as practical after work in an area was completed. A loss of less than 0.5 acres of wetlands may lead to a loss of water quality functions such as groundwater discharge/recharge, sediment/toxicant retention, and nutrient removal. However, depending on the acreage of wetlands surrounding the filled areas, minor impacts could occur but would not create a noticeable difference in water quality functions. Because of the proven effectiveness of best management practices, discharge of sediment to waterways that would impact surface water quality would be minor and short term. Additionally, best management practices, along with other avoidance, mitigation and permit conditions required by state and federal regulatory agencies would be used to minimize water quality and sedimentation impacts. As such, short term, adverse impacts to surface and groundwater water quality in this area would be minor.

The placement of the medians (within the first mile of Park Road) places them in zones “X (Other Flooded Areas)” or zone “X (Other Areas)”. These areas have a lower flood risk and would lead to minor impacts on floodplains. Compacting and filling wetlands adjacent to the medians would reduce the natural features of the floodplain, which could increase flooding severity since these habitats provide a valuable ecological service (e.g., water storage and storm buffering; see wetlands sections of this EA). However, due to the large acreage of wetlands surrounding the proposed fill areas, the impacts may not create a noticeable difference in the benefits to the natural functioning of the floodplain. Because of the limited impacts to wetlands under Alternative C, impacts to the natural functioning of the floodplain would be minor.

7.2.10.1.3 Air Quality and Greenhouse Gas Emissions

As stated under the analysis for Alternative B, for this project type, air quality and greenhouse gas emissions impacts were analyzed adequately within the Phase IIIEP/PEIS. For the proposed project, the
impacts would be consistent with the Final Phase III ERP/PEIS analysis. Emissions of particulates that could affect air quality, including visibility in the general vicinity of the project area, could temporarily increase during construction activities to install traffic-calming measures on portions of Park Road from the use of motorized equipment at the site and from exhaust from gasoline- or diesel-powered vehicles and equipment. This equipment would also temporarily emit air pollutants. However, activities requiring the use of machinery would not be expected to be long-term. Because of the short-term and localized nature of the operation, impacts to air quality from construction activities would be minor. The area is in attainment for all criteria pollutants and under the qualifications of a Class II airshed, small increases in air emissions are allowed. Because of the localized and short-term use of construction equipment, any emissions would not be expected to exceed the NAAQS as a result of implementation of the proposed action.

While the level of traffic within the Davis Bayou Area of the park would be expected to decrease during timed VFW Road closures, the level of motor vehicle traffic in the local area and region would be expected to remain consistent. Impacts to GHG emissions would be minor. The GHG emission during construction would remain less than the 25,000 metric ton threshold.

Best management practices and mitigation measures that would be applied are the same as those identified for Alternative B in Section 7.2.9.1.3.

### 7.2.10.1.4 Noise

As stated under the analysis for Alternative B, for this project type, noise impacts were analyzed adequately within the Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. During construction associated with road safety improvements, sounds from equipment and work crews would increase. Construction noise would not contribute substantially to long-term average noise levels, but could consist of some intrusive sounds. Noise levels from typical construction equipment such as road graders, backhoes, heavy trucks, and bulldozers range from 80 A-weighted decibels to 85 decibels at 50 ft (USDOT 2011). Noise associated with construction under Alternative C could affect residents, park users, and wildlife in the area. However, best management practices would be employed during these activities to minimize noise and the area affected under this alternative would be limited to a portion of Park Road. Sounds generated from these activities would be temporary, lasting only as long as the construction activity was occurring and would be limited to daytime working hours. During construction of traffic-calming devices, impacts to the natural soundscape would be short-term and minor.

Beyond the construction timeframe, timed closures of VFW Road would reduce the amount of traffic on Park Road at certain times of day, which could result in a long-term benefit to the natural soundscape during these closures. Otherwise, use of the park roads with the proposed improved safety features would not measurably increase sound levels from those produced currently.
7.2.10.1.5 Summary of Impacts to the Physical Environment

Impacts to the physical environment from implementation of Alternative C of the Bike and Pedestrian Use Enhancements at Davis Bayou Project would include:

- Short-term impacts to geology and substrates would be minor and adverse as a result of ground disturbance from soil removal, grading, and vegetation clearing during installation of traffic-calming medians, signs, and an automatic gate.
- Short-term impacts to hydrology, water quality, and floodplains would be associated with construction activities. Though construction in these areas may reach the elevation of groundwater, it is not likely to impact groundwater hydrology due to the larger depth of the aquifer below. Impacts to surface and groundwater water quality in this area would be minor and would result from potential erosion during construction. Impacts to the natural functioning of the floodplain would be minor as a result of a reduction of natural features in the floodplain.
- Short-term impacts to air quality and greenhouse gas emissions would be localized and minor during construction as a result of emissions produced from the use of machinery. Actions proposed under Alternative C would not be anticipated to change the level of motor vehicle traffic within the park, the local area, or the region and therefore, over the long-term, impacts to GHG emissions would be minor;
- Short-term impacts to the natural soundscape would be minor and adverse from sounds from construction of traffic-calming devices from the use of equipment and noise from construction activities. Over the long-term, timed closures of VFW Road would reduce the amount of traffic on Park Road at certain times of day, which could result in a long-term benefit to the natural soundscape during these closures.

7.2.10.2 Biological Environment

7.2.10.2.1 Living Coastal and Marine Resources

As stated under the analysis for Alternative B, for this project type, living coastal and marine resources impacts were analyzed adequately within the Phase III ERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis.

Wetlands

For this project type, impacts to habitats were analyzed adequately within the PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative C, the construction of the two proposed traffic-calming medians would cause long-term adverse impacts to wetlands adjacent to the proposed project area in the Davis Bayou Area if it were determined during final design that wetlands would be filled. Impacts are expected to be minor due to the small size of the project footprint in relation to the amount of surrounding wetlands and the mitigation measures that would be in place (see the corresponding analysis section under Alternative B). Long-term, minor, adverse direct impacts are expected due to the potential loss of palustrine forested wetlands associated
with the installation of the medians. Impacts to all wetlands are discussed in greater detail in the Wetlands Statement of Findings in Appendix E.

The Trustee would apply for a Mississippi Coastal Wetland Protection Act Permit and authorization by the USACE. Pursuant to the Coastal Zone Management Act of 1972, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. Federal Trustees are submitting consistency determinations for state review coincident with public review of this document. The Trustee would adhere to all conditions of the Mississippi Coastal Wetland Protection Act permit and the USACE permit.

Construction activities may affect wetlands and aquatic habitat due to erosion. The release of sediments during construction would be controlled using best management practices and mitigation as described in the corresponding analysis section under Alternative B to protect soil resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. Further, revegetation of disturbed sites would be started as soon as practical after work in an area is completed. Impacts are expected to be minor, short-term and adverse.

**Emergent and Terrestrial Habitat**

Under Alternative C, the construction of the two proposed traffic-calming medians would cause long-term adverse impacts to emergent and terrestrial habitat adjacent to the proposed project area in the Davis Bayou Area if it were determined during final design that any such habitat would be filled. Impacts are expected to be minor due to the small size of the project footprint in relation to the amount of surrounding emergent and terrestrial habitat and the mitigation measures that would be in place (see the wetlands and wildlife and wildlife habitat analysis under Alternative B). Long-term, minor, adverse direct impacts are expected due to the potential loss of habitat associated with the installation of the medians.

Construction activities may affect emergent and terrestrial habitat due to erosion. The release of sediments during construction would be controlled using best management practices and mitigation as described in the corresponding analysis section under Alternative B to protect soil resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. Further, revegetation of disturbed sites would be started as soon as practical after work in an area is completed.

**Wildlife and Wildlife Habitat**

Under Alternative C, in the short-term, construction activities would likely impact wildlife in the area due to general human disturbance, increased noise, and the potential for erosion. Project activities could result in the temporary displacement, injury, or death of wildlife. However, avoidance of the area by wildlife during construction would be anticipated and there is sufficient suitable feeding and resting habitat available in the Davis Bayou Area surrounding the project areas to support additional wildlife use. Wildlife would be expected to move away from areas of active construction and resume normal
foraging and resting behaviors. The release of sediments during construction would be controlled using best management practices and mitigation as described in the corresponding analysis section under Alternative B to protect soil resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. Further, revegetation of disturbed sites would be started as soon as practical after work in an area is completed. Any adverse effects would be anticipated to occur on an individual level rather than a population level. Overall, construction activities would be expected to have short-term, minor impacts on wildlife.

Under Alternative C, the construction of the two proposed traffic-calming medians would cause long-term adverse impacts to wildlife and wildlife habitat adjacent to the proposed project area in the Davis Bayou Area if it were determined during final design that any such habitat would be altered or filled. Long-term impacts to wildlife would result from a permanent loss of vegetation and the potential loss of wetlands associated with the installation of the medians. Overall, these direct impacts would be minor due to the small size of the project footprint in relation to the amount of surrounding habitat and the mitigation measures that would be in place (see the corresponding analysis section under Alternative B).

This project involves the removal of some vegetation and the placement of fill and some retaining walls along the existing road into or adjacent to areas that are currently forests, forested wetlands, and marsh. A variety of construction equipment would be used. Each of these actions and pieces of equipment serve as a potential pathway to introduce or spread invasive species. BMPs would be implemented to ensure these pathways are “broken” and do not spread or introduce species (See BMPs listed below). The implementation of these BMPs meets the spirit and intent of EO 13112. Due to the implementation of BMPs, the Trustees expect risk from invasive species introduction and spread to be short-term and minor.

**Fish and Fish Habitat**

Under Alternative C, increased erosion caused by construction activities could affect fish and fish habitat. The release of sediments during construction would be controlled using best management practices and mitigation, as described in the wetlands and wildlife analysis sections under Alternative B, to protect soil resources, prevent the transport of sediment into waterways, confine impacts to the construction sites, and to minimize the magnitude of the impacts on downstream water quality. Further, revegetation of disturbed sites would be started as soon as practical after work in an area is completed.

The construction of the two proposed traffic-calming medians would cause long-term adverse impacts to fish and fish habitat adjacent to the proposed project area in the Davis Bayou Area if it were determined during final design that any such habitat would be filled. It is expected that fishes that utilize the areas to be filled would be permanently displaced, and would use the other available habitats in the Davis Bayou Area. Impacts are expected to be minor due to the small size of the project footprint in relation to the amount of surrounding habitat. Impacts are expected to be realized on an individual level and not a population level. Best management practices and mitigation as described under the corresponding analysis section under Alternative B would be utilized to minimize impact to fish and fish habitat.
7.2.10.2.2 Protected Species

Through coordination with the U.S. Fish and Wildlife Service and management agencies for Mississippi, listed species were identified that may be in or near the Davis Bayou Area as described in Section 7.2.6.2.2. Information on each species, including their preferred habitat, prey, and foraging areas, was gathered. Short-term impacts would last one year or less; long-term impacts would occur for more than one year. Impacts on special status species were determined based on the same criteria as stated under Section 7.2.9.2.2 under Alternative B.

Federally listed and state-listed threatened and endangered species are addressed together in this section, because many of these species (1) have dual federal and state special status, (2) occur in the same habitats, or (3) would be impacted similarly under each alternative.

Endangered Species Act (ESA) Section 7 consultation with USFWS has been completed. The USFWS concurred that this project will have no effect to any species or critical habitat (USFWS 2015). ESA Section 7 coordination with the National Marine Fisheries Services (NMFS) concluded that there would be no effect to species and habitats under NOAA’s jurisdiction (NOAA, 2015b). Appropriate recommendations would be incorporated into the proposed project.

Under Alternative C, there would be no impacts to federally listed threatened or endangered species because no currently listed threatened or endangered species are known to occur in the project area. The only species known to occur in the project corridor that is protected under the Endangered Species Act is the American alligator. The alligator is considered fully recovered from its listing as an endangered species and only remains on the threatened species list due to its similarity of appearance with the endangered crocodile. The U.S. Fish and Wildlife Service regulates the hunting and legal trade of alligator skins and products, but it no longer considers alligator populations to be imperiled (NPS 2014a).

Long-term adverse impacts would be minor and would result from the slight reduction of aquatic and terrestrial habitat associated with the installation of the medians.

Implementing Alternative C could affect the species of concern discussed in Section 7.2.6.2.2. In general, impacts to protected species from the installation of two traffic-calming medians within the first mile of Park Road would be minor due to the small size of the project footprint in relation to available habitat, the mitigation measures in place, and the ability of most of these species to avoid disturbed areas. Short-term minor impacts would be associated with the noise and disturbance of construction activities. Long-term, minor, adverse direct impacts are expected to fish and wildlife due to the permanent loss of wildlife habitat from the clearing of vegetation and the loss of wetlands.

Potential indirect, adverse impacts on protected species from the proposed action mainly would involve displacement of wildlife populations from the project area. Most wildlife would be already accustomed to traffic and visitors along the road adjacent to the project area. Movement of the limited numbers of wildlife that currently inhabit this small area into surrounding, unimpacted habitats would not be expected to result in exceedances of the carrying capacity of the extensive, adjacent habitats. Therefore, impacts would be minor.
Best management practices, along with other avoidance, mitigation, and permit conditions required by state and federal regulatory agencies would be used to minimize impacts to habitat. Mitigation measures to protect species of concern would be the same as those described above for wildlife, fish, and their habitats under the Alternative B analysis.

**Bald and Golden Eagles, Migratory Birds, and Other Birds of Conservation Concern**

The Trustees have reviewed the project site and determined that bald eagles do use areas near the project area for foraging and resting, but not nesting. Refer to the corresponding analysis under Alternative B for conservation measures that would be implemented for bald eagles.

The Trustees have reviewed the project site and determined that migratory bird nesting occurs in the Davis Bayou Area, but is not likely to occur within the project area. Coordination under MBTA is ongoing between the Trustees and the U.S. Fish and Wildlife Service. Pre-construction nesting surveys would be conducted; if evidence of nesting is found, coordination with the U.S. Fish and Wildlife Service would be initiated to develop and implement appropriate conservation measures.

Short-term construction activities taking place outside the nesting season would likely impact birds in the area, including protected species, due to general human disturbance and increased noise. These species are expected to move away from areas of active construction to other adjacent areas and resume normal foraging, resting, and loafing behaviors. There is sufficient suitable feeding and resting habitat available in the Davis Bayou Area surrounding the project areas to support additional bird use. In addition, conservation measures would be implemented to minimize impacts to protected species and migratory birds from the project to the maximum extent practicable (see corresponding analysis section under Alternative B). Therefore, impacts would be short-term and minor.

**7.2.10.2.3 Summary of Impacts to the Biological Environment**

Impacts to the biological environment from implementation of Alternative C of the Bike and Pedestrian Use Enhancements at Davis Bayou Project would include:

- Short- and long-term impacts to living coastal and marine resources would be minor and would result from the use of fill, the potential for erosion, the removal of vegetation, and the disturbance during construction activities associated with the installation of traffic-calming medians along Park Road.

- There would be no impacts to federally threatened or endangered species under Alternative C. Short-term impacts to protected species including, bald eagles, migratory birds, and other birds of concern, would be minor and adverse due to general human disturbance and increased noise during construction. Long-term impacts to protected species would be minor and adverse from displacement resulting from the permanent loss of wildlife habitat from the clearing of vegetation and the loss wetlands.
7.2.10.3 Human Uses and Socioeconomics

7.2.10.3.1 Socioeconomics and Environmental Justice

As stated under the analysis for Alternative B, for this project type, socioeconomics and environmental justice impacts were analyzed adequately within the Phase IIERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative C, temporary jobs would be created mainly in the construction services sector for design and completion of the proposed traffic-calming devices and increased signage along portions of Park Road. These jobs would result in a slight short-term beneficial impact to local socioeconomics from wages paid as well as an increase in sales and expenditures for local and regional services, materials, and supplies.

During road-safety improvement activities, and during temporary closures of VFW Road, some visitors could avoid the Davis Bayou Area because of perceived reductions in experience quality or due to the restricted access. A loss of these visitors and their expenditures would represent an unnoticeable impact on the economy of the county. Timed closures of VFW Road could result in an increase in road-based recreational visitation at the park during these closures, which could result in some increased spending near the park, which would have a slight long-term benefit to the local socioeconomic environment.

It is not anticipated that impacts from the installation of traffic-calming devices or timed closures of VFW Road would be any greater or more severe on minorities or individuals below the poverty line than non-minorities and those who are above the poverty line. None of the proposed actions under Alternative C would disproportionately affect low-income populations or minority populations.

Mitigation measures would be the same as those described under the corresponding analysis for Alternative B.

7.2.10.3.2 Cultural Resources

As stated under the analysis for Alternative B, for this project type, cultural resources impacts were analyzed adequately within the Phase IIERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative C, ground disturbance would occur in existing road corridors to accommodate the traffic calming medians. The four known archeological sites lie within or overlap areas that would include ground disturbance during construction activities proposed in Alternative C. In accordance with Section 106 of the NHPA, the National Park Service is consulting with the Mississippi SHPO. If the National Park Service determines that ground disturbance would lead to a substantial loss of important cultural information potential contained in a NRHP-eligible site, it would implement mitigation measures deemed appropriate to offset any potential loss. Such mitigation could range from documentation and curation of artifacts to creation and placement of interpretive signage and would be arrived at through consultation with the Mississippi SHPO. If previously unknown archeological resources are discovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented. If the resources could not be preserved in situ, an appropriate mitigation strategy would be developed in consultation with the SHPO and, as necessary, American Indian tribes. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are
discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001) of 1990 would be followed. If non-Indian human remains were discovered, standard reporting procedures to the proper authorities would be followed, as would all applicable federal, state, and local laws.

While the project has the potential to cause a loss of important cultural information potential, appropriate implementation of mitigations developed in consultation with the Mississippi SHPO would ensure that any adverse impacts to cultural resources under Alternative C would not exceed a minor degree of intensity. Because of their irreplaceable nature, all impacts to cultural resources are considered long-term. For purposes of NHPA Section 106, ‘adverse effect to historic properties’ would be the determination submitted to the Mississippi SHPO for actions associated with implementation of Alternative C should any of the four sites be determined NRHP-eligible. Should all four be determined ineligible for NRHP listing, the NHPA Section 106 determination of effects submitted to the Mississippi SHPO would be ‘no historic properties affected.’

Impacts to cultural resources would be minimized using applicable mitigation measure as discussed under the corresponding Alternative B analysis.

7.2.10.3.3 Infrastructure

As stated under the analysis for Alternative B, for this project type, infrastructure impacts were analyzed adequately within the Phase IIIERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. The addition of 10-ft elliptical traffic-calming medians within the first mile of Park Road would result in minor impacts to traffic patterns and road infrastructure by slowing traffic speeds within this area. Installing a gate at the intersection of Knapp and VFW Roads would restrict through traffic from entering the park during times of high recreational use of Park Road. This reduction of motor vehicle traffic utilizing the park roads would result in a long-term direct beneficial impact to the traffic and roadway infrastructure within the park. Long-term, indirect impacts to roadway infrastructure outside of the park would occur during the gate closures due to the increased traffic volume and potential for traffic congestion. These impacts would be minor depending on the timing of closures and the volume of traffic being directed elsewhere. No impacts to public utilities are expected under this alternative.

7.2.10.3.4 Land and Marine Management

As stated under the analysis for Alternative B, for this project type, land and marine management impacts were analyzed adequately within the Phase IIIERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative C, a Coastal Zone Management Act consistency determination would be submitted for state review and concurrence before project implementation. No changes would occur to the current land use at the project site or the adjoining shoreline areas. The area would remain zoned for diverse visitor opportunities and land use and management authority at the Davis Bayou Area would remain under the purview of the National Park Service. Thus, no impacts would occur to land and marine management under Alternative C.
7.2.10.3.5 Aesthetics and Visual Resources

As stated under the analysis for Alternative B, for this project type, aesthetics and visual resources impacts were analyzed adequately within the Phase IIIEPR/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. Under Alternative C, the road corridor would remain at its current width. Installing traffic-calming measures and new signage along portions of Park Road would be designed to have minimal impacts to the viewshed. Timed traffic restrictions proposed under Alternative C could result in long-term beneficial impacts to the natural landscape and soundscape through a reduction in vehicular traffic.

7.2.10.3.6 Tourism and Recreational Use

As stated under the analysis for Alternative B, for this project type, tourism and recreational use impacts were analyzed adequately within the Phase IIIEPR/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. During construction of the traffic-calming medians within the first mile of Park Road, recreational experience would be impacted from noise and visual disturbances associated with the use of heavy equipment. Use of Park Road in this area could be impacted by temporary closures. These temporary inconveniences would result in moderate short-term impacts on tourism and local recreational use during construction. While much of the road-based recreational use of the Davis Bayou Area comes from local residents, short-term impacts during construction would be kept slightly lower by implementing construction during the slowest part of the tourist season.

Under Alternative C, bicyclists and pedestrians would continue to traverse Robert McGhee Road and Park Road for recreational purposes and pedestrians, bicyclists, and motorists would continue to share the road surface at all times. Existing trails within the National Seashore would remain in use along their current routes. However, under this alternative, gated closures of VFW Road during high recreational use times would reduce the amount of vehicular traffic in the park during those times. Visitors would still have vehicular access to the park and its resources by accessing Park Road off U.S. Route 90. Timed gated closures of VFW Road would reduce traffic on Park Road between VFW Road and U.S. Route 90, which typically sees the most traffic congestion. This reduction of traffic would result in long-term beneficial impacts to the visitor experience for pedestrians, bicyclists, and other visitors utilizing the park for recreational purposes at those times. For visitors who were local residents utilizing Park Road as a commuter route between U.S. Route 90 and VFW Road, the timed closure would result in short-term, moderate, adverse impacts until residents adjusted to the change and found an alternate travel route. Long-term impacts would be minor and adverse.

Under this alternative, pedestrian, bicyclists, and motorists would still share the road surface at all times and there would be adverse impacts to tourism and recreational use depending on the time of day, location within the park, and level of congestion between the various user groups. Minor to moderate adverse impacts to recreational users utilizing the park roads on foot or bicycle would result from increased risks associated with sharing the road with vehicular traffic, impacts to the viewshed and natural soundscape resulting from traffic, and insecurity resulting from the proximity of vehicular traffic. With the potential for traffic in the park to increase, conditions could deteriorate to the point that the
quality of the visitor experience would be diminished for visitors that favor this area. For visitors/local residents who utilize the park roads as a commuter route, adverse impacts would result from the need to reduce driving speeds during heavy bicycle-pedestrian congestion and the increased risk associated with passing these user groups on the roads’ many curves.

The addition of two traffic-calming medians within the first mile of Park Road would result in long-term benefits to the overall visitor experience by slowing traffic in this area and improving safety for both drivers and recreationalists. While residents utilizing the park roads on their daily commute may need to adjust to the traffic-calming medians, they would encourage drivers to follow the speed limit thereby improving safety and reducing traffic violations, which would result in a long-term benefit. Additional benefits would result from increased NPS road maintenance activities and compliance with appropriate Federal Highway Administration safety recommendations.

Impacts to tourism and recreational use would be minimized using applicable mitigation measures as discussed under the corresponding Alternative B analysis.

7.2.10.3.7 Public Health and Safety and Shoreline Protection

As stated under the analysis for Alternative B, for this project type, public health and safety and shoreline protection impacts were analyzed adequately within the Phase IIIERP/PEIS. For the proposed project, the impacts would be consistent with the Final Phase III ERP/PEIS analysis. No hazardous waste would be created during the installation of a traffic control gate at the intersection of Knapp and VFW Roads and traffic-calming medians along the first mile of Park Road. All hazardous materials (e.g., diesel fuels) handled during construction would be contained and appropriate barriers would be in place to ensure the protection of adjacent water resources from potential spills and leaks. Personal protective equipment would be required, as appropriate, for all construction personnel and authorized access zones would be established, if needed, at the perimeter of the project site during construction. Signage would be posted and areas deemed unsafe for the public would be temporarily closed. As a result, short-term impacts to public health and safety during installation of traffic-calming medians and a traffic control gate would be minor.

Gated closures of VFW Road during high recreational use times would reduce the amount of motorized traffic on Park Road between VFW Road and U.S. Route 90 during these peak times. While pedestrians, bicyclists, and motorists would continue to share the road surface, these timed closures would reduce motorized traffic in one of the most highly congested areas of the park during peak recreational use times. This reduction would result in long-term beneficial impacts to public health and safety for pedestrians, bicyclists, and other visitors utilizing the park for recreational purposes at those times. However, pedestrian, bicyclists, and motorists would still share the road surface at all times and there would be adverse impacts to public health and safety depending on the time of day, location within the park, and level of congestion between the various user groups. Minor to moderate adverse impacts to visitors utilizing the park roads on foot or bicycle would result from the increased risks associated with sharing the road with vehicular traffic. For visitors/local residents who utilize the park roads as a commuter route, adverse impacts would result from the increased risk associated with passing these user groups on the roads’ many curves.
Emergency response vehicles would have the ability to open the gate if use of VFW Road allowed for a faster response route during an emergency. Because of this emergency accessibility, indirect impacts to public health and safety within the neighboring residential areas during closures would be minor and adverse.

The addition of two traffic-calming medians within the first mile of Park Road and a reduction in the speed limit throughout the park would result in long-term benefits to overall public health and safety by slowing traffic and improving safety for both drivers and recreationalists. Additional benefits to public health and safety would result from increased NPS road maintenance activities and compliance with appropriate Federal Highway Administration safety recommendations.

### 7.2.10.3.8 Summary of Impacts to the Human Uses and Socioeconomics

Impacts to the human uses and socioeconomics from implementation of Alternative C of the Bike and Pedestrian Use Enhancements at Davis Bayou Project would include:

- Short-term impacts to socioeconomics and environmental justice would be slight and beneficial as a result of the addition of temporary jobs in the area during construction;
- While the project has the potential to cause a loss of important cultural resource information, appropriate implementation of mitigations developed in consultation with the Mississippi SHPO would ensure that any adverse impacts to cultural resources under Alternative C would not exceed a minor degree of intensity;
- Short-term adverse impacts to roadway infrastructure would be minor as a result of slowing traffic speeds around the traffic-calming medians along Park Road. Long-term beneficial impacts to roadway infrastructure would result from a reduction of motor vehicle traffic resulting from timed closures at VFW Road. These impacts would be minor depending on the timing of closures and the volume of traffic being directed elsewhere. No impacts to public utilities are expected under this alternative;
- There would be no impacts to land and marine management because there would be no changes to the current land use at the project site or the adjoining shoreline areas;
- Long-term impacts to the aesthetics and visual resources within the Davis Bayou Area would be beneficial as a result of a reduction in the visual presence and noise of vehicular traffic along the park roads during timed closures;
- Short-term impacts to tourism and recreational use of the Davis Bayou Area would be moderate and adverse as a result of the temporary inconvenience from noise, the visual disturbance of heavy equipment, and temporary closures during construction. Long-term impacts to tourism and recreational use of the Davis Bayou Area would be beneficial for pedestrians, bicyclists, and other visitors utilizing the park for recreational purposes during timed closures as a result of a decrease in vehicular traffic. Long-term benefits would also result from improved safety resulting from the installation of two traffic-calming medians along Park Road. Short-term, moderate, adverse impacts to residents utilizing Park Road as a commuter route would result from timed closures of VFW Road until residents adjusted to the change and found an alternate travel route. Long-term impacts would be minor and adverse. Minor to moderate adverse
impacts to recreational users utilizing the park roads on foot or bicycle would result from increased risks associated with sharing the road with vehicular traffic, impacts to the viewshed and natural soundscape resulting from traffic, and insecurity resulting from the proximity of vehicular traffic. For visitors/local residents who utilize the park roads as a commuter route, adverse impacts would result from the need to reduce driving speeds during heavy bicycle-pedestrian congestion and the increased risk associated with passing these user groups on the roads’ many curves;

- Short-term impacts to public health and safety would be minor during construction as a result of protection measures put in place to protect construction personnel and the public. Long-term impacts to public health and safety would be beneficial because of a reduction in motorized traffic during closures of VFW Road. Minor to moderate adverse impacts to visitors utilizing the park roads on foot or bicycle would result from the increased risks associated with continuing to share the road with vehicular traffic. For visitors/local residents who utilize the park roads as a commuter route, adverse impacts would result from the increased risk associated with passing these user groups on the roads’ many curves.

7.2.11 Cumulative Impacts

As discussed in Chapter 4, the CEQ regulations to implement NEPA require the assessment of cumulative impacts in the decision-making process for federal projects, plans, and programs. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 C.F.R. §1508.7).

The Bike and Pedestrian Use Enhancement Project cumulative impacts analysis tiers from the Phase III ERP/PEIS analysis of the Alternative “Contribute to Providing and Enhancing Recreational Opportunities.” That analysis included an evaluation of the type of restoration activity proposed for the Bike and Pedestrian Use Enhancement project. The Final Phase III ERP/PEIS identified nine major action categories, as well as examples of past, present, and reasonably foreseeable future actions in the study area. The categories of potentially relevant past, present, and reasonably foreseeable future actions included: Restoration related to the Spill, other relevant environmental stewardship and restoration activities, military operations, marine transportation, energy activities, marine mineral mining, including sand and gravel mining, coastal development and land use, fisheries and aquaculture, and tourism and recreation.

The Phase III ERP/PEIS analysis of cumulative impacts relevant to the proposed project is incorporated by reference into the following cumulative impacts analysis for the Bike and Pedestrian Use Enhancement project. The following analysis focuses on the cumulative impacts of other past, present, and reasonably foreseeable future actions not already analyzed in the Phase III ERP/PEIS and the Bike and Pedestrian Use Enhancement project itself. The contribution that the proposed project makes to the cumulative impacts is then stated.
7.2.11.1 Site Specific Review and Analysis of Cumulative Impacts

This section describes past, present, and reasonably foreseeable future actions that were not discussed in the Phase III ERP/PEIS, but which are relevant to identifying any cumulative impacts that the proposed Bike and Pedestrian Use Enhancement Project could contribute to on a local scale. Context and intensity, terms defined in Appendix D, are used in the analysis.

For the Bike and Pedestrian Use Enhancement project, specifically, the relevant affected resources analyzed in this EA are:

- Geology and Substrates
- Hydrology, Water Quality, and Floodplains
- Air Quality and Greenhouse Gas Emissions
- Noise
- Living Coastal and Marine Resources
- Protected Species
- Socioeconomics and Environmental Justice
- Cultural Resources
- Infrastructure
- Land and Marine Management
- Aesthetics and Visual Resources
- Tourism and Recreational Use
- Public Health and Safety and Shoreline Protection

Past, present and reasonably foreseeable future actions not analyzed in the Phase III ERP/PEIS local action types were identified through conversations with Seashore staff and searching websites relevant to the project. Actions that would be relevant to the Bike and Pedestrian Use Enhancement Project cumulative impacts analysis are defined here as those with similar timing or location, and that affect similar resources. The site-specific area is defined as the study area corridor in the Davis Bayou Area; however, this cumulative impacts analysis includes areas adjacent to the Davis Bayou Area, where appropriate. Websites searched include:

- [http://www.nfwf.org/whoweare/mediacenter/pr/Pages/gulf-main-pr-14-1117.aspx](http://www.nfwf.org/whoweare/mediacenter/pr/Pages/gulf-main-pr-14-1117.aspx)

This search, in addition to conversation with Seashore staff, resulted in the following three actions that are relevant to the Bike and Pedestrian Use Enhancement Project cumulative impacts analysis.
Table 7-8. Description of past, present, and reasonably foreseeable future actions not identified in the PEIS

<table>
<thead>
<tr>
<th>Category/Projects</th>
<th>Project Description</th>
<th>Key Resource Areas with Potential for Cumulative Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General Management and Resource Management Plans at Gulf Islands National Seashore</td>
<td>These management plans structure operations and management of the national seashore and its resources. These plans include, for example, the Fire Management Plan and the General Management Plan. Each plan prescribes ongoing management actions and the implementation of discreet projects.</td>
<td>• Geology and substrates • Hydrology, water quality, and floodplains • Noise • Protected Species • Tourism and Recreational Use • Cultural Resources • Air quality and greenhouse gas emissions • Living coastal and marine resources • Protected species • Socioeconomic and environmental justice • Land and marine management • Aesthetics and visual resources • Public health and safety and shoreline protection</td>
</tr>
<tr>
<td>2. Expansion of facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi</td>
<td>Access to the campus is only available via Park Road. The new facilities and programs are expected to increase vehicular traffic along Park Road and bring more visitors to the Davis Bayou Area.</td>
<td>• Geology and substrates • Noise • Protected Species • Hydrology, water quality, and floodplains • Living coastal and marine resources • Aesthetics and visual resources • Infrastructure • Tourism and Recreational Use • Socioeconomic and environmental justice</td>
</tr>
<tr>
<td>3. Utility Infrastructure Improvements</td>
<td>The national seashore anticipates the installation of fiber optic utility lines in the near future. The electrical company is planning to replace the electrical utility lines along Park Road within the foreseeable future. Both of these utility lines would be buried.</td>
<td>• Geology and substrates • Noise • Tourism and Recreational Use • Aesthetics and visual resources • Infrastructure</td>
</tr>
</tbody>
</table>

Other Phase IV Restoration Projects are not anticipated to represent cumulative actions with respect to this project.

7.2.11.1.1 Geology and Substrates

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.1.1 Geology and Substrates, Table 6-4. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to geology and substrates would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts to geology and
substrates in localized areas. Those types of projects were not expected to contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified cumulative impacts that could occur under each of the alternatives (A, B, and C) considered for the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Impacts on geology and substrates which would result from recreational improvements and other planning efforts within the Davis Bayou Area of the national seashore. Natural resource management plans within the national seashore would alter conditions during implementation from increased erosion and displacement of soil, which could result in short-term adverse impacts ranging from minor to moderate depending on the action. However, over the long-term these plans protect natural resources, which would result in long-term benefits to geology and substrates. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi, which would result in short-term minor, adverse impacts to geology and substrates in the vicinity of the Davis Bayou Area from increased erosion and displacement of soil during construction. 3) Installation of new utilities along Park Road, which would result in short-term minor, adverse impacts to geology and substrates in the Davis Bayou Area during construction that may displace soil or require soil removal and fill placement.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have minor adverse impacts on geology and substrates. Alternative A carried out in conjunction with the other plans and actions discussed in Table 7-8 has the potential to result in short-term minor to moderate adverse impacts and long-term beneficial cumulative impacts to geology and substrates discussed above. Alternative A would not be expected to contribute substantially to these cumulative adverse impacts.

Under Alternative B, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have a minor to moderate, adverse, and short- to long-term impact on geology and substrates. Alternative B carried out in conjunction with other plans and actions discussed above has the potential to result in some short-term minor to moderate adverse, long-term minor adverse, and long term beneficial cumulative impacts to geology and substrates. Alternative B would have a small contribution to these cumulative adverse impacts.

Under Alternative C, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have short-term, minor, and adverse impacts on geology and substrates. Alternative C carried out in conjunction with the other plans and actions discussed above has the potential to result in short-term minor to moderate adverse impacts and long-term beneficial cumulative impacts to geology and substrates. Alternative C would not be expected to contribute substantially to these cumulative adverse impacts.
7.2.11.1.2 Hydrology, Water Quality, and Floodplains

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.1.2 Geology and Substrates, Table 6-5. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts on hydrology and water quality would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts on water quality in localized areas. Those types of projects were not expected to contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified two actions as being potentially relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Cumulative impacts on hydrology, water quality, and floodplains which would result from management plans within the Davis Bayou Area of the national seashore, including the General Management Plan, the Fire Management Plan and Invasive Species Management Plan. These plans involve the use of chemical controls, which have the potential to enter the water bodies within the park in the case of mishandling of chemicals or an actual fire requiring retardants. These chemicals could have short- or long-term impacts on water quality depending on the flush-time of the water body. However, with best management practices in place these impacts are expected to be minor. The variety of improvements proposed under the 2013 Gulf Islands National Seashore General Management Plan, could have a moderate, long-term, beneficial impact on water quality within the Davis Bayou Area by decreasing erosion and the potential for pollutants to enter water bodies within the park. Implementation of other natural resource management plans within the national seashore, including the fire management plan and the invasive species management plan, have the potential to alter surface and ground water quality as well as floodplain function due to increased sedimentation from erosion and displacement of soils during implementation. However, over the long-term proposed actions under these plans have been developed to protect the overall ecosystem, which would result in long-term benefits to hydrology, water quality, and floodplains. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi, which would result in short-term and adverse impacts on hydrology, water quality, and possibly floodplains of the Davis Bayou Area due to increased sedimentation in the water bodies from erosion during construction. However, with best management practices in place, these impacts are expected to be minor.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in no impacts on the hydrology, water quality, or floodplains. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor short- to long-term adverse and long-term beneficial cumulative impacts on hydrology, water quality, and floodplains. Alternative A would not be expected to contribute substantially to cumulative adverse impacts.
Under Alternative B of the Bike and Pedestrian Use Enhancements at Davis Bayou project, impacts on groundwater hydrology would be moderate long-term adverse and also long-term beneficial; impacts on surface and groundwater water quality would be minor and adverse, but temporary and also long-term beneficial; and impacts on the natural functioning of the floodplain would be minor and adverse. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor short- to long-term adverse and long-term beneficial impacts on surface and groundwater water quality and the natural functioning of the floodplain. Alternative B would have a small contribution to cumulative adverse impacts.

Under Alternative C of the Bike and Pedestrian Use Enhancements at Davis Bayou project, impacts on groundwater hydrology are not likely; impacts on surface and groundwater water quality would be minor and adverse, but temporary; and impacts on the natural functioning of the floodplain would be minor and adverse. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor short- to long-term adverse and long-term beneficial impacts on surface and groundwater water quality and the natural functioning of the floodplain. Alternative C would not be expected to contribute substantially to cumulative adverse impacts.

7.2.11.1.3 Air Quality and Greenhouse Gases

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.1.3 Air Quality, Table 6-4. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to air quality and greenhouse gas emissions would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts to air quality and greenhouse gas emissions in localized areas. Those types of projects were not expected to contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified three actions as being potentially relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Cumulative impacts on air quality and greenhouse gases which would result from recreational improvements and other planning efforts within the Davis Bayou Area of the national seashore. Natural resource management plans within the national seashore would alter conditions, with short-term adverse impacts to air quality and greenhouse gas emissions from the use of mechanized equipment during implementation. However, over the long-term these plans all follow NPS management directives to protect air quality, which would result in long-term benefits. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi, which would increase vehicular traffic along Park Road, increasing emissions in the area and resulting in minor, long-term, and adverse impacts. 3) Installation of new utilities along Park Road, which
would result in short-term minor, adverse impacts from equipment emissions in the Davis Bayou Area
during construction.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have
long-term adverse impacts on air quality and greenhouse gas emissions. Alternative A carried out in
conjunction with other plans and actions within and around the Davis Bayou Area has the potential to
result in short- and long-term minor adverse and long-term beneficial cumulative impacts to air quality
and greenhouse gas emissions. Alternative A would not be expected to contribute substantially to
cumulative adverse impacts.

Under Alternative B, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have a
slight, adverse, and short-term impact on air quality and greenhouse gas emissions. Alternative B carried
out in conjunction with other plans and actions within and around the Davis Bayou Area has the
potential to result in minor short- and long-term adverse and long-term beneficial cumulative impacts to
air quality and greenhouse gas emissions. Alternative B would not be expected to contribute
substantially to cumulative adverse impacts.

Under Alternative C, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have
minor, adverse, and short-term impacts on air quality and greenhouse gas emissions. Alternative C
carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the
potential to result in minor short- and long-term adverse and long-term beneficial cumulative impacts to
air quality and greenhouse gas emissions. Alternative C would not be expected to contribute
substantially to cumulative adverse impacts.

7.2.11.1.4 Noise

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.1.4 Noise, Table 6-4. As stated there,
when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in
combination with other past, present, and reasonably foreseeable future actions, short and long-term
cumulative adverse impacts to noise would likely occur. However, those types of projects carried out in
conjunction with other environmental stewardship and restoration efforts have the potential to result in
some long-term beneficial cumulative impacts to noise in localized areas. Those types of projects were
not expected to contribute substantially to cumulative adverse impacts. In this manner, the Bike and
Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of
the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified three actions as being potentially relevant to the Bike and
Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS
due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8
above, include: 1) Cumulative impacts on noise which would result from an increase in noise associated
with implementation of recreational improvements, resource management, and other planning efforts
within the Davis Bayou Area of the national seashore. Implementation of these actions would result in
short-term adverse impacts on noise from the use of mechanized machinery during implementation.
However, over the long-term these plans all follow NPS management directives to protect natural
soundscapes, which would result in long-term benefits. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi, which would increase vehicular traffic along Park Road increasing noise in the area and resulting in minor, long-term, and adverse impacts. 3) Installation of new utilities along Park Road, which would result in short-term minor, adverse impacts from increased noise and the possibility for intrusive sounds in the Davis Bayou Area during construction.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have long-term, minor, and adverse impacts on noise. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor short- and long-term adverse and long-term beneficial cumulative impacts to noise. Alternative A would not be expected to contribute substantially to cumulative adverse impacts.

Under Alternative B, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have a minor to moderate, adverse, and short-term impact on noise. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor to moderate short- and long-term adverse and long-term beneficial cumulative impacts to noise. Alternative B would have a small contribution to cumulative adverse impacts.

Under Alternative C, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have short-term, minor, and adverse impacts on noise. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor short- and long-term adverse and long-term beneficial cumulative impacts to geology and substrates. Alternative C would not be expected to contribute substantially to cumulative adverse impacts.

7.2.11.1.5 Living Coastal and Marine Resources

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.2.2 Living Coastal and Marine Resources, Table 6-9. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to living coastal and marine resources would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts to living coastal and marine resources, primarily as a result of increased education and awareness of resources and reef development. Those types of projects were not expected to contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified two actions as being potentially relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Cumulative impacts to living coastal and marine resources which would result from recreational improvements and other planning efforts within the Davis Bayou Area of the national
seashore. The variety of biological management, resource protection actions, and enhanced scientific study and research proposed under the 2013 Gulf Islands National Seashore General Management Plan would increase awareness and management of these resources, which would increase protection and have a moderate, long-term, beneficial impact on the living coastal and marine resources in the project area. Implementation of other natural resource management plans within the national seashore, including the fire management plan and the invasive species management plan, would alter conditions, with short-term minor adverse impacts from ground disturbance during implementation. However, over the long-term, actions proposed under these plans protect natural habitats and species diversity and thereby improve vegetation and wildlife habitat, which would result in long-term benefits to living coastal and marine resources. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi, which would increase visitor use in the Davis Bayou Area and would increase vehicular traffic along Park Road. During these times of increased use and traffic, impacts to living coastal and marine resources could be minor and adverse depending on the time of day, time of year, and the level of congestion.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in extremely small long-term adverse impacts to the living coastal and marine resources. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor short-term adverse and long-term beneficial cumulative impacts to living coastal and marine resources. Alternative A would not be expected to contribute substantially to cumulative adverse impacts.

Under Alternative B, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in short- and long-term, minor, and adverse impacts to living coastal and marine resources. There would be long-term beneficial impacts to wetlands and EFH from mitigation projects. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor short- and long-term adverse and long-term beneficial cumulative impacts to living coastal and marine resources. Alternative B would have a small contribution to cumulative adverse impacts.

Under Alternative C, impacts from the Bike and Pedestrian Use Enhancements at Davis Bayou project would be short- and long-term, direct and indirect, minor, and adverse. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some short- and long-term minor adverse and long-term beneficial cumulative impacts to living coastal and marine resources. Alternative C would not be expected to contribute substantially to cumulative adverse impacts.

7.2.11.1.6 Protected Species

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.2.1 Habitats, Table 6-8. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to habitat would likely occur. However, those types of projects carried out
in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts to habitat in localized areas. Those types of projects were not expected to contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified two actions as being potentially relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Cumulative impacts to protected species, which would result from recreational improvements and other planning efforts within the Davis Bayou Area of the national seashore. The variety of biological management, resource protection actions, and enhanced scientific study and research proposed under the 2013 *Gulf Islands National Seashore General Management Plan* would increase awareness of and protection for protected species and thereby have a moderate, long-term, beneficial impact on protected species in the area. Implementation of other natural resource management plans within the national seashore, including the fire management plan and the invasive species management plan, would alter conditions, with short-term adverse impacts on protected species resulting from ground disturbance and the use of mechanized equipment during implementation. However, over the long-term actions proposed under these plans protect natural habitats and species diversity and thereby improve vegetation and wildlife habitat, which would result in long-term benefits to protected species. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi would disturb nearby habitat, increase visitor use and potential disturbance to protected species in the Davis Bayou Area, and would increase vehicular traffic along Park Road. During these times of increased use and traffic, there is the potential for increased collisions or interactions with protected species and over the long-term impacts could be minor and adverse depending on the time of day, time of year, and the level of congestion.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in extremely small long-term adverse impacts to protected species. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor, short- and long-term adverse and long-term beneficial cumulative impacts to protected species. Alternative A would not be expected to contribute substantially to cumulative adverse impacts.

Under Alternative B, impacts from the Bike and Pedestrian Use Enhancements at Davis Bayou project to protected species would be short- and long-term, minor, and adverse. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor, short- and long-term adverse and long-term beneficial cumulative impacts to protected species. Alternative B would not be expected to contribute substantially to cumulative adverse impacts.

Under Alternative C, impacts from the Bike and Pedestrian Use Enhancements at Davis Bayou project would be short- and long-term, direct and indirect, minor, and adverse. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to
result in some minor, short- and long-term adverse and long-term beneficial cumulative impacts to protected species. Alternative C would not be expected to contribute substantially to cumulative adverse impacts.

### 7.2.11.1.7 Socioeconomics and Environmental Justice

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.3.1 Socioeconomics and Environmental Justice, Table 6-4. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to socioeconomics and environmental justice would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts to noise in localized areas. Those types of projects were not expected to contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified three actions as being potentially relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Cumulative impacts on socioeconomics and environmental justice, which would result from recreational improvements and other planning efforts within the Davis Bayou Area of the national seashore. The variety of recreational opportunities and planning projects proposed under the 2013 *Gulf Islands National Seashore General Management Plan*, along with increased spending for improvements and increased visitor use, could boost the local economy and have a moderate, long-term, beneficial impact on socioeconomics and environmental justice. Implementation of other natural resource management plans within the national seashore would alter conditions, with short-term adverse impacts to socioeconomics and environmental justice if areas are closed or restricted. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi, which would increase vehicular traffic along Park Road resulting in minor, short-term, and beneficial impacts to socioeconomics and environmental justice from construction spending. 3) Installation of new utilities along Park Road, which would result in short-term minor, beneficial impacts from increased construction spending in the Davis Bayou Area.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would have no impacts to socioeconomics and environmental justice. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor, short-term adverse and short and long-term beneficial cumulative impacts to socioeconomics and environmental justice. Alternative A would not be expected to contribute substantially to cumulative adverse impacts.

Under Alternative B, there would be slight short- and long-term beneficial impacts to socioeconomics and environmental justice. Alternative B carried out in conjunction with other plans and actions within
and around the Davis Bayou Area has the potential to result in minor, short-term adverse and short- and long-term beneficial cumulative impacts to socioeconomics and environmental justice. Alternative B would have a small contribution to cumulative adverse impacts.

Under Alternative C, there would be slight, short-term, beneficial impacts on socioeconomics and environmental justice. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor, short-term adverse, and short- and long-term beneficial cumulative impacts to socioeconomics and environmental justice. Alternative C would not be expected to contribute substantially to cumulative adverse impacts.

### 7.2.11.1.8 Cultural Resources

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.3.2 Cultural Resources, Table 6-11. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, those types of projects are not expected to contribute substantially to short-term or long-term adverse or beneficial cumulative impacts to cultural resources. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified three actions as being potentially relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts organized by the action mentioned in Table 7-8 above include: 1) Cumulative impacts on cultural resources would result from implementation of plans and projects within the Davis Bayou Area of the national seashore. The establishment of a cultural resources management program proposed under the 2013 Gulf Islands National Seashore General Management Plan is expected to result in identification and documentation of additional cultural resources within the national seashore, as well as development of preservation strategies. This would increase protection of these resources and result in a moderate, long-term beneficial impact. 2) Proposed expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi and installation of new utilities along Park Road would each include archeological surveys or monitoring, as appropriate, preceding all ground disturbing activities. Because archeological resources would be identified and avoided to the greatest extent possible during construction, and because appropriate mitigation measures would be implemented by the National Park Service if necessary, any adverse impacts to archeological resources associated with these two future projects would be no more than minor.

Under alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in no impacts to cultural resources. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in both minor adverse and long-term beneficial cumulative impacts to cultural resources. Alternative A would not contribute to these cumulative impacts.
Under alternative B, adverse impacts to cultural resources may occur under the Bike and Pedestrian Use Enhancements at Davis Bayou project because known archeological resources would be disturbed during construction activities. However, any substantial loss of important cultural information potential and/or encounters with previously undiscovered resources would be subject to established mitigation measures to ensure that adverse impacts are no greater than minor. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in both minor adverse and long-term beneficial cumulative impacts to cultural resources. Alternative B would not contribute substantially to these cumulative impacts.

Under alternative C, adverse impacts to cultural resources may occur under the Bike and Pedestrian Use Enhancements at Davis Bayou project because known archeological resources would be disturbed during construction activities. However, any substantial loss of important cultural information potential and/or encounters with previously undiscovered resources would be subject to established mitigation measures to ensure that adverse impacts are no greater than minor. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in both minor adverse and long-term beneficial cumulative impacts to cultural resources. Alternative C would not contribute substantially to these cumulative impacts.

7.2.11.1.9 Infrastructure

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.3.3 Infrastructure, Table 6-12. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, those types of projects would not be expected to result in a substantial incremental contribution to cumulative adverse impacts to infrastructure, though infrastructure would likely be affected by ongoing and future activities requiring future investment. Those types of projects may contribute to some long-term beneficial cumulative impacts to water quality in localized areas. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified two actions as being potentially relevant to infrastructure under the Bike and Pedestrian Use Enhancements at Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 2) Cumulative impacts on infrastructure which would result from an expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi, which would increase vehicular traffic along Park Road. Depending on the amount of increased traffic, the increased wear and tear would result in long-term, minor to moderate adverse impacts to the roadways along the portion of Park Road between U.S. Route 90 and the lab entrance. 3) Installation of new utilities along Park Road could result in a temporary disturbance to services and/or changes to the roadway surface from installation. These actions would result in short-term minor, adverse impacts to public utilities within the Davis Bayou area during construction. However, improved public utilities would result in long-term beneficial impacts to infrastructure.
Under Alternative A, continued use of infrastructure would result in long-term, minor adverse impacts. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor short-term adverse, minor to moderate long-term adverse, and long-term beneficial cumulative impacts to infrastructure. Alternative A would not be expected to contribute substantially to adverse cumulative impacts.

Under Alternative B, there would be short-term, minor to moderate adverse impacts to roadways and public utilities and long-term beneficial impacts to infrastructure. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some minor to moderate short- and long-term adverse and long-term beneficial cumulative impacts to infrastructure. Alternative B would have a large contribution to both the short-term adverse and the long-term beneficial cumulative impacts.

Under Alternative C, there would be long-term, beneficial impacts to roadways and no impacts to public utilities. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor short-term adverse, minor to moderate long-term adverse, and long-term beneficial impacts to infrastructure. Depending on the timing of congestion associated with the Gulf Coast Research Laboratory and that of timed closures of VFW Road, there is the potential for increased long-term adverse impacts to infrastructure both inside the national seashore and immediately outside as a result of increased congestion. Alternative C would have a small contribution to both the short-term adverse and the long-term beneficial cumulative impacts.

7.2.11.1.10 Land and Marine Management

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.3.4 Land and Marine Management, Table 6-13. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, those types of projects would not contribute substantially to short-term or long-term cumulative adverse impacts to land and marine management. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts may result in long-term beneficial cumulative impacts to land and marine management in the Gulf Coast region because of the potential for synergistic effects of those project types with these other environmental stewardship and restoration activities leading to the alignment of management goals and assistance provided to management and staff to best manage properties from restoration, conservation and recovery efforts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified one action as being potentially relevant to the Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-7 above, include: 1) Cumulative impacts on land and marine management would result from recreational improvements and other planning efforts within the Davis Bayou Area of the national seashore. The decision, under the 2013 Gulf Islands National Seashore General Management Plan, not to maintain the recreational playing fields within the Davis
Bayou Area could have a slight impact on land management of this portion of the national seashore, but because the area would still be used for recreational purposes, overall there would be no changes to the land use of the area. Other natural resource management plans within the national seashore would not impact land and marine management.

No changes would occur to the current land use at the project site or the adjoining shoreline areas under any of the proposed alternatives for the Bike and Pedestrian Use Enhancements at Davis Bayou project. The area would remain zoned for diverse visitor opportunities and land use and management authority at the Davis Bayou Area would remain under the purview of the national seashore. Thus, no impacts would occur to land and marine management under Alternatives A, B, or C. Alternatives A, B, and C carried out in conjunction with other plans and actions within and around the Davis Bayou Area would not result in impacts to land and marine.

Based on these findings, the Bike and Pedestrian Use Enhancements at Davis Bayou project is not expected to contribute substantially to cumulative impacts to land and marine management.

### 7.2.11.1.11 Aesthetics and Visual Resources

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.3.8 Aesthetics and Visual Resources, Table 6-17. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to aesthetics and visual resources would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts to aesthetics and visual resources in localized areas. Those types of projects would not contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified three actions as being potentially relevant to the Bike and Pedestrian Use Enhancements at Davis Bayou project due to their localized nature. 1) Cumulative impacts on aesthetics and visual resources, which would result from implementation of plans and projects within the Davis Bayou Area of the national seashore. The 2013 Gulf Islands National Seashore General Management Plan, as well as natural resource management plans (invasive plant management and fire management plans), are expected to result in improved natural habitats within the national seashore, which would be considered aesthetically pleasing and would constitute a long-term, beneficial impact on aesthetics and visual resources. 2) Proposed expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi could increase traffic congestion within the national seashore. The presence of increased traffic would result in a long-term, minor, adverse impact to aesthetics and visual resources. 3) Installation of new utilities along Park Road would involve the temporary presence of construction crews and machinery, a short-term, minor adverse impact to aesthetics and visual resources.
Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in long-term minor adverse impact to aesthetics and visual resources. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in short- and long-term minor adverse, and long-term beneficial cumulative impacts to aesthetics and visual resources. Alternative A would have a small contribution to cumulative adverse impacts.

Under Alternative B, both short- and long-term, minor adverse impacts to aesthetics and visual resources would result from the Bike and Pedestrian Use Enhancements at Davis Bayou project. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in short- and long-term minor adverse, and long-term impacts to aesthetics and visual resources. Alternative B would have a small contribution to cumulative adverse impacts.

Under Alternative C, minimal adverse impacts would occur along with long-term, beneficial impacts from the Bike and Pedestrian Use Enhancements at Davis Bayou project. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in short- and long-term minor adverse, and long-term beneficial cumulative impacts to aesthetics and visual resources. Alternative C would have a small contribution to both the adverse and beneficial cumulative impacts.

7.2.11.1.12 Tourism and Recreational Use

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.3.5 Tourism and Recreational Use, Table 6-14. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to tourism and recreational use would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term beneficial cumulative impacts to tourism and recreational use in localized areas. Those types of projects would not contribute substantially to cumulative adverse impacts. In this manner, the Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified three actions as being potentially relevant to the Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Cumulative impacts on tourism and recreational use, which would result from recreational improvements and other planning efforts within the Davis Bayou Area of the national seashore. The variety of recreational opportunities proposed under the 2013 Gulf Islands National Seashore General Management Plan, along with an increased emphasis and number of facilities to support the education, interpretation, and stewardship activities for visitors could have a moderate, long-term, beneficial impact on the visitor experience. Other natural resource management plans within the national seashore would alter conditions, with short-term adverse impacts on visitor experience during implementation due to temporary closures or
disruptions. However, over the long-term these plans protect natural habitats and species diversity and thereby improve opportunities for wildlife observation and aesthetic resources, which would result in long-term benefits to tourism and recreational use. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi would increase vehicular traffic along Park Road. During these times of increased traffic, long-term impacts to tourism and recreational use could be moderate and adverse depending on the time of day, time of year, and the level of congestion. The increased access and availability of these programs for visitors to the Davis Bayou Area of the national seashore would result in long-term beneficial impacts. 3) Installation of new utilities along Park Road would result in short-term minor, adverse impacts to tourism and recreational use of the Davis Bayou Area during construction. However, improved utility infrastructure would result in long-term beneficial impacts to visitors.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in long-term, minor to moderate adverse impacts. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor short-term and up to moderate long-term adverse and long-term beneficial cumulative impacts to tourism and recreational use. Alternative A would have a small contribution to cumulative adverse impacts.

Under Alternative B, impacts to tourism and recreational use would be short-term, moderate and adverse during construction and beneficial over the long term from the Bike and Pedestrian Use Enhancements at Davis Bayou project. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor to moderate short- and long-term adverse and long-term beneficial cumulative impacts to tourism and recreational use. Alternative B would have a large contribution to both short-term adverse and long-term beneficial cumulative impacts.

Under Alternative C, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in short- and long-term, minor to moderate adverse impacts with some long-term benefits. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in minor to moderate short- and long-term adverse and long-term beneficial impacts, and some substantial long-term adverse cumulative impacts to tourism and recreational use depending on whether peak congestion to the Gulf Coast Research Laboratory coincided with timed closures of VFW Road. Alternative C would have a small contribution to both short-term adverse and long-term beneficial cumulative impacts.

7.2.11.1.13 Public Health and Safety and Shoreline Protection

This analysis tiers from the Final Phase III ERP/PEIS, Section 6.8.4.3.9 Public Health and Safety, Including Flood and Shoreline Protection, Table 6-18. As stated there, when projects that ‘Contribute to Providing and Enhancing Recreational Opportunities’ were analyzed in combination with other past, present, and reasonably foreseeable future actions, short and long-term cumulative adverse impacts to public health and safety would likely occur. However, those types of projects carried out in conjunction with other environmental stewardship and restoration efforts have the potential to result in some long-term
beneficial cumulative impacts to public health and safety in localized areas. Those types of projects would not contribute substantially to cumulative adverse impacts. The Bike and Pedestrian Use Enhancements at Davis Bayou project is anticipated to fall within the expected range of the Final Phase III ERP/PEIS cumulative impacts.

On a local scale, this analysis identified three actions as being potentially relevant to the Davis Bayou project that were not identified in the Phase III ERP/PEIS due to their localized nature. These cumulative impacts, organized by the action mentioned in Table 7-8 above, include: 1) Cumulative impacts on public health and safety which would result from improvements and other planning efforts within the Davis Bayou Area of the national seashore. Natural resource management plans and visitor-based improvements proposed under the 2013 Gulf Islands National Seashore General Management Plan would have a long-term beneficial impact on public health and safety by improving facilities and providing for safe management of resources. 2) An expansion of the facilities and programs at the Gulf Coast Research Laboratory of the University of Southern Mississippi would increase vehicular traffic along Park Road. During these times of increased traffic, impacts to public health and safety could be moderate and adverse depending on the time of day, time of year, and the level of congestion. 3) Installation of new utilities along Park Road would result in short-term adverse impacts to public health and safety during construction. However, these impacts would be minor in intensity due to implementation of safety precautions during construction.

Under Alternative A, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in long-term, minor to moderate adverse impacts. Alternative A carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in short- and long-term minor to moderate adverse and long-term beneficial cumulative impacts to public health and safety. Alternative A would have a fairly large contribution to cumulative adverse impacts.

Under Alternative B, impacts to public health and safety under the Bike and Pedestrian Use Enhancements at Davis Bayou project would be minor and adverse during construction and beneficial over the long term. Alternative B carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in short-and long-term minor to moderate adverse and long-term beneficial cumulative impacts to public health and safety. Alternative B would have a large contribution to cumulative beneficial impacts.

Under Alternative C, the Bike and Pedestrian Use Enhancements at Davis Bayou project would result in short- and long-term, minor to moderate adverse impacts with some long-term benefits. Alternative C carried out in conjunction with other plans and actions within and around the Davis Bayou Area has the potential to result in some substantial long-term adverse cumulative impacts to public health and safety depending on whether peak congestion to the Gulf Coast Research Laboratory coincided with timed closures of VFW Road. Collectively, cumulative impacts would be short- and long-term, minor to moderate adverse and long-term beneficial. Alternative C would have a small contribution to cumulative adverse impacts.
7.2.12 Summary and Next Steps

The proposed bicyclist and pedestrian use enhancements on Park Road (2.17 miles) and Robert McGhee Road (0.82 miles) in the Davis Bayou Area under either action alternative would improve the experience of bicyclists and pedestrians there. The Preferred Alternative (Alternative B) involves adding a multi-use lane on the sides of the road. Alternative C involves installing a traffic control gate at VFW and Knapp Road to restrict traffic through the park at different times of the day. Both action alternatives involve adding two traffic-calming structures in the median of Park Road. The existing condition (Alternative A) poses a safety risk to pedestrians and cyclists and does not meet the purpose and need of the project. This project is consistent with the ‘Contribute to Providing and Enhancing Recreational Opportunities’ Alternative in the Phase III ERP/PEIS for early restoration. Although this EA addresses the project as it would occur on both Park Road and McGhee Road, the Phase IV early restoration project funds only the Park Road portion.

The Draft NEPA analysis of the environmental consequences suggests that of the impacts caused by the project’s Preferred Alternative, most would be minor, adverse and short-term, some would be moderate, adverse and short-term, a few would be minor or moderate, adverse and long-term, and some – especially for Infrastructure, Tourism and Recreational Use, and Public Health and Safety – would be long-term and beneficial. No major adverse impacts are anticipated.

The Trustees have started coordination and reviews under the Historic Preservation Act and other federal statutes. Coordination and informal consultation under the ESA, MBTA, and BGEPA have been completed. The USFWS concurred that this project will have no effect to any species or critical habitat and that take of migratory birds and bald eagles will be avoided (USFWS 2015). The consultations for both ESA and MSFCMA are complete. For ESA compliance, NOAA determined that this project selected for implementation in Phase IV of the DWH Early Restoration Plan will have No Effect to listed species under the jurisdiction of National Marine Fisheries Service. For MSFCMA compliance, NOAA concurs that an adequate evaluation of potential project impacts to EFH supportive of a number of federally managed fishery species has been provided to NOAA (NOAA 2015a). In addition, sufficient information pertaining to the marsh-creation mitigation component of the project to ensure impacts to EFH would be adequately offset was provided. The Trustees have completed coordination and reviews with NOAA under the Marine Mammal Protection Act. Pursuant to the Coastal Zone Management Act of 1972, the Federal Trustees submitted their consistency determination for this project to the Mississippi DMR on May 21, 2015. The Mississippi DMR replied by letter dated June 29, 2015 with its determination that the proposed actions are consistent with the Mississippi Coastal Program. As noted in that response, additional consistency review may be required pursuant to federal regulations (see 15 C.F.R. Part 930) prior to project implementation, including as part of required federal and state permitting processes and authorizations in Mississippi, as may be applicable. A Section 106 of the National Historic Preservation Act review of this project is currently underway. If any historic properties are determined to be in the project’s area of potential effect, all adverse effects will be resolved prior to construction in that vicinity.

Additionally, a Floodplains Statement of Findings was prepared and has been approved by NPS management as required by Executive Order 11988 “Floodplain Management” and NPS Director’s Order
#77-2 and its Floodplain and Procedural Manual #77-2 (see Appendix E). Also, a Wetlands Statement of Findings was prepared and has been approved by NPS management as required by Executive Order 11900 “Protection of Wetlands” and NPS Director’s Order #77-1 (see Appendix E).

The Trustees considered public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Public comments and Trustee responses are found in Chapter 15.

7.3 References


Gulf Coast Research Laboratory. 2007. Diamondback Terrapin. The Center for Fisheries Research and Development of the University of Mississippi. Ocean Springs, MS. As accessed on 6 April 2015 at http://www.usm.edu/gcrl/publications/docs/diamondbackterrapin.full.pdf

Gulf of Mexico Fishery Management Council (GMFMC). 1998. “Generic Amendment for Addressing Essential Fish Habitat Requirements in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic, Stone Crab Fishery of the Gulf of Mexico, Spiny Lobster in the Gulf of Mexico and South Atlantic, and Coral and Coral Reefs of the Gulf of Mexico.”


