CHAPTER 12: PROPOSED PHASE III EARLY RESTORATION PROJECTS: FLORIDA

Introduction

In response to the *Deepwater Horizon* Oil Spill, the Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission have hosted, and continue to host, public meetings to inform the public about the NRDA process and, in particular, the Early Restoration process. As part of these meetings, the Florida Trustees have solicited, and continue to solicit, specific project ideas that could be implemented as part of the Early Restoration process. In addition to the public meetings, the Florida Trustees have also set up a website, http://www.deepwaterhorizonflorida.com, where members of the public can submit and view restoration project proposals. The Florida Trustees have compiled, and regularly update, a list of all project proposals received, which they have and will continue to consider when developing potential projects to be part of this and future Early Restoration efforts.

For the identification of potential Early Restoration projects, the Florida Trustees are only considering projects that occur within the limited geographic area of the 8-county panhandle region. This is the area in which boom was deployed and that was impacted by response and SCAT activities related to the Spill. In addition, DOI and NOAA identified potential projects utilizing screening considerations outlined in Chapter 7 focused on federal trust resources. Working from this structure, and as described in Chapter 2, the Trustees are proposing 30 projects in Florida, many of which have multiple components for Phase III of Early Restoration (see Table 12-1). The first two projects in the table are projects that would be implemented by the US Department of the Interior in Florida. All 30 projects meet the criteria outlined in the OPA regulations, the Framework Agreement, and additional screening considerations applied by NOAA and DOI (see Chapter 7), and are consistent with the goal of compensating the public for natural resource injuries and loss of associated services resulting from the Spill.

Within the remainder of this chapter, there is a subsection for each proposed Phase III project. Each project-specific subsection begins with a general description of the project and relevant background information, followed by: 1) a discussion of the project's consistency with project evaluation criteria; 2) a description of planned performance criteria, monitoring and maintenance; 3) a description of the type and quantity of Offsets BP would receive if the project is selected for implementation; and 4) information about estimated project costs.

Each of the proposed projects falls within proposed project types in the Trustees' programmatic action alternatives, identified and evaluated in previous sections of this document (Chapters 5 and 6). Following each project description is a project-specific environmental review, which provides information and analysis about anticipated environmental consequences of the proposed project. The Trustees have also undertaken project-specific environmental reviews to help ensure proposed project locations, methods, timing and other factors reasonably maximize project benefits, minimize potential adverse consequences, and otherwise address environmental compliance needs.

Environmental Justice, as defined in Executive Order 12898, was not identified as an issue during the scoping period for this Phase III ERP/EIS. Based on county-level data, none of the eight Florida counties[1] where Early Restoration projects are planned qualify as areas of minority population pursuant to the CEQ and EPA guidelines. That is, the minority population in the eight county area (both as a whole and on a county-by-county basis) does not exceed 50 percent, nor is any minority population in this area meaningfully greater than the minority population percentage in the state.

Likewise, there is little concern that the area qualifies as a low-income population. The possible exception is Franklin County, where as of 2012, 24 percent of the population lives below the poverty threshold, which is 10 percent greater than the state-wide average. The Trustees have not determined that this is a meaningful difference such that Franklin County should be considered an Environmental Justice area of concern for the purposes of this document. However, even if Franklin County was considered to be an Environmental Justice area of concern, the projects proposed in the area would not have a disproportionate adverse impact on the county's low-income population, as no high and adverse impact is expected to result from the proposed projects. As discussed below, the projects would be expected to have positive impacts on all county residents’ access to, and enjoyment of, area natural resources.

Table 12-1. Proposed Phase III Early Restoration projects in Florida.

			ALTERNATIVE 4											
			ALTERNATIVE 2									ALTERNATIVE 3		
	PROPOSED PROJECT	LOCATION	CREATE AND IMPROVE WETLANDS	PROTECT SHORELINES AND REDUCE EROSION	RESTORE BARRIER ISLANDS AND BEACHES	RESTORE AND PROTECT SUBMERGED AQUATIC VEGETATION	CONSERVE HABITAT	RESTORE OYSTERS	RESTORE AND PROTECT FINFISH	RESTORE AND PROTECT BIRDS	RESTORE AND PROTECT SEA TURTLES	ENHANCE PUBLIC ACCESS TO NATURAL RESOURCES FOR RECREATIONAL USE	ENHANCE RECREATIONAL EXPERIENCES	PROMOTE ENVIRONMENTAL AND CULTURAL STEWARDSHIP, EDUCATION, AND OUTREACH
1	Beach Enhancement Project at Gulf Island National Seashore	FL[1]											X	
2	Ferry Project at Gulf Islands National Seashore	FL[1]										X		
3	Florida Cat Point Living Shoreline Project	FL	X	X										
4	Florida Pensacola Bay Living Shoreline Project	FL2	X	X										
5	Florida Seagrass Recovery Project	FL				X								
6	Perdido Key State Park Beach Boardwalk Improvements	FL										X	X	
7	Big Lagoon State Park Boat Ramp Improvement	FL										X	X	

[1] Escambia, Santa Rosa, Okaloosa, Bay, Franklin, Wakulla, Gulf and Walton

			ALTERNATIVE 4											
			ALTERNATIVE 2									ALTERNATIVE 3		
	PROPOSED PROJECT	LOCATION	CREATE AND IMPROVE WETLANDS	PROTECT SHORELINES AND REDUCE EROSION	RESTORE BARRIER ISLANDS AND BEACHES	RESTORE AND PROTECT SUBMERGED AQUATIC VEGETATION	CONSERVE HABITAT	RESTORE OYSTERS	RESTORE AND PROTECT FINFISH	RESTORE AND PROTECT BIRDS	RESTORE AND PROTECT SEA TURTLES	ENHANCE PUBLIC ACCESS TO NATURAL RESOURCES FOR RECREATIONAL USE	ENHANCE RECREATIONAL EXPERIENCES	PROMOTE ENVIRONMENTAL AND CULTURAL STEWARDSHIP, EDUCATION, AND OUTREACH
8	Bob Sikes Pier Parking and Trail Restoration	FL										X	X	
9	Florida Artificial Reefs	FL										X	X	
10	Florida Fish Hatchery	FL										X	X	
11	Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle	FL										X	X	
12	Shell Point Beach Nourishment	FL											X	
13	Perdido Key Dune Restoration Project	FL			X									
14	Florida Oyster Cultch Placement Project	FL						X						
15	Strategically Provided Boat Access Along Florida's Gulf Coast	FL										X	X	
16	Walton County Boardwalks and Dune Crossovers	FL										X	X	
17	Gulf County Recreation Projects	FL										X	X	
18	Bald Point State Park Recreation Areas	FL										X	X	
19	Enhancements of Franklin County Parks and Boat Ramps	FL										X	X	X
20	Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements	FL										X	X	
21	Navarre Beach Park Gulfside Walkover Complex	FL										X	X	
22	Navarre Beach Park Coastal Access and Dune Restoration	FL										X	X	
23	Gulf Breeze Wayside Park Boat Ramp	FL										X	X	
24	Developing Enhanced Recreational Opportunities at the Excribano Point Portion of the Yellow River Wildlife Management	FL										X	X	X

	PROPOSED PROJECT	LOCATION	ALTERNATIVE 4											
			ALTERNATIVE 2									ALTERNATIVE 3		
			CREATE AND IMPROVE WETLANDS	PROTECT SHORELINES AND REDUCE EROSION	RESTORE BARRIER ISLANDS AND BEACHES	RESTORE AND PROTECT SUBMERGED AQUATIC VEGETATION	CONSERVE HABITAT	RESTORE OYSTERS	RESTORE AND PROTECT FINFISH	RESTORE AND PROTECT BIRDS	RESTORE AND PROTECT SEA TURTLES	ENHANCE PUBLIC ACCESS TO NATURAL RESOURCES FOR RECREATIONAL USE	ENHANCE RECREATIONAL EXPERIENCES	PROMOTE ENVIRONMENTAL AND CULTURAL STEWARDSHIP, EDUCATION, AND OUTREACH
	Area													
25	Norriego Point Restoration and Recreation Project	FL										X	X	X
26	Deer Lake State Park Development	FL										X	X	
27	City of Parker – Oak Shore Drive Pier	FL										X	X	
28	Panama City Marina Fishing Pier, Boat Ramp and Staging Docks	FL										X	X	
29	Wakulla Marshes Sands Park Improvements	FL										X	X	
30	Northwest Florida Estuarine Habitat Restoration, Protection and Education – Fort Walton Beach	FL										X	X	X

[1] These proposed projects would be implemented on federally-managed lands and managed by DOI.

12.1 Beach Enhancement Project at Gulf Island National Seashore: Project Description

12.1.1 Project Summary

This project involves removing fragments of asphalt and road-base material (limestone aggregate and some chunks of clay) that have been scattered widely over the Fort Pickens, Santa Rosa, and Perdido Key areas of the Florida District of Gulf Islands National Seashore, managed by the National Park Service, and replanting areas, as needed, where materials are removed. These materials originated from roads damaged during several storms and hurricanes. The asphalt- and road-base-covered conditions are clearly unnatural and impact the visitor experience both aesthetically and physically in these National Seashore lands. This project would enhance the visitor experience in the cleaned-up areas. The exact method for removing the material would be left to the contractor hired if the project is approved, but would involve primarily mechanized equipment, supplemented by small crews using hand tools. The estimated cost for this project is $10,836,055.

12.1.2 Background and Project Description

As noted above, this proposed project would take place in the Fort Pickens, Santa Rosa, and Perdido Key areas of the Florida District of Gulf Islands National Seashore (see Figure 12-1). The materials designated for removal originated from roads damaged during several storms and hurricanes since 1995 and were spread over an area of barrier island habitat hundreds of acres in size and over 14 miles long (see Figure 12-2 and Figure 12-3). These materials are found in both vegetated and un-vegetated areas and in both flat open beaches and dune areas. Additionally, there is also a small, two-mile-long area on the Gulf side of the Fort Pickens area where sections of the old road and some miscellaneous chunks of concrete may exist in the intertidal and subtidal zones where visitors sometimes walk, wade, and swim. Fragments and materials range in shape and size from large slabs down to brick- and pea-size (i.e., from approximately 10 feet in size down to a quarter of an inch).

Over the years, areas covered with materials have been observed by Seashore staff. Rough maps have been created to locate these areas, which total approximately 400 acres. In reality, however, these materials could exist over a much greater area. This is due to the highly dynamic nature of the area such that, since these observations were made, wind and water have been continually uncovering and moving these materials over an area as great as approximately 2,041 acres. This includes 1,303 acres over 7.3 miles in the Santa Rosa area, 631 acres over 5.0 miles in the Fort Pickens area, 99 acres over 2.0 miles in the Perdido Key area (west of Fort Pickens, across the mouth of the bay), and approximately eight acres in the inter- and subtidal zones on the Gulf side of the Fort Pickens area (see Figure 12-4, Figure 12-5 and Figure 12-5). The extent to which cleanup would occur over all these areas is unknown, but would depend on how much cleanup could occur with the project funding available. Therefore, in the environmental compliance documents for this project, consultations requested and impacts analyzed are for cleanup activities over the entire 2,041 acre area.

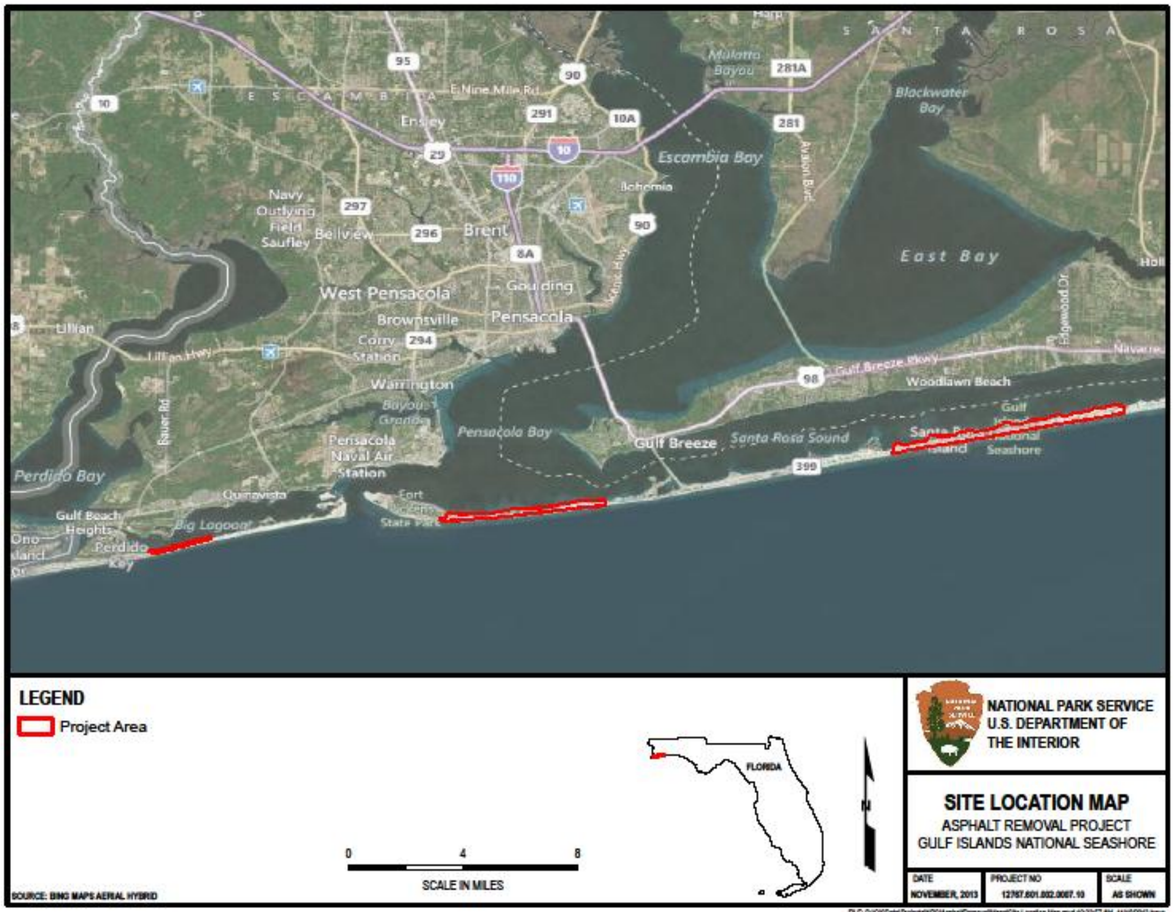

Figure 12-1. Asphalt removal project boundaries (outlined in red).

Figure 12-2. Asphalt fragments and road-base materials.

Figure 12-3. Asphalt fragments, road-base material, and a remnant road.

Figure 12-4. Potential project area (bounded by red line) of 1,303 acres at Santa Rosa area.

Figure 12-5. Potential project area (bounded by red line) of 631 acres at Fort Pickens area (in-water project area bounded by black diamonds).

Figure 12-6. Potential project area (bounded by red line) of 99 acres at Perdido Key area.

Based on initial observations made by Seashore staff over the years, the majority of the land area proposed to be cleaned is assumed to have materials only at the surface (0-3 inches). A smaller area – perhaps 100-200 acres – is assumed to have materials up to approximately six inches deep; an even smaller area – perhaps 10-20 acres – is expected to have materials up to three feet deep. A very small area – perhaps 5-15 acres – is expected to have materials several feet deep, including, possibly, the intertidal and subtidal zones at the Fort Pickens area. Buried materials may be removed to the extent practical to ensure that these materials do not "daylight" in the future due to wind or water erosion.

12.1.2.1 Timelines and Methodology

Cleanup activities on land would occur seven months each year during the late summer, fall, and winter months when disturbance of visitors would be minimal. Cleanup activities would *not* occur between March 15 and August 15 since this is the height of the bird nesting season and most of the sea turtle nesting season. (Effects to threatened and endangered species and their critical habitats, along with measures to mitigate these effects, are being addressed in consultations with the U.S. Fish and Wildlife Service and National Marine Fisheries Service.) Cleanup activities on land are expected to take up to four years, and re-planting (see below) up to three years, making total project duration approximately five years. Cleanup activities in-water would occur four months each year during the late fall and winter months to prevent disturbance of nesting and hatching sea turtles. Cleanup activities there would *not* occur between March 15 and Nov. 15. Depending on how widely the materials are found to be distributed, how long it takes to clean them up, and the actual cleanup costs, the area cleaned could be as small as approximately 50 acres per seven-month year, or as large as approximately 300 acres per seven-month year.

The method for removing the material would involve primarily mechanized equipment, supplemented by small crews using hand tools. Mechanized equipment such as dump trucks, roll-off dumpsters, backhoes, tractors with sifters and front-end loaders, and "pushable" sifters could be used. Hand tools such as rakes, shovels, scoops, buckets, screens, etc. would also be used by crews in sensitive areas (e.g. wetlands, dunes and densely vegetated areas, near nests or burrows, etc.). This equipment would be staged in the parking lots nearest the work area. Access to areas to be cleaned would be via the parking lots and road, as long as vegetated dunes would not be crossed and damaged in the process.

The on-land sand-asphalt-fragment-road-base mixture would be sifted in place. However, in some areas up to three-foot mounds of asphalt fragments (and sand) exist (typically by the side of the road in certain areas); in these areas it may be gathered and temporarily stockpiled at a nearby parking lot (i.e. staging area) and sifted. In this case the clean sand would then be re-deposited back at the original site. The separated asphalt and road base would be disposed of at a nearby landfill and/or taken to a nearby recycling facility, both off-site.

The mechanized equipment would be used in un-vegetated areas (un-vegetated landscapes dominate the areas to be cleaned). Areas that are vegetated (e.g., dunes and beach mouse habitat) would either not be cleaned or would be cleaned using hand tools. Large mechanized equipment would avoid dunes by at least 10 feet from the toe of the dune (could be less at designated access points where a narrow break in the dune occurs). Smaller mechanized equipment, e.g. pushable sifters, could be used up to the toe of a dune. Much of the proposed project area is sparsely vegetated. In these areas, resource managers would determine whether or not the vegetation is dense enough to warrant avoiding with mechanized equipment and treating with hand tools instead. If it isn't, then mechanized equipment would be used, resulting in the removal of vegetation at that location. It is assumed that approximately 10% of the total area to be mechanically cleaned contains vegetation that would be destroyed in the cleanup process. Re-planting these areas with like numbers (and like species) of plants is planned as part of this project. This re-planting work could include removing and preserving plants before cleaning an area and replanting them afterwards.

Additional activities to support re-planting include collection of plant cuttings or seeds, plant propagation, delivery and installation of plant material, and protection, monitoring, and re-planting if needed. Assuming a normal transplant density of 21,000 plants per acre, a 10% density of plants in the areas cleaned, and several hundred acres cleaned, this could likely result in several hundred thousand plants being re-planted into the cleaned areas.

For the small, eight-acre area where removing asphalt and some concrete could occur in the inter- and subtidal zones, a large backhoe with a long arm and bucket (or grapple) on the end would be used. No work would be done from boats or barges. The backhoe would operate near the mean low water

(MLW) line and reach out perhaps five-to-fifteen feet – but no more than 20 feet – to retrieve materials. Depth of removal from these zones is not known but would be determined based on technical feasibility, cost effectiveness, and, using best professional judgment, the likelihood of the materials becoming uncovered in the reasonably near future – e.g., in the 0-3 feet deep range. Sand would also be scooped up with the pieces of asphalt or concrete and would be deposited on the beach just above the surf line where the pieces – and incidental amounts of sand only – would be taken off-site and disposed of. Remaining sand would be returned to the intertidal zone where it was removed from to the extent reasonably possible. As such, only negligible amounts of sand would be removed from the intertidal zone.

12.1.3 Evaluation Criteria

This proposed project meets the evaluation criteria established for OPA and the Framework Agreement. The project would enhance the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill. Thus, the nexus to resources injured by the Spill is clear (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 would benefit terrestrial vegetation and terrestrial habitat. Accordingly, the project also benefits more than one resource and/or service. See 15 C.F.R. § 990.54 (a)(5). The project is technically feasible and utilizes proven techniques with established methods and documented results (personal communication, Mark Nicholas, 2013) and can be implemented with minimal delay. Government agencies have successfully implemented similar beach cleaning projects in the region. For these reasons, the project has a high likelihood of success. See C.F.R. § 990.54(a)(3) and Section 6e of the Early Restoration Framework Agreement. Cost estimates are based on similar past projects, and based on these estimates the project can be conducted at a reasonable cost. See C.F.R. § 990.54(a)(1). As a result, the project is considered feasible and cost effective. The project is not inconsistent with long-term restoration needs. (See C.F.R. § 990.54(a)(1),(3), and Sections 6d-6e of the Early Restoration Framework Agreement).

12.1.4 Performance Criteria, Monitoring and Maintenance

The goal of this project is to restore a portion of the lost visitor use of the Seashore caused by the Spill by improving the future visitor experience there. This would be accomplished by improving the appearance of the Seashore and the public's enjoyment of use of the Seashore. The aesthetic and physical improvements would improve the visitors' experience by keeping them from walking on or swimming among the asphalt and road-base materials. The project would be deemed successful when observation shows road materials have been removed and replanted areas established. As such, performance criteria for this project are the removal of the materials from an area and the short-term survival (i.e., 80% after 90 days) of replanted vegetation. Each of these criteria can be easily monitored and confirmed through visual observation. To confirm materials have been removed from an area, monitoring would occur immediately after an area has been cleaned, and then again some days, weeks, or months later in case wind or water uncovers additional materials or in case storm overwash events have redistributed materials back into the same areas or into new areas. Additionally, visitor use would be monitored using existing Seashore protocols for the gathering and evaluation of visitor feedback.

Monitoring plant survival at replanted areas would likely occur three months after planting to confirm that the percent-survival performance criterion (at least 80%) is met.

No long-term maintenance activities beyond the five-year duration of this project are expected for this project and are not budgeted.

12.1.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $21,672,110 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured on DOI lands in Florida, which would be determined by the Trustees' assessment of lost recreational use for the Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[2]

12.1.6 Cost

The total estimated cost to implement this project is $10,836,055. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, design, implementation, monitoring, and potential contingencies.

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[2] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.2 Beach Enhancement Project at Gulf Island National Seashore: Environmental Review

The proposed beach enhancement project involves removing fragments of asphalt and road-base material that have been scattered widely over the Fort Pickens, Santa Rosa, and Perdido Key areas of the Florida District of the Seashore.

12.2.1 Introduction and Background

This project is consistent with Alternative 3, “Contribute to Providing and Enhancing Recreational Opportunities”, and more specifically, “Enhance Recreational Experiences.” The alternative incorporates multiple project types to address an important type of injury caused by the Spill: lost and degraded recreational use of Gulf resources. This project involves enhancing recreational experiences through reducing and removing land-based debris. Land-based debris can be disturbing and disruptive to recreational activities and aesthetic experiences like beach going, hiking, and general sightseeing. Removal of debris not only restores the natural beauty of the coastal environment for visitors to enjoy, but also removes debris that is potentially harmful to humans and wildlife.

See Sections 12.1.2 and 12.1.2.1 for detailed introductory and background information for this project.

12.2.2 Project Location

The Seashore is located in Florida (Escambia, Santa Rosa, and Okaloosa counties) and Mississippi (Jackson and Harrison counties). Covering more than 14 miles of Santa Rosa Island, the proposed project is located at the Fort Pickens, Santa Rosa, and Perdido Key Areas of the Seashore, near Pensacola Beach, Escambia County, Florida (see , above).

12.2.3 Project Scope

This project involves removing fragments of asphalt and road-base material (limestone aggregate and some chunks of clay) that have been scattered widely over the Fort Pickens, Santa Rosa, and Perdido Key areas of the Florida District of Gulf Islands National Seashore, managed by the National Park Service. These materials originated from roads damaged during several storms and hurricanes. Debris removal methods would involve primarily mechanized equipment, supplemented by small crews using hand tools. For details see Section 12.1.2.1. Work would be contracted, and exact methods for cleanup would be identified at that time. The following environmental analysis and the extent to which cleanup would occur over all these areas is unknown, but would depend on how much cleanup could occur with the project funding available. Therefore, in the environmental compliance documents for this project, consultations requested and impacts analyzed are for cleanup activities over the entire 2,041 acre area. Consultation also analyzes maximum use of equipment and other cleanup activities as the exact areas where each type of activity could be utilized are not known yet.

The locations of proposed removal of asphalt and other road based materials from the project area can be found in Figure 12-2, above. Cleanup activities are expected to take up to four seasons, and re-planting up to three seasons, making the total project duration approximately five years. Depending on how widely the materials are found to be distributed, how long it takes to clean them up, and what actual cleanup costs end up being, the area cleaned could be as small as approximately 50 acres per seven-month year, or as large as approximately 300 acres per seven-month year.

12.2.4 Operations and Maintenance

No operations or maintenance activities are anticipated as a result of this project once beach enhancement activities are completed. Materials would be removed as current project funding allows.

12.2.5 Affected Environment and Environmental Consequences

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 and environmental consequences of the project.

12.2.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.2.5.2 Physical Environment

12.2.5.2.1 Geology and Substrates

Affected Resources

The proposed project areas in Fort Pickens, Santa Rosa, and Perdido Key all consist predominantly of sand that has formed as the supratidal open beach and dunes and is the substrate in the intertidal and subtidal areas. Island and shoreline ridge deposits are largely devoid of clay and silt because these sand formations were deposited by wind after ocean currents transported the parent material. For example, Santa Rosa Island is composed of approximately 99% medium grained quartz sand (NPS 2011c [Draft General Management Plan / Environmental Impact Statement, Gulf Islands National Seashore, DOI, NPS, August, 2011]). Perdido Key and Santa Rosa Island, including the project areas, like all barrier islands, are a product of natural functions such as erosion/accretion and overwash. The islands migrate to the west through the daily process of alongshore drift and to the north during extreme storm events through overwash. Barrier islands migrate relative to sea level and the energy dynamics of the system through the redistribution of sand. Studies at the Seashore have shown that the volume of sand on the island remains relatively stable; it is just redistributed to the north. From a geological standpoint, it is critical to the long-term survival of the barrier island to allow these processes to continue (NPS 2006).

Following hurricane impact, these same natural functions serve to rebuild the structure of the island. The island is fronted by a low-elevation beach berm that develops following a hurricane and can be overtopped by elevated water levels during strong frontal storms. Overwash during these storms is part of the post-hurricane recovery of the barrier island. The sediment deposited in these overwash fans is important to the recovery of the dunes and the vertical structure of the island. The dune system redevelops from and within the overwash sediments and through sediment delivery under fair-weather conditions. Overwash during both extreme and frontal storms is a strong control on the ecological makeup and diversity of the island, and any impedance to overwash would not only alter the post-hurricane topography but also the ecology (Houser and Oravetz 2006).

Environmental Consequences

Possible impacts from this project include compaction, erosion, and topographical changes. The removal of asphalt and other road-based materials would not cause compaction in the open beach or dune areas due to the wide wheels or tracks that must be used in the sand and the inherently low compactibility of sand. Compaction in the intertidal zone where larger equipment could be possible since moisture makes the sand there more compactable. Impacts would be short term and minor, however, due to the constant wave and tidal action in that area that would rapidly re-work the sand profile back to a natural condition. Beneficial effects on compaction are expected in all areas where these hard, dense road materials are removed and the sand is returned to its natural state.

Impacts from the project on erosion and topography are not expected in the open beach or dunes areas. In the one small area – roadside berms where old asphalt piles could be up to three feet deep – it is possible that this substrate would not be sifted in place, but rather scooped up and removed to a nearby location (e.g. parking lot), sifted there, and the remaining sand returned to its original location. The only impact on topography here would be short term (< 24 hours) and minor while the material is gone, but beneficial once it is returned and is restored to its natural (lower) height. Also, beneficial effects on erosion and topography over the entire supratidal project area are expected in the long term since removing these foreign materials would allow more plant growth; more plant growth, in turn, traps moving sand (from wind or water) and actually lessens erosion and promotes accretion and natural dune-building processes. In the event that a backhoe is used to remove asphalt in the intertidal and subtidal zones, an increase in erosion potential would occur and sand could be redistributed locally via waves. Additionally, as foreign materials are scooped out of these zones, sand would be scooped up also, creating a hole or depression. Once this mix of sand and foreign materials is separated on the beach and the sand is returned to the spot it came from, and natural wave and tidal action works these areas, impacts would be highly localized, short-term, and therefore minor.

Additional beneficial impacts from this project include the restoration of color, consistency, and temperature of the sands back to near natural conditions.

12.2.5.2.2 Hydrology, Water Quality, and Floodplains

Affected Resources

Although the great majority of the project area is devoid of surface water resources, some do exist. However, due to the ephemeral nature of nearly all the of the surface water features in the project area, there is no current and accurate inventory of them. It is known, however, that brackish ponds, lagoons, and freshwater marshes are located in permanently flooded to intermittently exposed wetland depressions and occur sparsely across the project area. This community type is generally found in freshwater environments. In some cases, where lagoons are connected to the sound or ocean, where frequent overwash occurs, where residual concentrations of salts exist in the base soils, or where salt water intrudes into the groundwater, water may be brackish. This community's habitat is usually formed during severe storm overwash events such as during hurricanes when the storm surge rushing across the islands scours and gouges out depressions. These depressions subsequently fill with fresh or brackish water creating ponds and lagoons (NPS 2011c). The Santa Rosa area has many "swales". These are often ephemeral in nature and form during wet years. The Fort Pickens area basically has the 3 perennial ponds just north of the road, and another ephemeral wet area by parking lot 21 (GUIS staff, personal communication, 2013). Lagoons and other surface water features are believed to occur on the Perdido Key and Santa Rosa areas.

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. Water depths tend to be relatively shallow, averaging 1 to 3 feet deep, although depths as much as 9 feet have been observed in some ponds (NPS 2011c).

Because of the dynamic nature of barrier islands, these water features tend to constantly change and in many cases are short lived (NPS 2011c).

There are no known freshwater rivers, streams, or springs in the project area (GUIS staff, personal communication, 2013).

The great majority of the project area is devoid of water resources.

In addition to groundwater and surface waters, the entire project area is classified as a coastal floodplain and therefore falls under the requirements of Executive Order 11988 (Floodplain Management) and the NPS Procedural Manual 77-2.

Environmental Consequences

There would be no impacts from this project to on-island surface water or groundwater hydrology. This is primarily because there are so few on-island water resources, but also, for those that exist (e.g. permanent brackish ponds and lagoons or ephemeral ponds/swales), equipment would stay out of and a safe distance (to be determined, but at least 10 ft.) from them. Groundwater would not be impacted from this project since it is below typical asphalt removal depths. Where it is not – e.g., near ephemeral freshwater wetlands where groundwater is extremely shallow – these areas would be avoided by equipment.

There would be no impacts from this project to on-island water quality. This is primarily because there are so few on-island water resources, but also, for those that exist (e.g. permanent brackish ponds and lagoons or ephemeral ponds/swales), equipment would stay out of and a safe distance (to be determined, but at least 10 ft.) from them. Very small long term beneficial effects on groundwater quality are expected from the removal of the asphalt and any hydrocarbons or other compounds that may still be leaching out of these materials into the water table.

As described earlier, this project could require some removal work in the inter- and sub-tidal zones of the Gulf and, as such, could create some turbidity there. It is anticipated that all impacts to turbidity would be short-term in nature occurring only during removal activities. Increases in turbidity are not expected to be substantial, however, since background levels of subtidal turbidity are high in this area anyway due to wave action. Additionally, BMPs 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 water quality in this area would be minor. Very small long term beneficial impacts to water quality are expected from the removal of the asphalt and any hydrocarbons or other compounds that may still be leaching out of these materials into the water. There would be no impacts to water quality in Santa Rosa Sound or Pensacola Bay since asphalt removal would not take place there.

Although the entire project area is designated as a coastal floodplain, a Floodplain Statement of Findings (per Procedural Manual 77-2) is not required for this project since: a) no development (structures, facilities, topographic alterations, etc.) would occur there and therefore no staff or visitors would be put at an increased safety risk; b) no modifications would be made that would either adversely affect the natural resources and functions of the floodplain or increase flood risks; and c) this project would help restore natural floodplain values in this area by removing the foreign materials and allowing more natural flow of water over land during flood events. As such, this project is in compliance with NPS Director's Order #77-1: Wetland Protection.

12.2.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

In Table 12-2, below, both State of Florida and federal primary ambient air quality standards for criteria air pollutants are presented.

The USEPA proposed strengthening the air quality standards for ground-level ozone to 0.075 ppm in 2008. To attain this standard, the three-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. The 2006 to 2008 average of the fourth-highest daily maximum 8-hour ozone concentration for Pensacola was 0.079 ppm, and thus Escambia County would be designated as nonattainment according to the proposed 2008 ozone standard (USEPA 2009a).

Available monitoring data from 2003 to 2007 were used to estimate air quality parameters for the Seashore as part of the *Air Quality in National Parks 2008 Annual Performance and Progress Report*. The five-year average of the annual fourth-highest 8-hour ozone concentrations at the Seashore was determined to be greater than or equal to 0.076 ppm, and the Seashore was assigned the status of significant concern with an improving trend (NPS 2011a).

Escambia County, Florida has an annual fine-particle particulate matter (PM) concentration of 8.4 µg/m^3, which meets the national standard of 12 µg/m^3, and is slightly better than the national average of 9.20 µg/m^3. It also has an annual average sulfur dioxide concentration of 14 ppb, which meets the national sulfur dioxide standard of 75 ppb, and is slightly better than the national average of 19.00 ppb. There is currently no data available for Escambia County regarding carbon monoxide, nitrogen oxide, or lead levels (http://air-quality.findthedata.org/l/159/Escambia-County, 2013). Additionally, there is no trend analysis data is available for visibility, ammonium, nitrate, or sulfate parameters for the Seashore (NPS, 2013).

In 2013, Escambia County was in attainment of the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants as designated by the USEPA.

Table 12-2. State and Federal Ambient Standards for Criteria Air Pollutants.

POLLUTANT	AVERAGING PERIOD	FEDERAL PRIMARY STANDARD	STATE OF FLORIDA STANDARD
Ozone	8-hour	0.075 ppm	Same as Federal
	1-hour (daily max.)	0.12 ppm	Same as Federal
PM2.5	Annual (arithmetic mean)	15.0 μg/m^3	Same as Federal
	24-hour	35 μg/m^3	Same as Federal
PM10	Annual (arithmetic mean)	NA	50 μg/m^3
	24-hour	150 μg/m^3	150 μg/m^3
Carbon Monoxide	8-hour	9 ppm	9 ppm
	1-hour	35 ppm	35 ppm
Nitrogen Dioxide	Annual (arithmetic mean)	0.053 ppm	0.05 ppm
	1-hour	0.100 ppm	Same as Federal
Sulfur Dioxide	Annual (arithmetic mean)	0.03 ppm	0.02 ppm
	24-hour	0.14 ppm	0.10 ppm
	1-hour (per annum)	NA	0.40 ppm
	1-hour (per 7 days)	NA	0.25 ppm
	5-minute	NA	0.80 ppm
Lead	Rolling 3-month average	0.15 μg/m^3	Same as Federal
	Quarterly average	1.5 μg/m^3	Same as Federal
Total Suspended Particulate	Annual (geometric mean)	NA	60 μg/m^3
	24-hour	NA	150 μg/m^3

In addition, under the terms of the 1990 CAA amendments, the Seashore is designated as a Class II airshed. By definition, Class II areas of the country are set aside for protection under the CAA. Protection is somewhat less stringent than in Class I areas. The primary means by which the protection and enhancement of air quality are accomplished are through implementation of NAAQS (NPS 2008). These standards address six pollutants known to harm human health: ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides (NPS 2008). 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 (GHGs) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the

GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The principal GHGs emitted into the atmosphere through human activities are CO_2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (USEPA 2010). CO_2 is the major GHG emitted, and the burning of fossil fuels accounts for 81 percent of all U.S. GHG emissions (USEPA 2010). Currently GHG emissions are not monitored or collected at Seashore.

Environmental Consequences

Project implementation would require the use of heavy equipment which would temporarily affect air quality in the immediate project vicinity due to construction vehicle emissions. Fine particulate matter associated with the removal of asphalt and other road base materials and the replacement of sand may become temporarily airborne during project implementation. Any adverse air quality impacts that would occur would be localized, short term, and minor.

The use of gasoline and diesel-powered construction vehicles and equipment, including cars, trucks, and backhoes, would contribute to an increase in GHG emissions. Estimated construction equipment and use and subsequent emissions for the proposed project are detailed in Table 12-3. Greenhouse gas emissions of the proposed project.

Table 12-3. Greenhouse gas emissions of the proposed project.

VESSEL/CONSTRUCTION EQUIPMENT AND PROJECTED NUMBER	NO. OF HOURS OPERATED[3]	CO_2 (METRIC TONS)[4]	CH4 (CO_2E) (METRIC TONS)[5]	NOX (CO_2E) (METRIC TONS)	TOTAL CO_2E (METRIC TONS)
Bulldozer (1)[6]	1,800	684	0.36	0.36	684.72
Backhoe (3)[7]	1,800	1,890	1.08	1.08	1,892.16
Dumptruck (1) [8]	1,800	612	0.36	0.36	612.72
TOTAL					**3,189.60**

Based on the assumptions described in the table above, and the small scale and short duration of the proposed project, predicted greenhouse gas emissions would be short-term and minor and would not exceed 25,000 metric tons per year put forth by the Council on Environmental Quality (CEQ) as a level

[3] Emissions assumptions for all equipment based on 10-hour days of operation, 6 days a week per piece of equipment over a 7-month construction period.

[4] CO_2 emissions assumptions for diesel and gasoline engines based on USEPA 2009b.

[5] CH_4 and NOx emissions assumptions and CO_2e calculations based on USEPA 2011.

[6] Current construction estimates indicate two Bobcats, however, existing GHG emissions are not available for Bobcats therefore it was assumed that GHG emissions for two Bobcats would be similar to those of one bulldozer

[7] GHG emissions data is not available for tractors, and it was assumed that tractors would have similar GHG emissions to backhoes.

[8] Construction equipment emission factors based on USEPA NONROAD emission factors for 250hp pieces of equipment. Data was accessed through the California Environmental Quality Act Roadway Construction Emissions Model.

above which to conduct a detailed analysis of said emissions (CEQ, 2010). Therefore, the project would have only short-term minor impacts on GHG emissions.

12.2.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted sound, and noise levels and impacts are interpreted in relationship to its effects on nearby residents or organisms. Noise associated with recreational land uses, such as boating, can be of concern to surrounding communities. Noise also emanates from vehicular traffic associated with project sites during construction. Ambient noise (the existing background noise environment) can be generated by a number of noise sources, including mobile sources, such as airplanes, automobiles, trucks, and trains; and stationary sources such as construction sites, machinery, or industrial operations. The Noise Control Act of 1972 (42 U.S.C. 4901 to 4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 12-4 presents some familiar sounds and their decibel levels.

Table 12-4. Familiar sounds and their decibel levels (dB).

SOUND	DECIBEL LEVEL (DB)
Whisper	30
Normal Conversation	50-65
Vacuum cleaner at 10 feet	70
Midtown Manhattan Traffic Noise	70-85
Lawnmower	85-90
Train	100
Nearby Jet Takeoff	130
Source: Occupational Safety and Health Administration 2012	

Table 12-5 presents noise levels produced by typical construction equipment.

Table 12-5. Noise levels produced by typical construction equipment.

TYPE OF EQUIPMENT	MAXIMUM LEVEL (DBA) AT 50 FEET
Road Grader	85
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Crane	85
Combined Equipment	89
Source: Thalheimer (1996).	

For the in-water portion of the project, asphalt slabs and concrete chunks may be broken up in the water if they can't be removed and broken up on land. This would cause impulsive noises that could be somewhere in the range of 154-196 dB re:1 uPa zero-to-peak level and 176 dB re:1 uPa RMS level (Laughlin, 2006). Impact hammers in the open air could have sound levels in the range of 93–98 dBA (Laughlin, 2007b).

The primary sources of ambient (background) noise in the project area are operation of vehicles, commercial and recreational vessels, the nearby Pensacola Airport, and natural sounds such as wind, surf, and wildlife. The levels of noise in the project area varies, 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 levels in the project area are primarily from commercial and recreational vessels, and vehicles on Highway 399. Noise levels fluctuate with highest levels usually occurring during the spring and summer months due to the increased boating and coastal beach activities.

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 beach recreationists, although for most of the work residences would be over a mile away and recreationists would be much fewer in the late summer/fall/winter months when this project would be implemented.

In-water work activities contribute to noise in the underwater environment and are a concern for both the NMFS and the USFWS. There are numerous contributing sources to background marine sound conditions, including those from marine mammals (71 dB), lightning strikes (260 dB), waves breaking, and rain on the open surface and by human or mechanical sources including recreational activities and boating (150-195 dB). These levels are maximum source levels. Although there are many sources of noise in the underwater environment, the most common sources of noise associated with construction activities are via hammering. Impulsive noises like this have short duration and consist of a broad range of frequencies (CRS Report 96-603). Similar to above-ground noise, underwater noise levels fluctuate in the project area with the greatest impacts coming during the spring and summer months due to increased human presence, increased boating and coastal beach activities.

Environmental Consequences

Instances of increased noise are expected during the removal of asphalt and other road base materials. Although construction noise could last on-land as long as seven months per year for four years, it would be remote (away from residences), it would occur primarily in the off-season for recreationists. As such, impacts to humans and organisms during project implementation would be short term and minor.

Noise is expected to disturb terrestrial wildlife, including birds and mammals in the project area. Although wildlife would be able to avoid noisy areas and the project would occur during a part of the year when biological activity in the project area is generally low, impacts are expected to be short term and moderate.

Mitigation measures that could limit noise during on-land activities include: limiting activity at project sites to daytime hours (dawn to dusk); promoting awareness among contractors that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; limiting activity to time periods for visitor use of the site is at its lowest (i.e. late summer, fall and winter; Monday through Friday, possibly Saturday, not Sunday); and possibly employing noise-controlled construction equipment to the maximum extent possible.

Regarding underwater noise, if the backhoe bucket or grapple is used to break up asphalt or concrete pieces in the water by striking it, momentary sounds could exceed both the 160 dB re 1 uPa RMS level for impulsive noise and the 180 dB re 1 uPa zero to peak level. Also, if the backhoe is parked with its tracks (or wheels) in the water, the 120 dB re 1uPA RMS level could be exceeded from engine noise. Mitigation measures would include breaking up large pieces on land (rather than in-water) whenever possible, and keeping the backhoe vehicle itself out of the water as much as possible. Also, although the window of time for in-water cleanup activities is four months per year for four years, it is expected to only take a total of two months. Additionally, the shallowness of the water in this area should have a dampening effect on any project-generated underwater noise. With these in mind, and also the short term and localized nature of this activity, impacts to underwater sound would be minor.

12.2.5.3 Biological Environment

12.2.5.3.1 Living Coastal and Marine Resources

Coastal and Submerged Aquatic Vegetation

Affected Resources

Seagrass
No seagrass occurs in the areas where asphalt will be removed.

Terrestrial vegetation
Terrestrial vegetation occurring in the project area is typical of a barrier island dune-and-open-beach environment. Primary plant associations occurring in the project area include sea oats (*Uniola paniculata),* beach picnic grass (*Panicum amarum)*, and beach elder (*Iva imbricata*) (Seashore staff, personal communication, 2013). Densely vegetated areas in the project area can be seen in Figure 12-7, Figure 12-8, and Figure 12-9 below. There are approximately 67 acres of dense vegetation at the Fort Pickens area, approximately 225 acres at the Santa Rosa area, and approximately eight acres at the Perdido Key area. These are areas where mechanized equipment will not be allowed during the project. No federally protected plant species are present within any of the project areas.

Wetlands exist in the project area along the Pensacola Bay and include estuarine and marine deepwater, estuarine and marine wetland, freshwater emergent wetland, and freshwater forested/shrub wetland (NPS 2006). Wetlands located in the project area can be seen below in Figure 12-10, Figure 12-11, and Figure 12-12 (Note: due to the ephemeral and dynamic nature of many of these wetlands, these maps may not be entirely accurate). The intertidal zone marked in Figure 12-10 is also classified as wetlands.

Figure 12-7. Fort Pickens area – dense vegetation.

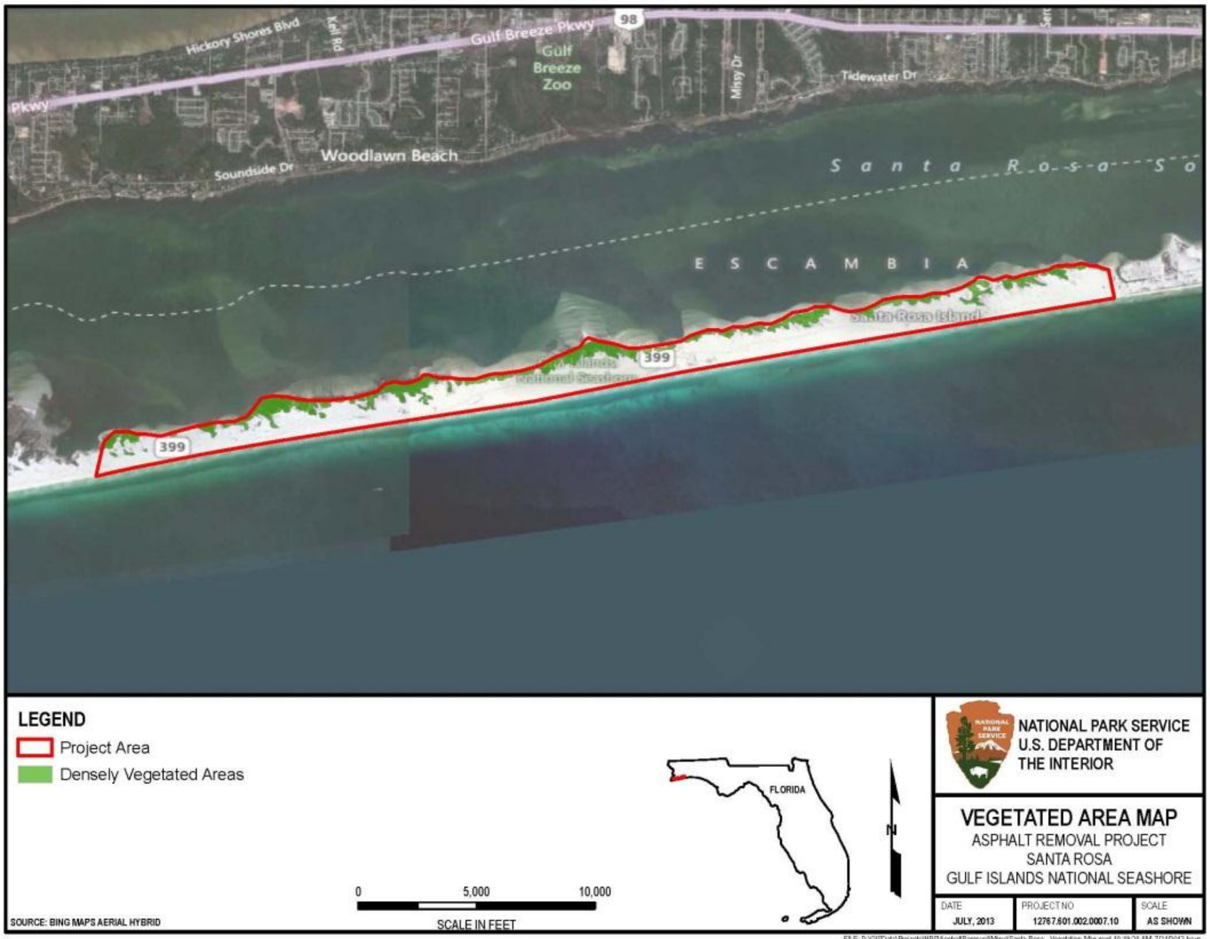

Figure 12-8. Santa Rosa area – dense vegetation.

Figure 12-9. Perdido Key area – dense vegetation.

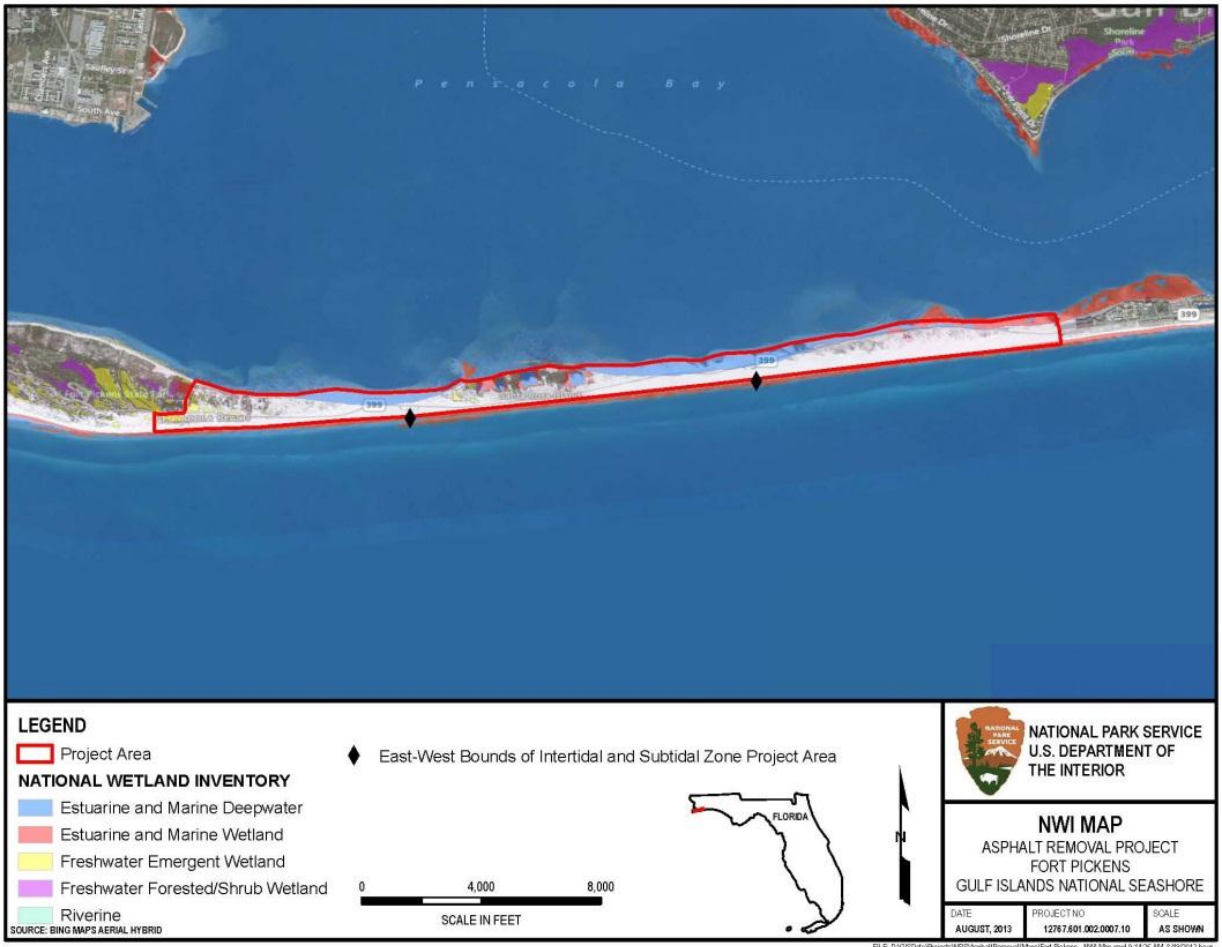

Figure 12-10. Fort Pickens wetlands located in the project area.

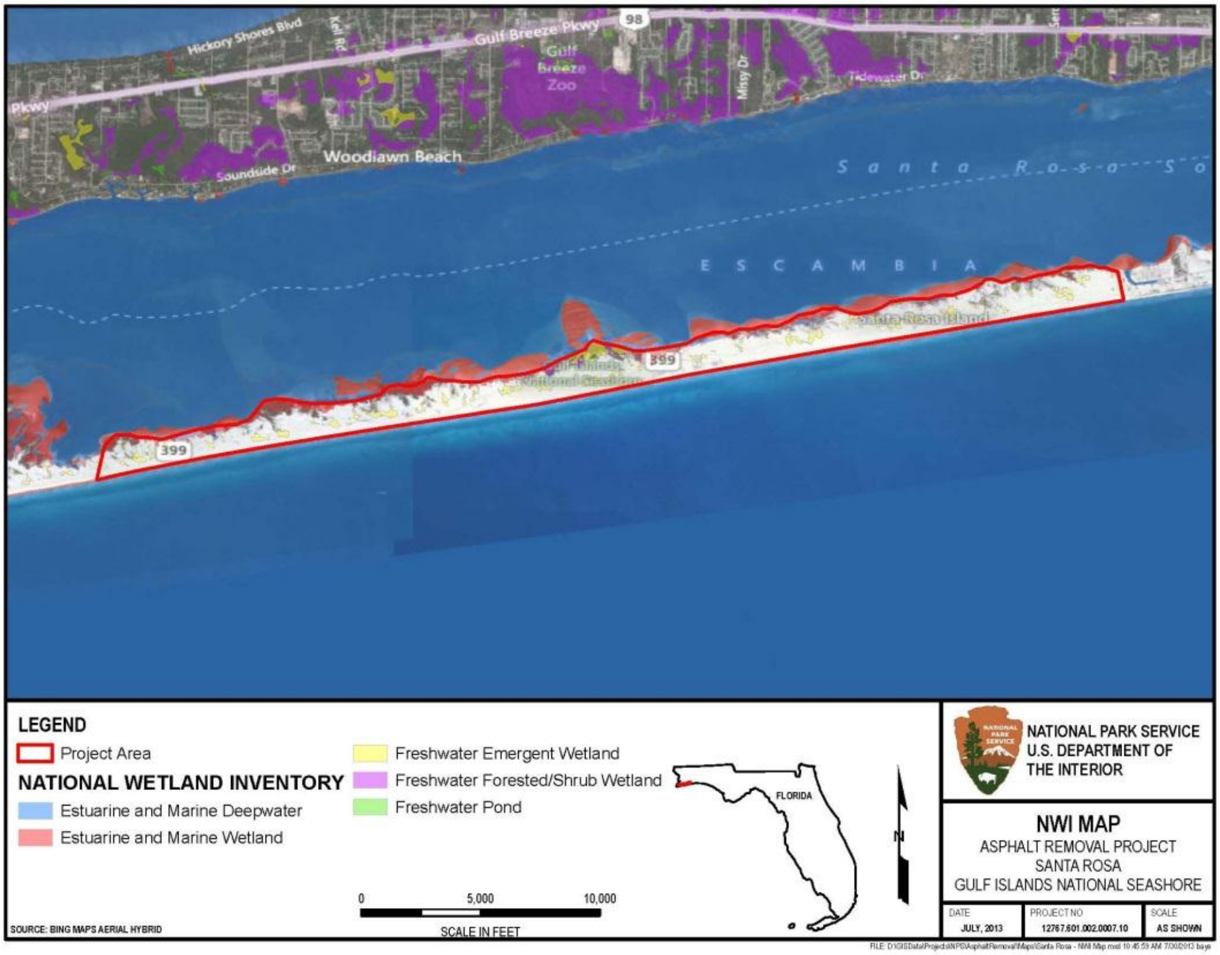

Figure 12-11. Santa Rosa wetlands located in the project area.

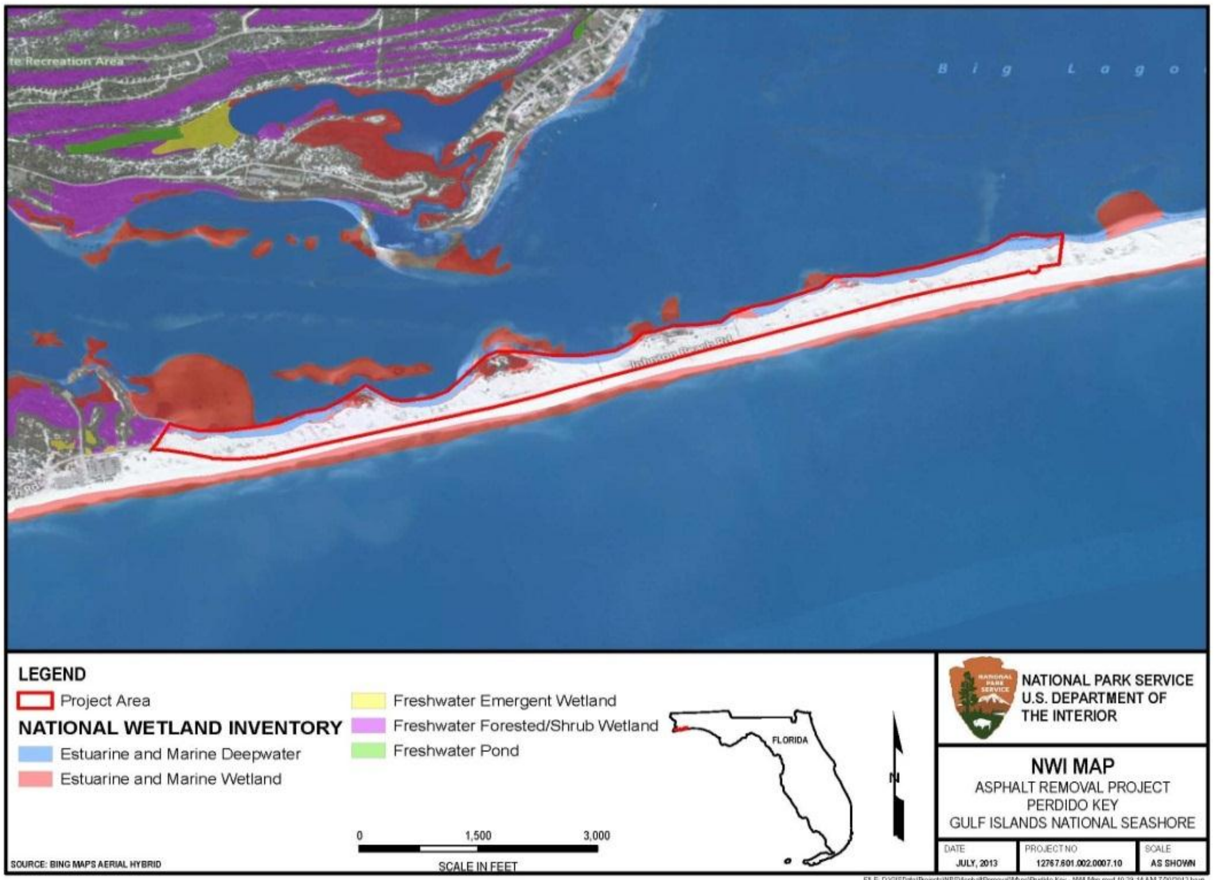

Figure 12-12. Perdido Key wetlands located in the project area.

Environmental Consequences

None of the areas associated with debris removal contain submerged aquatic vegetation such as seagrass or federally protected plant species. Therefore, the project would have no impact on these categories of plants. Impacts are likely to occur to terrestrial vegetation from removal and associated activities. As stated earlier, where vegetation in the project area sparse, mechanized equipment would move through that area since stopping to preserve and workaround every single plant is impractical. As such, sparsely spaced vegetation would be destroyed. It is assumed that all of the areas to be cleaned mechanically are sparsely vegetated, i.e., that they have 10% the plants of an area that is to be densely revegetated. Therefore, impacts to vegetation could be substantial and could involve the loss of hundreds of thousands of plants resulting in short-term moderate adverse impacts. These impacts would be mitigated within 12 months, wherein all destroyed vegetation would be replaced. This would be done either by removing all sparse vegetation before asphalt removal activities begin and replanting it afterwards, or by harvesting plant material (e.g., seeds, cuttings), cultivating it, and replanting the cleaned area with it. As such, impacts to vegetation would become short term and minor. Long-term beneficial impacts to terrestrial vegetation would result from removing the asphalt and road base materials which act as physical impediments to naturally occurring plant establishment and growth.

According to NPS Procedural Manual #77-1: Wetland Protection, a proposed NPS action that would have adverse impacts on wetlands would require preparation of a "Wetland Statement of Findings" as part of the NEPA process. However, certain actions may be excepted from this requirement, including: "*actions designed to restore degraded (or completely lost) wetland, stream, riparian, or other aquatic habitats or ecological processes" (Section 4.2.1.h of PM #77-1). For this exception, "restoration" refers to reestablishing environments in which natural ecological processes can, to the extent practicable, function as they did prior to disturbance.*

- Short-term wetland disturbances that are directly associated with and necessary for implementing the restoration may be allowed under this exception.
- Conditions 1 and 2 in Appendix 2 of PM #77-1 may be waived for this excepted action if adverse impacts on hydrology and fauna exceed "minor" but are necessary to achieve restoration objectives. Justification for this waiver must be included in the NEPA document.
- Actions causing a cumulative total of up to 0.25 acres of new, long-term adverse impacts on natural wetlands may be allowed under this exception if they are directly associated with and necessary for the restoration (e.g., small structures).

Appendix 2 of PM #77-1 presents a set of conditions that must be satisfied and best management practices (BMPs) that must be implemented for a proposed action to qualify as excepted. If one or more of the conditions or BMPs cannot be met, then the action reverts to full compliance with PM #77-1 and a Wetland Statement of Findings is required. Additional BMPs or conditions may be appropriate depending on local conditions or special circumstances. The conditions/BMPs are as follows:

1. **Effects on hydrology and fluvial processes:** Action must have only negligible to minor, new adverse effects on site hydrology and fluvial processes, including flow, circulation, velocities,

hydroperiods, water level fluctuations, sediment transport, channel morphology, and so on. Care must be taken to avoid any rutting caused by vehicles or equipment.

2. **Effects on fauna:** Action must have only negligible to minor, new adverse effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.
3. **Water quality protection and certification:** Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements (check with appropriate state agency).
4. **Erosion and siltation controls:** Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.
5. **Proper maintenance:** Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
6. **Heavy equipment use:** Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.
7. **Stockpiling material:** Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semipermeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
8. **Removal of stockpiles and other temporary disturbances during construction:** Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.
9. **Topsoil storage and reuse:** Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
10. **Native plants:** Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
11. **Boardwalk elevations:** Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures. (Placing a boardwalk at an elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.)

12. **Wild and Scenic Rivers:** If the action qualifies as a water resources project pursuant to Section 7(a) of the Wild and Scenic Rivers Act, then appropriate project review and documentation requirements under Section 7(a) are required.
13. **Coastal zone management:** Action must be consistent, to the maximum extent practicable, with state coastal zone management programs.
14. **Endangered species:** Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat (see NPS Management Policies 2006 and guidance on threatened and endangered species).
15. **Historic properties:** Action must not have adverse effects on historic properties listed or eligible for listing in the National Register of Historic Places.

An exception to the requirement to prepare a Wetland Statement of Findings is warranted for this project since:

- It would be improving wetland functions by removing the foreign materials from around them and, to the extent possible, from within them;
- No mechanized asphalt removal equipment would operate in supratidal wetlands or within 10 feet of them;
- Any cleanup of material from supratidal wetlands would only be done by crews using hand tools;
- Any disturbances of wetlands by crews would be short-term (during project implementation only);
- Prior to bringing equipment into a supratidal area, the area would be scouted for wetlands and clearly marked for avoidance;
- All 15 conditions and BMPs listed above would be adhered to.

Terrestrial Wildlife Species

Affected Resources

A number of wildlife species occur in and around the project areas. Although on the barrier islands upland animal species are somewhat limited in number due to the lack of diversity in vegetation and difficulty of access from mainland areas. There are a variety of invertebrates, reptiles, birds and small mammals that could be present in the project area. (NPS 2006).

The Santa Rosa beach mouse (*Peromyscus polionotus leucocephalus*) is one of eight subspecies of the oldfield mouse (*Peromyscus polionotus*) that occur, or occurred, on barrier islands and other coastal areas of Florida and Alabama. This mouse occurs only on Santa Rosa Island, including: areas near East Pass, Fort Walton Beach, Navarre Beach, Fort Pickens, Eglin Air Force Base, and east of Pensacola Beach. Currently, this species is not afforded protection under the ESA, like other beach mice subspecies, because of landowner implementation of voluntary conservation measures, and protected areas of habitat. Santa Rosa beach mouse habitat is restricted to the primary dunes, interdunal areas, and secondary and scrub dunes along the Gulf coast of Santa Rosa Island. They eat fruits and seeds of dune plants, primarily sea oats (*Panicum repens*) and beach grass (*Panicum amarums*), and occasionally eat invertebrates. They breed year-round (NPS 2011b).

Environmental Consequences

Santa Rosa Beach Mice inhabit the sand dunes on Santa Rosa Island. During project work, construction crews would be operating mechanized equipment on the beach and small crews may be walking along the beach removing fragments of material by hand. Machinery would not be used within dune habitats used by the mice; however crews with hand tools could be used. The noise produced by the machinery and movement of the machinery and people along the beaches may disturb Santa Rosa Beach Mice, vibrate the dunes, collapse burrows, or cause adults to temporarily abandon burrows leaving juveniles in the nest. However, conservation measures would be put in place to ensure operation of machinery is conducted in a manner such that these effects are avoided. If equipment and machinery could be left in place overnight, mice could shelter under or around it. Therefore, measures have been designed to avoid these impacts as well. Based on the incorporation of avoidance measures (see Table 12-6) in to the project, we expect any impacts to only be short-term and minor.

Regarding terrestrial wildlife in general, removal activities might impact them. The project activities could result in the temporary displacement, injury, or death of “non-protected” (i.e., non-T&E) wildlife like invertebrates in the sand. Overall, removal activities would be expected to have short-term, minor impacts on wildlife. There would be small, long-term beneficial effects, however, to terrestrial wildlife as a result of this project due to the improvement of habitat.

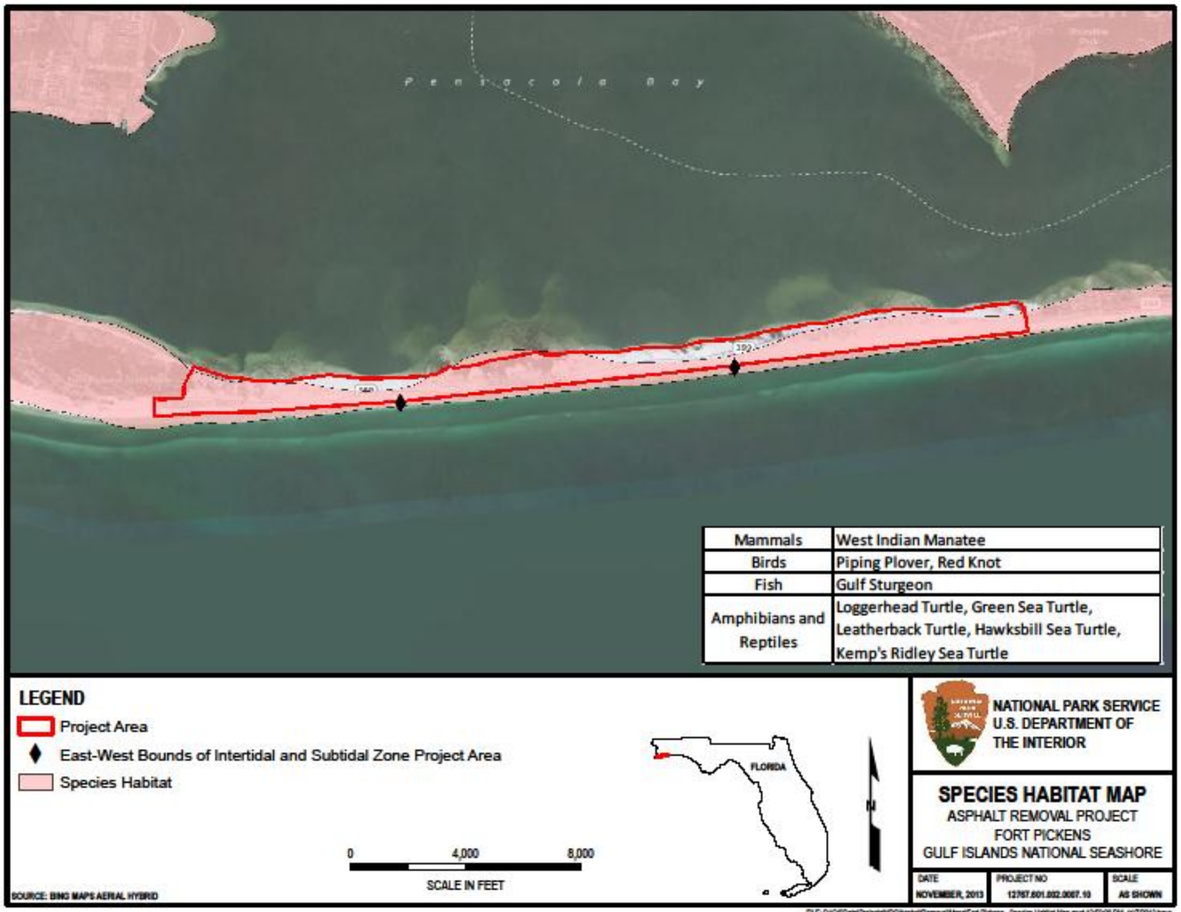

Figure 12-13. Fort Pickens project area species habitat. (NOTE: Polygon boundaries do not line up well because they were based on different aerial images. Tide levels at the time aerial images were taken could also have factored into this.)

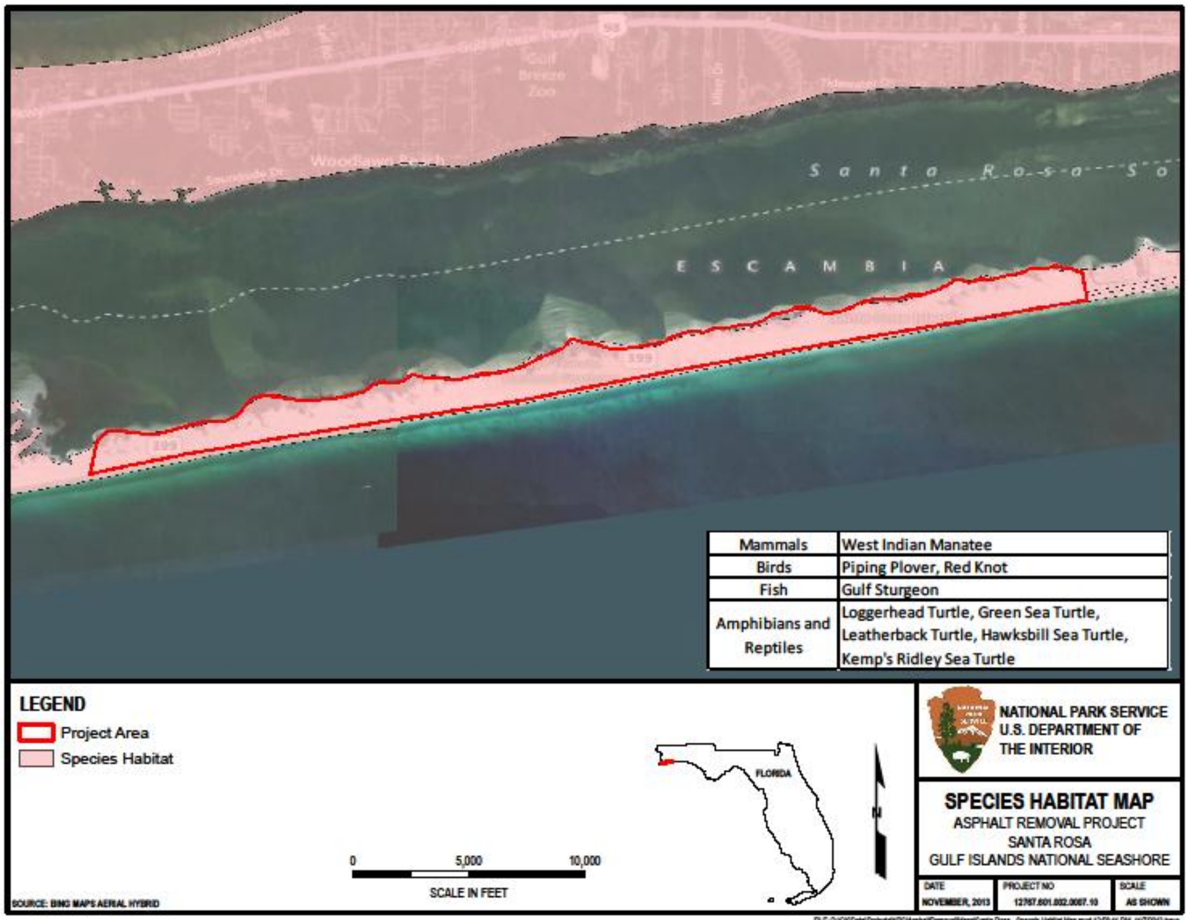

Figure 12-14. Santa Rosa project area species habitat.

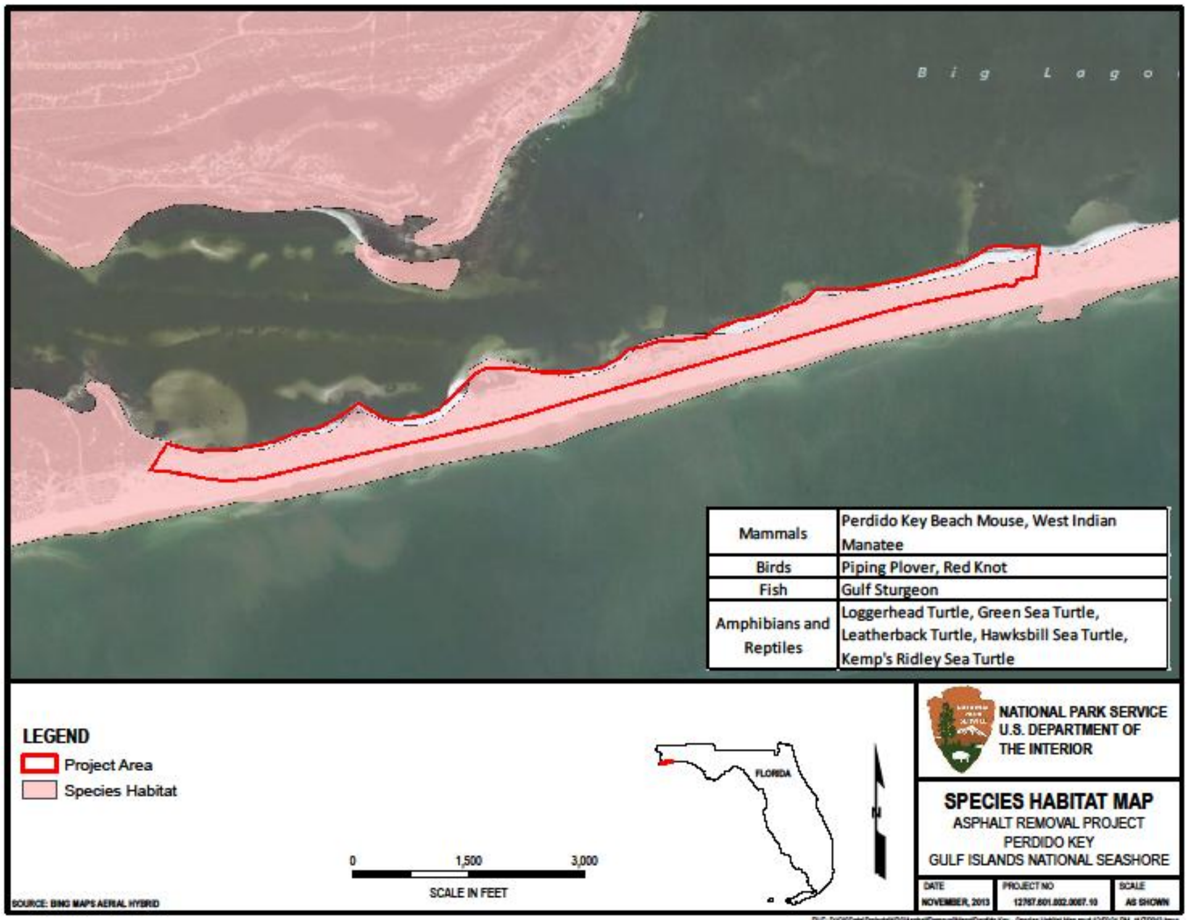

Figure 12-15. Perdido Key project area species habitat. (NOTE: Polygon boundaries do not line up well on the north shoreline because they were based on different aerial images. Tide levels at the time aerial images were taken could also have factored into this. The south border of the project area – roughly in the center of the Key – is correct as shown.)

Marine and Estuarine Fauna (fish, shell beds, benthic organisms)

Affected Resources

More than 200 species of fish have been observed in waters surrounding the Seashore. The most abundant fish species are the anchovy (*Anchoa* sp.) and the silverside (*Menidia* sp.); both species are also abundant in the shallow near shore waters. Myriad larval and young fish occupy the shallow waters around the islands and find food and protection in the seagrass beds (NPS 2011a).

Gulf Sturgeon Critical Habitat

See Protected Species section below.

Shellfish
Several species of shellfish that are commercially, recreationally, and ecologically important occur in Seashore waters, including blue crabs (*Callinectes sapidus*), stone crabs (*Menippe mercenaria*), and many species of shrimp (NPS 2006).

Marine Mammals
Noise and other activity associated with the proposed in-water work for this project may temporarily disturb manatees and dolphin species in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise. Standard Manatee Conditions for In-Water Work (USFWS 2011) would be implemented and adhered to during project implementation (see Chapter 6 for specific conditions). The permittee must comply with these conditions, and it is anticipated that these conservation measures would result only in short term or minor impacts to manatees from the proposed project. Dolphins are highly mobile species and would be expected to move away from the construction area during in-water activities. The Beach Enhancement project would adhere to all applicable federal, state, and local permit conditions for the protection of marine mammals.

Environmental Consequences
In-water components of the project would result in short-term, minor impacts to the marine fauna described above during removal activities. However, disturbed individuals would likely return to the area after activities cease and the removal of asphalt and other road-base material would provide overall long-term benefits to marine species. Where asphalt and concrete are removed from the intertidal zone, habitat for species should slightly benefit as a result of the removal of these unnatural materials from the sandy surface. As mentioned above, alteration would primarily involve some temporary increases to turbidity and changes to the topography. However, these changes should not affect marine fauna because impacts would be highly localized and short-term (minutes to hours) and would occur in an area that is already very turbid due to wave action. Similarly, alterations to topography would be short-term (hours to days) and are not likely to impact fauna due to the small project footprint and the ability of these species to avoid disturbed areas. After asphalt or concrete materials are removed from the intertidal and subtidal zones, the sand that was removed with the asphalt and concrete materials and deposited on the beach above the surf line would be returned to its original location to the best extent possible and all ruts and mounds would be filled and smoothed out, thus minimizing the topographical alterations.

Typically, marine mammal species in the Gulf are found in deeper waters on the outer continental shelf or along the shelf break; therefore, they would not be impacted during the restoration activities.

Protected Species
Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act and bald eagles protected under the Bald and Golden Eagle Protection Act.

Affected Resources

Special Status Species

USFWS and NMFS list species as threatened or endangered when they meet criteria detailed under the ESA of 1973. In, or in the vicinity of the Seashore, several terrestrial and marine species are listed as protected by USFWS. Based on existing literature and in consultation with the USFWS and NMFS, Table 12-6 identifies the species that are likely to occur in the Florida Panhandle and whose habitat type is present in the project area.

Table 12-6. List of Federal threatened, endangered, and other species of concern likely to occur in the Florida Panhandle.

SPECIES/CRITICAL HABITAT	STATUS	HABITAT DESCRIPTION
Fish		
Acipenser oxyrhinchus desotoi Gulf sturgeon)	T, CH	RIVERINE: spawning over bedrock, cobble, clean gravel, marl, soapstone, or hard clay substrates ESTUARINE/MARINE: unvegetated sandy shorelines, shallow shoals, and other areas containing mostly sand; Critical Habitat present in project area around Perdido Key, Ft. Pickens and Santa Rosa
Reptiles		
Caretta caretta (loggerhead turtle) Northwest Atlantic Distinct Population Segment	T, PCH	TERRESTRIAL: sandy beaches; Nesting; Proposed Critical Habitat present in project area at Perdido Key ESTUARINE/MARINE: unvegetated sandy shorelines, shallow shoals, and other areas containing mostly sand
Chelonia mydas (green sea turtle)	E	TERRESTRIAL: sandy beaches; Nesting ESTUARINE/MARINE: un vegetated sandy shorelines, shallow shoals, and other areas containing mostly sand
Dermochelys coriacea (leatherback turtle)	E	TERRESTRIAL: sandy beaches; Nesting ESTUARINE/MARINE: unvegetated sandy shorelines, shallow shoals, and other areas containing mostly sand
Eretmochelys imbricata (hawksbill sea turtle)	E	TERRESTRIAL: sandy beaches; Nesting ESTUARINE/MARINE: unvegetated sandy shorelines, shallow shoals, and other areas containing mostly sand
Lepidochelys kempii (Kemp's Ridley Sea Turtle)	E	TERRESTRIAL: sandy beaches; Nesting ESTUARINE/MARINE: unvegetated sandy shorelines, shallow shoals, and other areas containing mostly sand
Birds		
Charadrius melodus (piping plover)	T, CH	ESTUARINE: exposed unconsolidated substrate MARINE: exposed unconsolidated substrate TERRESTRIAL: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants. Critical Habitat present in project area at Santa Rosa
Calidris canutus rufa (red knot)	P	ESTUARINE: exposed unconsolidated substrate MARINE: exposed unconsolidated substrate TERRESTRIAL: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants
Mammals		
Peromyscus polionotus trissyllepsis (Perdido Key beach mouse)	E, CH	TERRESTRIAL: beach dune, coastal scrub. - Critical Habitat present in project area at Perdido Key

SPECIES/CRITICAL HABITAT	STATUS	HABITAT DESCRIPTION
Trichechus manatus (West Indian Manatee)	E	ESTUARINE: submerged vegetation, open water MARINE: open water, submerged vegetation RIVERINE: alluvial stream, blackwater stream, spring-run stream
Status: E=endangered, T=threatened, P=proposed, CH=critical habitat, PCH=proposed critical habitat Source: This table reflects the information provided by the USFWS Biological Evaluation Form, September 27, 2013.		

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*):

The Gulf sturgeon is an anadromous species which migrates from coastal bays and estuaries to large coastal rivers in the spring for spawning and then returns to brackish and marine environments from October through March for foraging. It is likely to be using estuarine and marine habitats surrounding the project area from mid- to late fall through early spring for foraging.

Gulf Sturgeon Critical Habitat

The proposed project area is located in critical habitat for Gulf sturgeon (See

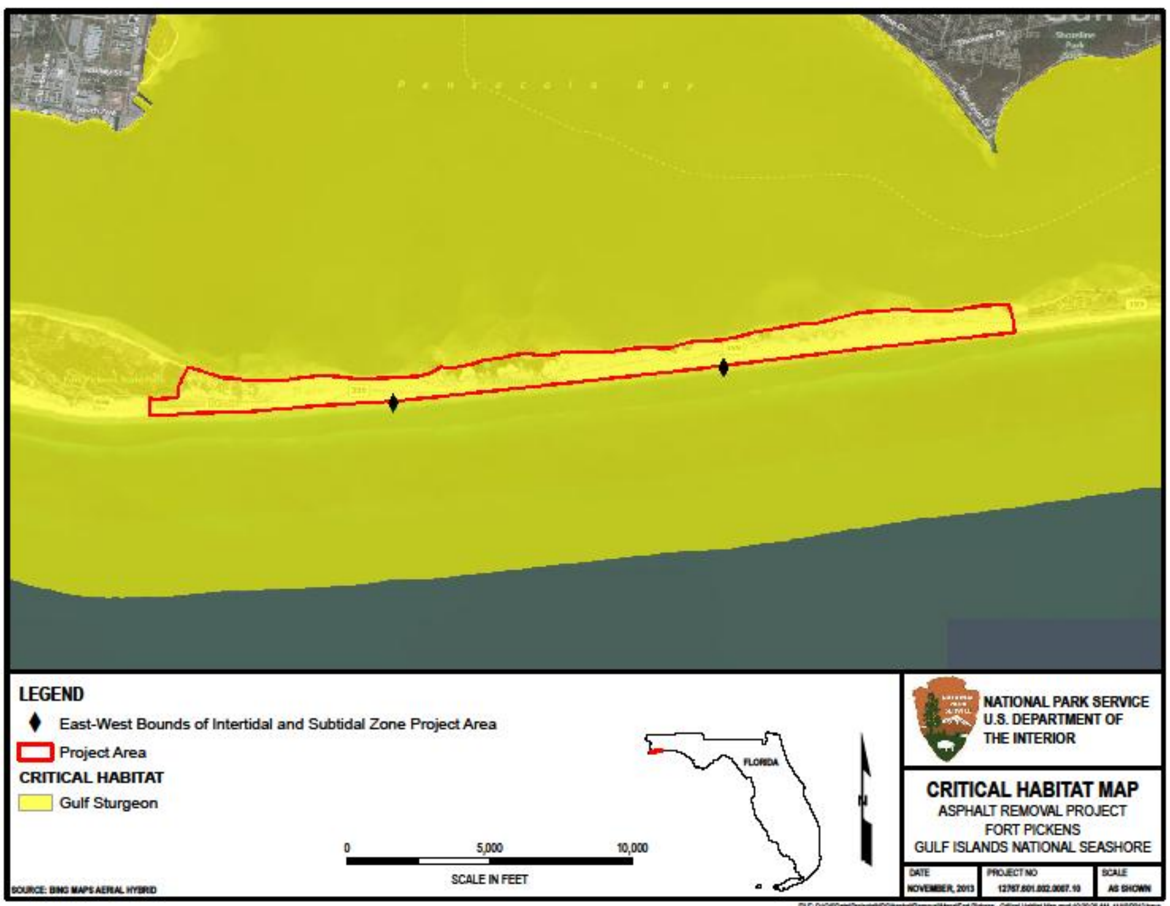

Figure 12-16, Figure 12-17, and Figure 12-18). Near shore waters within one nautical mile of the mainland from Pensacola Pass to Apalachicola Bay and the Perdido Key area and the area north of Santa Rosa Island were designated as critical habitat, as they are believed to be important migratory pathways between Pensacola Bay and the Gulf of Mexico for feeding and genetic exchange (NPS 2011a). The

Primary Constituent Elements for Gulf sturgeon critical habitat that are *present within or adjacent to* the project area are: 1) Abundant food items, such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages; and abundant prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks and/or crustaceans, within estuarine and marine habitats and substrates for subadult and adult life stages; 2) Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; 3) Sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and 4) Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (*e.g.*, an unobstructed river or a dammed river that still allows for passage).

Essential Fish Habitat

The 1996 Magnuson-Stevens Fishery Conservation and Management Act (MFCMA) requires cooperation among NMFS, anglers, and federal and state agencies to protect, conserve, and enhance Essential Fish Habitat (EFH). EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. The designation and conservation of EFH seek to minimize adverse effects on habitat caused by fishing and non-fishing activities. NOAA's Estuarine Living Marine Resources (ELMR) Program developed a database on the distribution, relative abundance, and life history characteristics of ecologically and economically important fishes and invertebrates in the nation's estuaries. NOAA designated EFH for more than 30 estuaries in the northern Gulf of Mexico for a number of species of finfish and shellfish. All of Pensacola Bay and waters surrounding the Seashore are designated as EFH. Therefore, EFH is present in the proposed beach enhancement project area for the following species:

- Sandbar Shark (*Carcharhinus plumbeus*)
- Scalloped Hammerhead Shark (*Sphyma lewini*)
- Bonnethead Shark (*Sphyma tiburo*)
- Finetooth Shark (*Carcharhinus isodon*)
- Tiger Shark (*Galeocerdo cuvier*)
- Blacktip Shark (*Carcharhinus limbatus*)
- Spinner Shark (*Carcharhinus brevipinna*)
- Atlantic Sharpnose Shark (*Rhizoprionodon terraenovae*)
- Bull Shark (*Carcharhinus leucas*)
- Blacknose Shark (*Carcharhinus acronotus*)
- Brown Shrimp (*Penaeus aztecus*)
- White Shrimp (*Penaeus setiferus*)
- Pink Shrimp (*Penaeus duorarum*)
- Royal Red Shrimp (*Pleoticus robustus*)
- Reef Fish (43 Species)

Loggerhead Sea Turtle (*Caretta caretta*):

The Northwest Atlantic Distinct Population Segment of the Loggerhead sea turtle (loggerhead) is regularly observed using the Seashore for nesting and the surrounding waters for swimming, migrations, and foraging. Preferences for nesting beaches include high energy coarse-grained beaches adjacent to the ocean that are narrow and steeply sloped (NOAA Fisheries 2013c). Habitat for foraging and migration includes open ocean, inshore areas, bays, salt marshes, ship channels, and mouths of large rivers. This sea turtle feeds on mollusks, fish, crustaceans, and other marine organisms Turtle nesting typically occurs on sandy beaches during the months of May through August, with hatching occurring from late July through October (NPS 2011a).

Loggerhead Sea Turtle Critical Habitat

Critical habitat for the loggerhead sea turtle has been proposed within the project area at Perdido Key (see Figure 12-18). Proposed critical habitat includes the extra-tidal or dry, sandy beaches from the mean high-water line to the toe of the secondary dune, which are capable of supporting a high density of nests or serving as an expansion area for beaches with a high density of nests and that are well distributed within each State, or region within a State, and representative of total nesting (USFWS 2013b). Proposed primary constituent elements (PCEs) for loggerheads includes: 1) Suitable nesting beach habitat that: (a) has relatively unimpeded nearshore access from the ocean to the beach for nesting females and from the beach to the ocean for both post-nesting females and hatchlings and (b) is located above mean high water to avoid being inundated frequently by high tides. 2) Sand that: (a) allows for suitable nest construction, (b) is suitable for facilitating gas diffusion conducive to embryo development, and (c) is able to develop and maintain temperatures and moisture content conducive to embryo development. 3) Suitable nesting beach habitat with sufficient darkness to ensure that nesting turtles are not deterred from emerging onto the beach and hatchlings and post-nesting females orient to the sea. These PCE’s are present at Perdido Key.

Green Sea Turtle (*Chelonia mydas*):

The green sea turtle breeding populations in Florida and on the Pacific Coast of Mexico are federally listed as endangered. All other populations are federally listed as threatened. In the Gulf of Mexico, green sea turtles are found in offshore and near-shore waters. Green sea turtles are herbivorous, feeding mainly on seagrasses and algae. In the southeastern United States, nesting generally occurs between June and September on sandy beaches. Eggs hatch approximately two months later. Hatchlings swim to offshore areas, where they live for several years. As the juvenile mature, they return to near-shore foraging grounds, where they become almost exclusively herbivorous (NMFS, 2009). Green sea turtles nest within the project area.

Leatherback Sea Turtle (*Dermochelys coriacea*):

While not common, there have been sporadic observations of Leatherback Turtles in Mississippi waters (MDWFP 2001). Leatherback sea turtles are federally listed as endangered. This species mainly inhabits the offshore open ocean; however, it does use nearshore coastal waters during nesting or feeding. Their main forage item is jellyfish. This species migrates long distances from nesting to feeding areas. The leatherback turtle mates in the waters adjacent to nesting beaches and along turtle migratory corridors. Females nest on sandy, tropical beaches several times during a nesting season, which occurs from March to July, typically at 8- to 12-day intervals. After nesting, females migrate from tropical waters to more temperate waters. Leatherback turtles rarely nest in the project area; however, Seashore staff documented its first leatherback nest in 2000 (NPS, 2007).

Hawksbill Sea Turtle (*Eretmochelys imbricata*):

The Hawksbill sea turtle is federally listed as endangered. Although this species uses various habitats such as the open ocean, bays, and estuaries throughout different life stages, it is mainly associated with coral reefs. The main dietary items of this species are sponges and other invertebrates (NOAA Fisheries 2013a). The main threat to hawksbills is habitat loss of coral reef communities (NMFS, 2009). In the continental United States, nesting is generally limited to the southeast coast of Florida and the Florida Keys (NMFS, 2009). Although nesting is possible in the panhandle of Florida and, Hawksbill sea turtles have been observed at the Seashore, but they are very rare and nesting within the project area has never been reported or documented (Hoggard, 2009).

Kemp's Ridley Sea Turtle (*Lepidochelys kempii*):

Kemp's Ridley sea turtle, federally listed as endangered and the most critically endangered of all five of the listed sea turtle species endemic to the area is distributed throughout the Gulf of Mexico and U.S. Atlantic seaboard. Typical habitat for this species includes nearshore and inshore coastal waters; often salt marshes and neritic zones with muddy or sandy substrate (NOAA Fisheries 2013b). Their diet consists mainly of swimming crabs, fish, jellyfish, and mollusks. Nesting occurs from May to July, with an incubation period of 50 to 60 days. Post-hatchlings travel offshore to avoid predation in shallow waters. Once the Kemp's Ridley turtle reach a carapace length of approximately 8 inches, it returns to near-shore waters to feed and develop (NMFS, 2009). The Kemp's Ridley turtle is known to nest within the project area (Hoggard, 2009).

Piping Plover (*Charadrius melodus*):

The piping plover, federally listed as threatened, uses shorelines and sparsely vegetated sand beaches, mudflats, and salt marshes for feeding and resting during migration and winter months. Breeding and nesting do not occur along the Gulf coast. Piping plovers begin arriving to the Seashore in July and remain into the following May; wintering habitat is concentrated in open beaches and tidal flats. Full surveys have not been conducted, but within the Florida District of the Seashore, piping plovers are known to winter in tidal flat areas on Perdido Key and on the north side of Santa Rosa Island (NPS 2011b).

Piping Plover Critical Habitat

Parts of the Seashore have been designated as critical habitat for wintering piping plover (see Figure 12-17 and Figure 12-18). The PCEs for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support these habitat components. PCE's are as follows: 1) Intertidal flats with sand or mud flats (or both) with no or sparse emergent vegetation, 2) Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting piping plovers. Such sites may have debris, detritus, or microtopographic relief (less than 50 cm above substrate surface) offering refuge from high winds and cold weather, 3) Important components of the beach/dune ecosystem include surf-cast algae, sparsely vegetated back beach and salterns, spits, and washover areas, and 4) Washover areas are broad, unvegetated zones, with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action. The PCEs are found in geologically dynamic coastal areas that support intertidal beaches and flats (between annual low tide and annual high tide) and associated dune systems and flats above annual high tide. These PCEs are present in the project area. Activities that affect PCEs include those that directly or indirectly alter, modify, or destroy the processes that are associated with the formation and movement of barrier islands, inlets, and other coastal landforms. Those processes include erosion, accretion, succession, and sea-level change. The integrity of the habitat components also depends upon daily tidal events and regular sediment transport processes, as well as episodic, high-magnitude storm events (Service 2001).

Red Knot (*Calidris canutus rufa*):

The red knot, federally listed as a candidate species, is a long-distance migrant which migrates as part of a large flock. The southeastern United States is mostly used as wintering habitat or as a migrating stopover for red knots; small populations overwinter in Florida although most migrate to South America. Wintering/migrating habitat consists of marine and estuarine habitats, with exposed unconsolidated substrate, dunes, and sandy beaches. In Florida, foraging occurs along sandy beaches, tidal mudflats, salt marshes, peat banks, and mangrove and brackish lagoons. Data on the distribution of red knot within the Seashore is not available, although they have been spotted in the project area (map provided by eBird (www.ebird.org) and created November 19, 2013).

Perdido Key Beach Mouse (*Peromyscus polionotus trissyllepsis*):

The Perdido Key beach mouse, federally listed as endangered, is one of eight subspecies of the oldfield mouse (*Peromyscus polionotus*) that occur, or occurred, on barrier islands and other coastal areas of Florida and Alabama. The Perdido Key beach mouse occurs in the wild only on Perdido Key. Perdido Key beach mouse habitat is restricted to the primary dunes, interdunal areas, and secondary and scrub dunes along the Gulf coast of Perdido Key. They eat fruits and seeds of dune plants, primarily sea oats (*Panicum repens*) and beach grass (*Panicum amarums*), and occasionally eat invertebrates. They breed year-round (NPS 2011b).

Perdido Key Beach Mouse Critical Habitat

Perdido Key beach mouse critical habitat is within the project area at Perdido Key (see Figure 12-15). PCE's for Perdido Key beach mouse: 1) A contiguous mosaic of primary, secondary scrub vegetation, and dune structure, with a balanced level of competition and predation and few or no competitive or predaceous nonnative species present, that collectively provide foraging opportunities, cover, and burrow sites; 2) Primary and secondary dunes, generally dominated by sea oats that, despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators; 3) Scrub dunes, generally dominated by scrub oaks, that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane induced storm surge; 4) Functional, unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and recolonization of locally extirpated areas; and 5) A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth and viability of all life stages. Beach mouse habitat at Perdido Key consists mainly of primary and secondary dune habitat, but provides the longest contiguous expanse of frontal dune habitat within the historic range of the PKBM, and possesses all five PCE's essential to conservation of the species. The area was included in the initial critical habitat designation (50 FR 23872) as well as the 2006 revision (71 FR 60238).

West Indian Manatee (*Trichechus manatus*):

The West Indian manatee is federally listed as endangered. The Florida manatee (*Trichechus manatus latirostrus*), a subspecies of the West Indian manatee, is found in the Florida District of the Seashore. The manatee is a large gray or brown aquatic mammal native to the United States in Florida, Georgia, and Puerto Rico. Manatees may be found in coastal or estuarine waters in Florida, but are most common in peninsular Florida. Manatees are found in shallow rivers, estuaries, and inshore coastal areas where they feed on seagrasses and other aquatic vegetation. During the winter months, manatees migrate to the warmer waters of south Florida or form large aggregations in natural springs and industrial outfalls where water temperatures are elevated. At the Seashore, manatee sightings are rare but have been documented in the Gulf of Mexico and Pensacola Bay (NPS, 2011b).

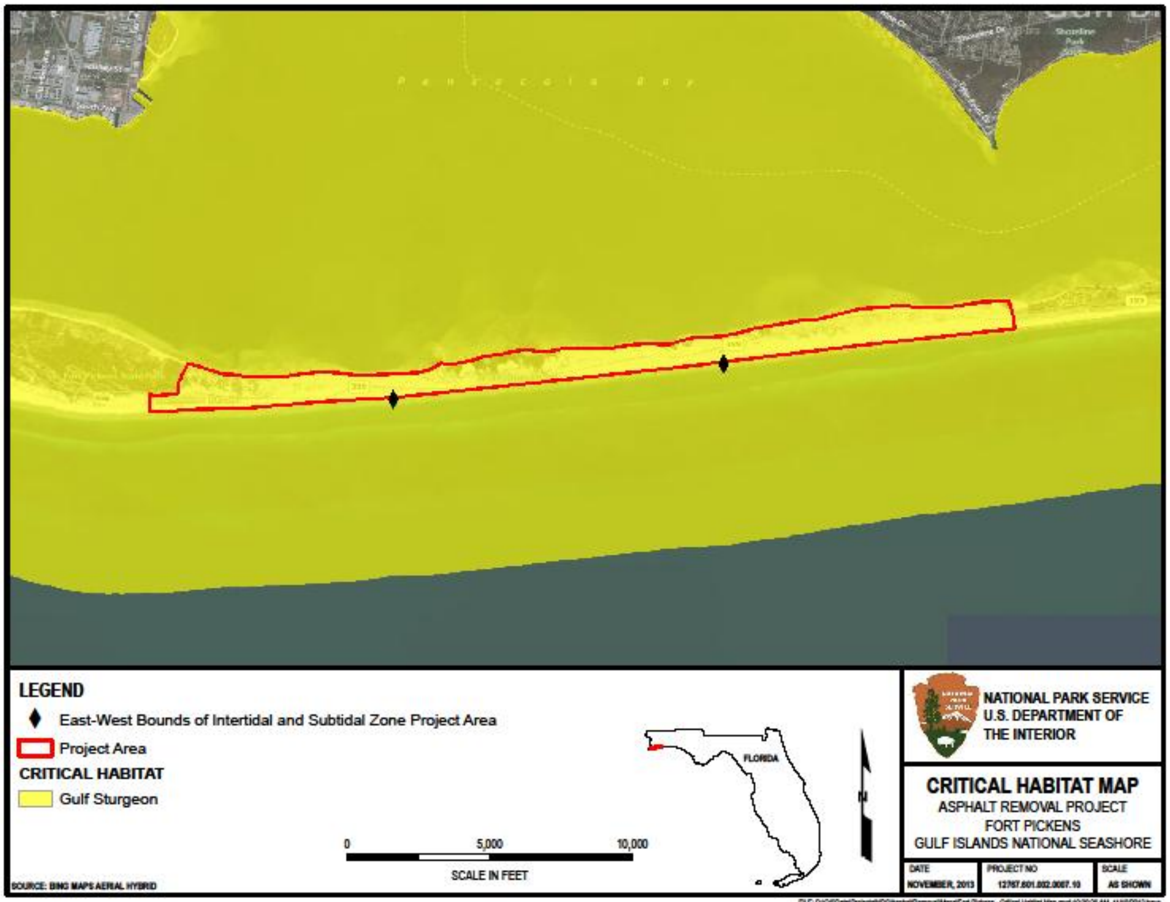

Figure 12-16. Fort Pickens project area special status species' critical habitat.

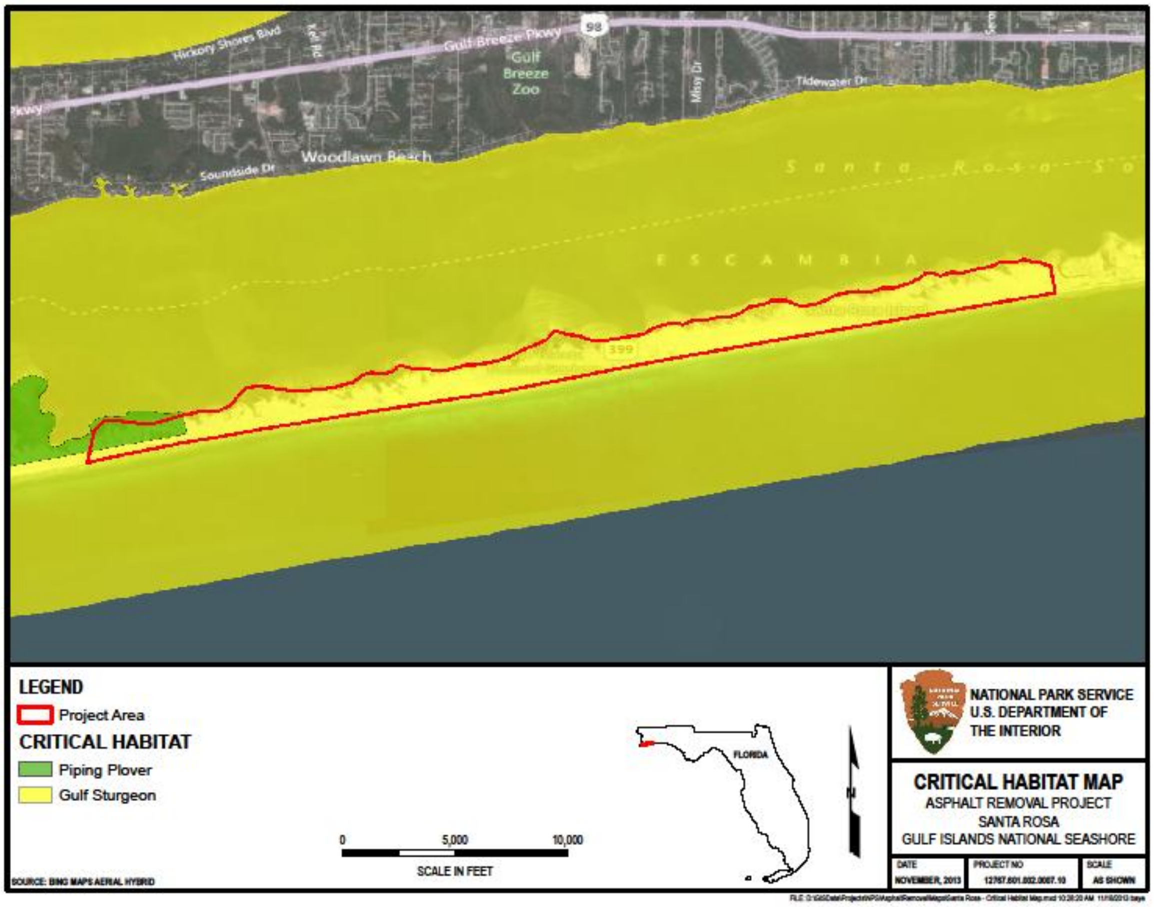

Figure 12-17. Santa Rosa project area special status species critical habitat.

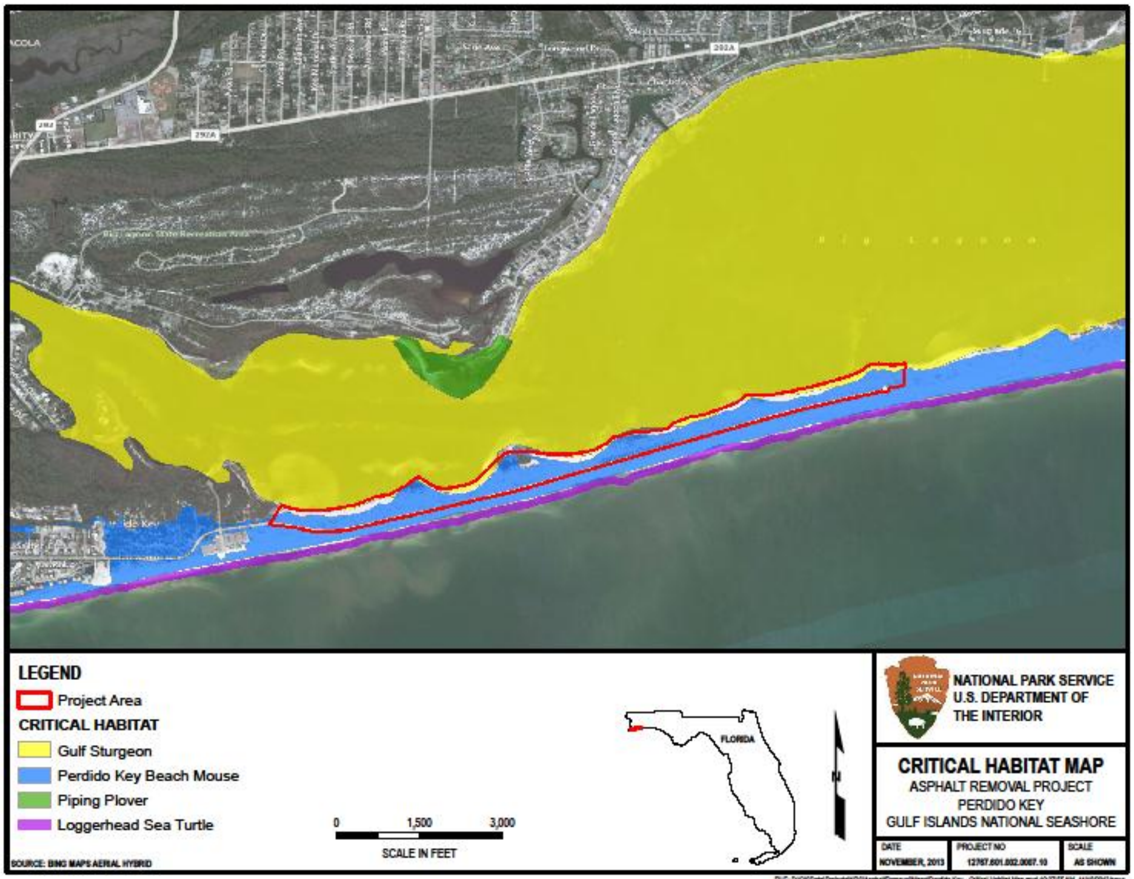

Figure 12-18. Perdido Key project area special status species critical habitat.

Environmental Consequences

The proposed project could impact the protected species described above. The project is considered "Not Likely to Adversely Affect" Gulf sturgeon within DOI jurisdiction (riverine environments). DOI also determined that two of the seven Primary Constituent Elements would be impacted from the project: "abundant food items" would sustain minor impacts and "water quality" would sustain negligible impacts. DOI has begun coordination with NMFS regarding potential impacts to Gulf Sturgeon in estuarine and marine waters. We believe the implementation of conservation measures and the short duration and highly localized nature of the project would minimize any potential impacts such that they are short-term and minor.

Most of the project work would occur during the late summer, fall and winter months when sea turtles are less likely to be present in the terrestrial environment. However, project work may coincide with sea turtle hatchling presence (i.e. Aug. 15 – Nov. 1). During this time construction crews would be operating mechanized equipment on the beach and small crews may be walking along the beach removing some fragments of material by hand. The noise produced by the machinery and movement of the machinery along the beaches may disturb any late nesting sea turtles or could crush nests. Ruts made by vehicles on shore can potentially trap sea turtles/hatchlings. Removal of large pieces of material may create holes that could potentially trap sea turtles or hatchlings, and hatchlings are vulnerable to being run over. In Table 12-6 we describe conservation measures to protect sea turtles during all life stages. The FWS concurred that this project is "Not Likely to Adversely Affect" the five sea turtles on land. DOI is currently coordinating with NMFS on the project's in-water effects. We believe the implementation of conservation measures and the short duration and highly localized nature of the project would minimize any potential impacts such that they are short-term and minor.

This project would likely result in short term, minor adverse impacts to EFH due to benthos disturbances and turbidity. Again, these impacts would be short term and highly localized. Removal of asphalt and concrete from these zones would actually have a small but long-term benefit on EFH by removing impediments to the normal use of the sandy benthos in this area by EFH species. An EFH Assessment stating so was prepared and submitted by DOI to NMFS, requesting its concurrence with this conclusion.

Additionally, this project could temporarily impede nearshore access (PCE 1) and short- term, temporary driving on the beach could compact sand. Conservation measures below would be implemented to ensure PCEs will continue to support the survival and recovery of Northwest Atlantic DPS of loggerhead sea turtles therefore any impacts to critical habitat would be short-term and minor.

Project work would occur during the late summer, fall and winter months over a period of approximately 4 years. Piping Plovers and Red Knots do not nest in the project area, but do use it for wintering habitat. Both species could be startled by work crews, vehicles, and machinery and stop foraging or roosting. However, these birds would be expected to move away from the disturbance to other suitable habitats outside of the disturbance area. There is an abundance of suitable foraging and roosting habitat within the Seashore and within 2 miles of the action area in which plovers would be expected to move to or within (i.e., within their normal range of movements). The noise produced by the machinery and movement of the machinery and personnel along the beaches may disturb either species present on site, but both could avoid disturbance by moving into adjacent areas of unimpacted habitat. Therefore we would not expect startling and temporary displacement to interrupt or have long-term consequences to normal behaviors. Foraging habitats are abundant within the Seashore and sand and prey items would be sieved on site and not removed from the area therefore we do not expect indirect effects to piping plover from a loss of prey base. Based upon the normal movement patterns of Piping Plover and Red Knot and the conservation measures outlined below (allowing movement of their own volition, and watching for the birds), any impacts would be expected to be short-term and minor.

Areas containing habitat components that are essential for primary biological needs of foraging, sheltering, and roosting are considered critical habitat. In the long term, construction activity impacts should be largely beneficial to critical habitat, with cleanup improving long-term foraging, sheltering, and roosting resources. Cleanup would improve the PCEs of sparsely vegetated intertidal flats, flats above high tide, back beach and washover areas by removing roadbed debris, thus returning the site to a more natural condition. During project work, construction crews would be operating mechanized equipment on the beach and small crews may be walking along the beach removing fragments of material by hand. Sand would be sifted in place and all sand and non-roadbed-related debris would be returned as near as possible to its original location. The vast majority of the material to be removed is expected to cause surficial disturbance only. No significant change to the structure of existing landscape features (including PCEs) is expected, and should changes occur, they would occur because of the removal of foreign materials and should not affect the way landscape features are formed and maintained in the future. Further, the project is not anticipated to alter the way any coastal processes (such as washovers and spits) occur. During project implementation machinery on the beach may compact sand and/or create divots where asphalt is removed, however this is not expected to change plant densities in any way, and where plants are removed, appropriate native plants would be planted in their place. Thus no short or long term effects to piping plover critical habitat are expected to occur.

In addition, we do not expect increased visitor use due to the project; rather we expect the project to result in an improved visitor experience. Therefore, we do not expect indirect effects from human use to increase or impact any of the protected species or critical habitats discussed above.

The majority of this project is to be accomplished on shore; however, a portion of this project would occur in the intertidal zone on the Gulf side of the Fort Pickens area. Due to the depth of water within the intertidal zone, lack of submerged aquatic vegetation, and rarity of encountering West Indian Manatees at Gulf Island National Seashore, it is unlikely that West Indian Manatees would be present in the action area. In-water asphalt removal would not involve the use of boats or barges. Construction equipment such as a backhoe with a long arm and bucket, located on shore near the mean low tide line, may be used to retrieve materials. Turbidity of the water within the intertidal zone may increase during the project work within this area and the noise from the machinery may affect species within the intertidal zone and adjacent areas. If transiting the area manatees could be startled by in-water removal or have difficulty navigating due to turbidity. We expect West Indian Manatee to naturally avoid any areas of increased turbidity as they are not known to use turbid habitats. We do not expect this avoidance of the project area to result in changes to normal behaviors. Also, because of the wave action in this area, natural background levels of turbidity are already high. Conservation measures would be implemented to prevent any direct impacts to the manatee. Therefore, we would expect any potential impacts to be short-term and minor.

Perdido Key Beach Mice inhabit the sand dunes along Perdido Key, but not other locations considered within this project. During project work, construction crews would be operating mechanized equipment on the beach and small crews may be walking along the beach removing fragments of material by hand. Machinery would not be used within dune habitats used by the mice; however crews with hand tools could be used. The noise produced by the machinery and movement of the machinery and people along the beaches may disturb the Perdido Key Beach Mice, vibrate the dunes, collapse burrows, or cause adults to temporarily abandon burrows leaving juveniles in the nest. However, conservation measures would be put in place to ensure operation of machinery is conducted in a manner such that these effects are avoided. If equipment and machinery could be left in place overnight, mice could shelter under or around it. Therefore, measures have been designed to avoid these impacts as well. Based on the incorporation of avoidance measures in (Table 12-6) to the project, we expect any impacts to only be short-term and minor.

PCE's for Perdido Key beach mouse critical habitat largely refer to landscape level areas (including vegetation and dune structure and habitat connections). This project would not affect the area on a landscape level. Work would occur in small areas and move from one area to the other as asphalt and aggregate material are removed. It is unlikely that this work would alter the landscape mosaic of vegetation, dunes, and other habitat connections with which the PCEs are concerned. Where vegetation is damaged it would be replaced, though vegetation in mouse habitat is expected to be avoided. The PCE of natural light regimes would not be affected because all work would occur within daylight hours. Therefore, we expect any impacts to critical habitat to be short-term and minor.

During restoration activities, a monitor would be present that would be able to halt work if federally-listed species are located in the project area. Work would be halted until such time as the area is deemed safe to continue the operation. Additionally, NOAA-NMFS' sea turtle "construction conditions" would be followed. Overall, restoration activities would restore the site to its natural conditions, which should have a positive impact to the federally listed who utilized the project area. No negative impacts to marine mammals or sea turtles would be anticipated as a result of the proposed project. Table 12-7 provides the conservation measures that would be implemented to reduce impacts to these species.

Table 12-7. Explanation of actions (conservation measures) to be implemented to reduce impacts to protected species.

SPECIES/CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
Gulf Sturgeon	• Instruct all personnel associated with the project in the potential presence of Gulf sturgeon. Furthermore, inform the project personnel of the civil and criminal penalties for harming, harassing, or killing species that are protected. • Keep noise low (in air and in water) to the greatest extent possible. • Care shall be taken in lowering equipment or material below the water surface and into the sediment. These precautions would be taken to ensure no harm occurs to any sturgeon which may have entered the project area undetected. • In the unlikely event that a protected Gulf sturgeon approaches any near-shore areas of the proposed project, work would immediately cease until the sturgeon moves away from the area on its own volition. • The Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) would be implemented to protect Gulf sturgeon,
Sea Turtles (Loggerhead Turtle, Green Sea Turtle, Leatherback Turtle, Hawksbill Sea Turtle, Kemp's Ridley Sea Turtle)	• The Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) would be implemented to protect in-water sea turtles. • Construction activities would be limited to the late summer, fall and winter months when sea turtles are less likely to be nesting and hatchlings are less likely to be leaving the nest. • The Seashore would increase turtle crawl and nest monitoring in areas between May 1 and Aug 31 in an effort to locate and identify all crawls, false crawls and nests. These nests would be marked for avoidance (following standard procedures) by foot traffic and vehicles. The Seashore fails to identify less than one nest in every two breeding seasons (personal communication with Mark Nicholas, Biologist, GUIS, 8/27/2013); therefore, we anticipate being able to avoid all nests if asphalt removal must occur in sea turtle nesting habitats prior to November. • In areas where sea turtle nests are present, cleaning would not begin until after the nest hatches. • Vehicles and equipment would be driven to avoid nests by a minimum of 10 feet. • All construction personnel would be notified of the potential presence of sea turtles both on the beach and in the water and would be reminded of the need to avoid sea turtles. • All construction personnel would be notified of the criminal and civil penalties associated with harassing, injuring, or killing sea turtles. • In areas where adults or hatchlings could be present and vehicles or mechanical equipment maybe used, a pre-operational survey would be conducted to ensure no adults or hatchlings are present or in the path of the equipment. • Train/instruct all construction personnel of what they are to do in the presence of a sea turtle.

SPECIES/CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
	• Construction activities would occur during daylight hours and noise would be kept to the minimum feasible. • All ruts created during construction activities involving operation of mechanized equipment would be leveled in order to prevent trapping of sea turtles. • All holes created from removal of material would promptly be filled in order to prevent entrapment of sea turtles.
Proposed Critical Habitat Loggerhead	• To avoid impacts to PCE 1 regarding relatively unimpeded nearshore access for nesting females and hatchlings, no work would be completed in the nearshore area until all known nests in the vicinity have hatched. In addition, Seashore staff would monitor for nests, crawls, and nesting females from May 1 and Aug 31 in an effort to locate and identify all crawls, false crawls and nests. • Short- term, temporary driving on the beach could compact sand, the driving would between nesting seasons allowing for the full natural cycle of wind/rain erosion and accretion of sand to occur. Therefore, this project should not in any way change the nature of the sand in the project area (PCE 2). Instead, the project would improve the physical conditions of sand in the project area by removing foreign materials. The project would be sifted in place, thus not removing sand. • Work on this project would only occur during daylight hours and would therefore not affect the light regime needed for post-nesting females and hatchlings to orient to the sea.
Piping Plover and Red Knot	• All construction personnel would be instructed and trained in the protection of shorebirds and seabirds. • Construction personnel would be notified of the criminal and civil penalties associated with harassing, injuring, or killing shorebirds and seabirds. • Construction activities would be conducted in accordance with the Florida Fish and Wildlife Conservation Commission's guidelines developed to protect nesting shorebirds would be applied to foraging and roosting Piping Plover and Red Knot. • If piping plovers or red knots are present, work would not occur until the birds have moved from the area by 150 feet. • Construction noise would be kept to the minimum feasible. • All construction personnel would be notified that if equipment is left onsite overnight, a qualified biologist would walk around the equipment and look for signs of birds before moving the equipment, contacting a qualified biologist if signs of birds' presence are detected.
Piping Plover Critical Habitat	• The project would not remove sand from intertidal, sand, or mud flats. • The project would occur in very localized locations for very short periods of time, allowing for intact sand, mud, and algal flats, as well as surf-cast algae, back beach, salterns, spits and washover areas to remain nearby as others are disturbed.
Perdido Key Beach Mouse	• All construction personnel would be notified of the potential presence of Perdido Key Beach Mice (PKBM) and reminded of the criminal and civil penalties associated with harassing, injuring, or killing Perdido Key Beach Mice. • To minimize impacts to PKBM in burrows, a qualified biologist would survey the project site before work commences and flag potential burrows and tracks so that they can be avoided. • Only hand tools would be used within a five-foot radius of a burrow opening or any observed mice tracks. • Mechanized equipment would not be used to remove the materials within areas known to support beach mice. Small crews, guided by a biologist, may remove product with hand tools to some extent. • Equipment and vehicles would avoid the dune by 10 foot of the toe of the dune. • Construction noise would be kept to the minimum feasible. • Construction would occur during the day to minimize disturbance to nocturnal patterns. • Equipment, vehicles, and project debris would not be stored in a manner or location where it could be colonized by mice. • All construction personnel would be notified that if equipment is left onsite overnight, a qualified biologist would walk around the equipment and look for signs of mice before moving the equipment.

SPECIES/CRITICAL HABITAT	ACTIONS TO MINIMIZE IMPACTS
Perdido Key Beach Mouse Critical Habitat	• The project would occur in very localized locations for very short periods of time, allowing the mosaic of primary, secondary scrub vegetation and dune structure to remain unchanged. • When plants are destroyed during the project, appropriate native plants would be planted in the same location to minimize effects to the vegetative composition of the area. • Only hand tools would be used within the dunes, reducing possible impacts to burrows and reactions to noise and vibration. • No mechanized equipment would be used or left in the dunes. • Project work would only occur during daylight hours, as such it would not alter the natural light regime of the area.
West Indian manatee	• All construction personnel would be notified of the potential presence of West Indian Manatee in the water and reminded of the criminal and civil penalties associated with harassing, injuring, or killing West Indian Manatees. • All workers would be educated that there could be West Indian manatees in the water and would be advised to look for manatees and, if observed, wait until manatees leave the area to put the equipment in the water. • In-water construction activities would be limited to the late summer, fall and winter months when West Indian Manatees are less likely to be present within the construction area. Care would be taken when lowering equipment into the water and the sediment in order to ensure that no harm is caused to West Indian Manatee that may potentially be in the water within the construction area. • Should a West Indian Manatee come within 50 foot of the project area during construction activities, work would immediately cease until the West Indian Manatee has moved away from the project area on its own. • Construction noise would be kept to the minimum feasible.

Migratory Birds and Bald Eagles

Affected Resources

More than 300 species of birds have been recorded at Gulf Islands National Seashore. Bird species utilize the project area for resting, nesting, foraging, wintering, or migratory rest stops (NPS 2006). Birds include songbirds, waterfowl, wading birds, birds of prey, and shorebirds. To protect nesting shorebirds, the Seashore temporarily closes nesting areas above the beach for specific time periods each year (NPS 2011a). During nesting season (March through August), Seashore biologists locate, count, and monitor nests of the least tern (*Sterna antillarum*), snowy plover (*Charadrius alexandrinus tenuirostris*), black skimmer (*Rhynchops niger*), and other shorebirds. Table 12-8 identifies the types of species common on the seashore and the habitats and behaviors exhibited by these groups while present.

In late 2004, Hurricane Ivan caused extensive storm surge and flooding on Santa Rosa Island. The majority of Seashore lands located on Santa Rosa Island were washed over (i.e., dunes washed away, leaving large open areas of flat, non-vegetated terrain). These flat areas of the Seashore temporarily became habitat for nesting shorebirds, such as plovers, terns, skimmers, and gulls (NPS 2006). While natural successional processes are resulting in the island ecosystem reaching equilibrium, including re-vegetation, which has decreased the area of preferred nesting habitat, the Fort Pickens Area still contains broad expanses of open habitat ideally suited for nesting shorebirds.

Table 12-8. Types of bird species common to the project area and their behaviors that could be taken to minimize potential impacts to them.

SPECIES*	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises, wood stork, American flamingo)	Foraging, feeding, resting, roosting, nesting	Wading birds primarily forage and feed at the water's edge. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily nest and roost in trees or shrubs (e.g. pines, *Bacchurus* and mangroves), which occur outside the project area. In addition, this project would not take place during nesting season; therefore this project is not anticipated to impact nesting.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Foraging, feeding, resting, roosting, nesting	Shorebirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily nest and roost in the dunes. However, this project would not take place during nesting season; therefore it is not anticipated to impact nesting.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Foraging, feeding, resting, roosting, nesting	Seabirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost in the dunes. However, this project would not take place during nesting season; therefore it is not anticipated to impact nesting.
Raptors (osprey, hawks, eagles, owls)	Foraging, feeding, resting, roosting, nesting	Raptors forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. The areas in the Seashore where these birds roost and nest are not within the project area.
Goatsuckers (nighthawks, whip-poor-will, Chuck-will's widow)	Foraging, feeding, resting, roosting, nesting	Goatsuckers forage, feed, rest, and roost in the project area. However, they are nocturnal/crepuscular and therefore not active during the project work period. They nest in thickets and woodlands, which are not included in the project area. In addition, this project would not take place during nesting season; therefore it is not anticipated to impact nesting.
Waterfowl (geese, swans, ducks, loons, and grebes)	Foraging, feeding, resting, roosting, nesting	Waterfowl forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost and nest in low vegetation. However, this project would not take place during nesting season; therefore it is not anticipated to impact nesting.
Doves and pigeons	Foraging, feeding, resting, roosting	Doves and pigeons could forage, feed, rest, and roost in the project area. However, they are unlikely to utilize sandy habitat. In addition, this project would not take place during nesting season; therefore it is not anticipated to impact nesting.

SPECIES*	BEHAVIOR	SPECIES/HABITAT IMPACTS
Rails and coots	Foraging, feeding, resting, roosting, nesting	Rails and coots forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. However they are most likely to favor marshy areas. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting if disturbed by the project. These birds primarily roost and nest in marshes, which are not within the project area. In addition, this project would not take place during nesting season; therefore it is not anticipated to impact nesting.
*Gulf Islands National Seashore lists 345 species of birds known to occur there. The above table lists species guilds and the genus type for those most likely to occur in the project area. The full list of species occurrences can be found at: **http://www.nps.gov/guis/naturescience/loader.cfm?csModule=security/getfile&pageID=525505**		

Bald Eagles

Bald eagles are known to nest within 1 mile of the project site (FDEP, personal communication, September 26, 2013). Based on the distance from proposed project activities, nesting of the known occurrences of bald eagle would not be impacted. However, if a bald eagle nest were observed in the vicinity of the project site, conservation measures to protect bald eagles would be implemented (see Chapter 6 for specific measures). To minimize potential for impacts to nesting bald eagles, the consultation protection measures may include 1) addressing prescribed nest tree protection zones, and 2) preparation of a bald eagle nest protection plan (including nesting behavior disturbance monitoring). Bald eagles have been known to tolerate certain potential disturbances in their breeding territories. Should these conservation measures be implemented for active nest sites adjacent to enhancement activities in the project area, potential impacts to the bald eagle would be short term and minor. The bald eagle was delisted by the USFWS and is not listed as threatened or endangered by the FWC. The bald eagle is, however, protected by state law pursuant to 68A-16, Fla. Admin. Code and by the U.S. government under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles feed on fish and other readily available mammalian and avian species and are dependent on large, open expanses of water for foraging habitat. In Florida, conservation measures to protect active nest sites during nesting season must be considered to reduce potential disturbances of certain project activities. If bald eagles are found nesting within 660 feet of a proposed construction area, then activities would need to occur outside of nesting season or coordination with the USFWS would occur to determine if a permit is needed, and Florida's *Bald Eagle Management Plan* guidelines would be followed (FWC 2008).

Environmental Consequences

No bald eagles nest within or adjacent to the Seashore; therefore, no impacts to this species are expected. The Seashore, prohibits all activity in and around nesting Migratory birds. Therefore, no impacts to any nesting birds, eggs, chicks, or fledglings would occur. Outside of nesting season, in the short-term, beach enhancement efforts would likely impact birds in the area of construction activities due to general human disturbance and increased noise. These species are expected 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 along the beaches surrounding the project areas to support additional bird use. In addition, conservation measures would be implemented to minimize impacts to Migratory birds from the project to the maximum extent practicable (Table 12-9). Therefore, impacts would be short-term and minor. There would be small, long-term beneficial effects to bird habitat as a result of this project as the asphalt would be removed and would not interfere with breeding, foraging, resting, or other normal behaviors.

Table 12-9. Types of bird species common to the project area and the conservation measures which would be taken to minimize potential impacts to them.

SPECIES/SPECIES GROUP	CONSERVATION MEASURES TO MINIMIZE IMPACTS
Wading birds (herons, egrets, ibises, wood stork, American flamingo)	Care would be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance would be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project would occur during daylight hours only. Nesting would not be impacted because the project would not occur during nesting season.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Care would be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance would be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project would occur during daylight hours only. Nesting would not be impacted because the project would not occur during nesting season.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Care would be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance would be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project would occur during daylight hours only. Nesting would not be impacted because the project would not occur during nesting season.
Raptors (osprey, hawks, eagles, owls)	No work would occur within 500 feet of any bald eagle nests. Care would be taken to avoid working near other raptor nests, and to minimize noise and vibration in their vicinities. Roosting should not be impacted because the project would occur during daylight hours only, and because the areas where these birds nest are not within the project area. 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.
Goatsuckers (nighthawks, whip-poor-will, Chuck-will's widow)	All work would be done during daylight hours. These birds are nocturnal/crepuscular and as such, should not be foraging or feeding while work occurs. Care would be taken to minimize noise and vibration near habitat where these birds are resting or roosting. Nesting would not be impacted because the project would not occur during nesting season.
Waterfowl (geese, swans, ducks, loons, and grebes)	Care would be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance would be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project would occur during daylight hours only. Nesting would not be impacted because the project would not occur during nesting season.
Doves and pigeons	It is unlikely that doves and pigeons would be impacted by this project.
Rails and coots	Care would be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbance would be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity when given the opportunity. Roosting should not be impacted because the project would occur during daylight hours only. Nesting would not be impacted because the project would not occur during nesting season.

Non-Native Species

Affected Resources
Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences
Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project would be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.2.5.4 Human Uses and Socioeconomics

12.2.5.4.1 Socioeconomics and Environmental Justice

Affected Resources
The population of Escambia County was 302,715 in 2012 and accounted for 1.6 percent of the state's total population. In 2013, median household income in Escambia County was $40,917, which was approximately seven percent lower than the median household income in the State of Florida. Escambia County contains both minority and low-income populations; however, as noted in the introduction to this chapter, no communities of environmental justice concern are located adjacent to the project area.

The Fort Pickens Area of the Seashore provides numerous types of visitor experience that allow for enjoyment of the Seashore resources across a broad range of socioeconomic groups. Approximately 32,000 Seashore visitors gain access through a Golden Age Passport each year, which accounts for approximately 4 percent of total visitation (NPS 2006). The Seashore provides a "Beach Wheel Chair" for the physically disabled; approximately 150 people utilize this service each summer season. The Fort Pickens Area takes in approximately $1.2 million a year in entry and campground fees. Collecting this money employs 10 permanent and 5 seasonal staff. The Fort Pickens Area contains two food retail sites, generating in excess of $250,000 gross revenue and $10,500 income to the Seashore, and employing six people (NPS 2006). Much of the Seashore's visitation has traditionally come from people wishing to visit the Fort Pickens Area. The existence of the Fort Pickens Area has a significant economic impact to nearby communities, including Pensacola, Pensacola Beach, Gulf Breeze, and Navarre Beach. Each of these communities derives important economic benefits from persons who stop to shop or seek lodging while visiting. Of the $1.2 million the Fort Pickens Area takes in, approximately $450,000 goes to the collection of fees and approximately $500,000 for use in repair and maintenance of Seashore infrastructure, improvements to visitor use areas, and programs. This money is returned to the local economy.

Environmental Consequences

A socioeconomic analysis regarding beach enhancements showed that approximately 6.67 jobs, $397,000 in local economic output and $315,000 in local labor income would be generated per million dollars of proposed project funds spent (DOI, 2012). The proposed project is anticipated to spend $10,836,055 and as such could result in approximately 72.3 jobs being created, $4,301,892 in local economic output, and $3,413,340 in labor income, resulting in short-term beneficial impacts to the local economy. There would be indirect beneficial effects to the local economy due to the potential for increased recreational and tourist activity in response to beach enhancement projects. These economic benefits would flow towards the Seashore as well as local service and retail industry sectors. Beneficial economic effects would accrue to local recreational supply retailers, restaurants, and hospitality providers. The proposed project would not adversely affect any low income or minority populations since these populations do not reside in or near the project area. Overall, no adverse impacts would occur to socioeconomics and environmental justice as a result of the proposed project.

12.2.5.4.2 Cultural Resources

Affected Resources

The area of potential effect (APE) for reviews under National Historic Preservation Act (NHPA) Section 106 of the National Historic Preservation Act includes the areas of direct and indirect impact. For this component of the proposed project, the APE consists of the beach enhancement project area identified in Figure 12-4, Figure 12-5 and .

There are eight known archeological sites located within the APE for the beach enhancement (asphalt removal) project, including several beached shipwrecks and historic sites. However, the entire APE for this project has not yet been subjected to systematic archeological survey, nor has a TCP study been conducted; limited portions of the APE have been archeologically surveyed. During-project monitoring and/or pre-project surveys of areas where ground disturbing activities would occur would be recommended, but actions have not commenced. The NPS' Southeast Archeological Center (SEAC) would conduct all archeological fieldwork for this project, with funding provided by project.

Environmental Consequences

Based on existing information, no impacts to cultural resources would likely occur. 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.

12.2.5.4.3 Infrastructure

Affected Resources

Infrastructure for the purpose of this analysis includes both transportation and utility networks. Vehicle use (for both transportation and maintenance) constitutes the primary source of energy consumption in the project area.

Environmental Consequences

Based on the nature of the beach enhancement project there would be no changes to infrastructure or additional public utility requirements. A solid waste management plan would be implemented to manage the collection, recycling and disposal of asphalt, road-base materials and non-project-related waste generated during implementation activities. Existing roads would be used to access the project area. The project would use fuels but would not prevent access to any known energy resources in the project vicinity, such as coal, oil, or natural gas.

There would be short term minor impacts to infrastructure as a result of this project.

12.2.5.4.4 Land and Marine Management

Affected Resources

Except for the areas just east of the Fort Pickens and Santa Rosa project areas and just west of the Perdido Key project area, the three project areas are void of commercial or private development and consist of open beach and dune. The Pensacola Bay and Santa Rosa Sound border the project area to the north and the Gulf of Mexico borders the project to the south. The proposed project area is currently used for recreational activities and is managed by the NPS.

Environmental Consequences

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. Although this project occurs on federal land, if it is determined that it can affect a state(s)' coastal use or resource, such a consistency determination would be submitted for this project.

Under the proposed project, no changes would occur to the current land use at the project site or the adjoining shoreline areas or subtidal area. The area would remain zoned for open space recreational use and land use and management authority at the seashore would remain under the purview of the Seashore. Thus, no impacts would occur to Land and Marine Management under the proposed project.

12.2.5.4.5 Aesthetics and Visual Resources

Affected Resources

The project area primarily consists of open sandy wind beach, dunes, vegetation, and scattered asphalt and road-base materials throughout. The topography of the area is flat to gently sloping. Except for some vehicular traffic and some boats and airplanes, the project area is a natural and generally appealing landscape and soundscape. Over the last decade or so, however, visitors have complained to

Seashore staff about the negative impacts of the asphalt and road base on their aesthetic experience of the Seashore. The once white sandy beach is no longer as white as it once was and now contains these dark foreign materials in addition to the sand.

Environmental Consequences
Short term impacts to visual resources would result from implementation the proposed project components. Large construction equipment such as backhoes would temporarily obstruct the shoreline views for visitors and recreational users at the site. These short-term project implementation-related impacts would be minor. Upon completion of asphalt and road base removal, beneficial impacts to aesthetics and visual resources throughout the project area would be great and long term.

12.2.5.4.6 Tourism and Recreational Use

Affected Resources
Beach access is a major expectation of Seashore visitors. The access routes take the traveler through dunes of white sand along the shores of the Gulf of Mexico and Santa Rosa Sound, a terrain of striking beauty. The fort is a destination to many visitors, and guided fort tours are offered daily during summer months. As mentioned above, over the last decade or so, a number of visitors to the different project areas have commented on the scattering of asphalt and the detriment of the asphalt to the overall Seashore experience as a natural area.

In the four years prior to Hurricane Ivan (2000-2003), annual attendance in the Fort Pickens Area averaged approximately 682,000 visitors (NPS 2011a). After Hurricane Ivan damaged Fort Pickens Road on September 16, 2004, visitation to the Fort Pickens Area fell to virtually zero. Since the road reopened in May 2009, visitation has returned to levels similar to those prior to Hurricane Ivan, although it dropped again after the *Deepwater Horizon* oil spill.

Environmental Consequences
During the project period, recreational experience would be impacted from noise and visual disturbances associated with the use of heavy equipment and the use of some areas by visitors could be impacted. While these temporary inconveniences would result in minor short term impacts on tourism and recreational use during the project, impacts would be kept low by implementing the project during the slowest part of the tourist season – i.e., late summer, fall, and winter. It is expected that the removal of asphalt would result in a long-term beneficial impact to overall visitor experience by allowing users to experience the site in its natural state.

12.2.5.4.7 Public Health and Safety and Shoreline Protection

Affected Resources
No hazardous materials currently exist at the project site where the potential for human exposure presents a substantial risk. The Seashore 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 Seashore.

Environmental Consequences

No direct or indirect impacts on public health and safety would occur as a result of the proposed project. No hazardous waste would be created during removal. All hazardous materials (e.g., diesel fuels) handled during removal would be contained and appropriate barriers would be in place to ensure the protection of adjacent water resources from potential spills and leaks. BMPs would be incorporated into implementation activities on site to ensure the proper handling, storage, transport and disposal of all hazardous materials. Personal protective equipment would be required for all construction personnel and authorized access zones would be established at the perimeter of the project site during implementation. As a result, no impacts to public health and safety would occur from the implementation of the proposed project. There would be, however, a small beneficial effect on public health and safety with the removal of the asphalt fragments from both the open beach and in-water areas; the material currently poses tripping hazards in some cases and some risk of abrasions on bare feet.

12.2.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Beach Enhancement at Gulf Islands National Seashore project implements restoration techniques within Alternatives 3 and 4.

The proposed Beach Enhancement at Gulf Islands National Seashore project involves removing fragments of asphalt and road-base material (limestone aggregate and some chunks of clay) that have been scattered widely over the Fort Pickens, Santa Rosa, and Perdido Key areas of the Florida District of Gulf Islands National Seashore, managed by the National Park Service, and replanting areas, as needed, where materials are removed. The asphalt- and road-base-covered conditions are clearly unnatural and impact the visitor experience both aesthetically and physically in these National Seashore lands. This project would enhance the visitor experience in the cleaned-up areas. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and increase the public's use and enjoyment of the natural resources by improving the beach at the Gulf Islands National Seashore. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.2.7 References

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12.3 Gulf Islands National Seashore Ferry Project: Project Description

12.3.1 Project Summary

The proposed DOI Ferry project involves the purchase of up to three ferries to be used to ferry visitors (no automobiles) between the City of Pensacola, Pensacola Beach, and the Fort Pickens area of the Gulf Islands National Seashore (Seashore) in Florida. The need for an alternative means to access the Fort Pickens area of the Seashore was made especially apparent when hurricanes and storms in 2004 and 2005 destroyed large segments of the road, eliminating vehicle access through this eight-mile-long area. A viable ferry service to this area of the Seashore would allow visitors to enjoy the Seashore not only if the road were to be destroyed again, but also by providing alternative options for visitor access. Operational responsibility for the boats (i.e., all aspects of the ferry service including preparing a business plan, staffing, ticket sales, vessel maintenance and repairs, insurance, licensing, getting regular inspections, etc.) has not yet been determined but would likely be either Escambia County or the National Park Service (or their contractor). The determination would be made by the ferry service stakeholders and would be based on several factors, including adequacy of staffing, experience, institutional stability, etc. Regardless of the operator, however, all BMPs described in this Environmental Review would be followed such that impacts to all stakeholders' trust resources are protected. The estimated cost for this project is $4,020,000.

12.3.2 Background and Description

This project would fund the purchase of up to three ferries to be used to ferry visitors (no automobiles) between the City of Pensacola, Pensacola Beach, and the Fort Pickens area of the Seashore in Florida. It also involves the connected but separate actions of: constructing two passenger queuing areas (one with a small ticketing facility); constructing a floating dock, a landing, and a ramp between the two in one area; and constructing a dock that is fixed to and extending from an existing pier in another area. Council on Environmental Quality (CEQ) regulations require connected actions[9] to be analyzed in the same NEPA analysis as a proposed action (40 C.F.R. §1508.25(a)1). These connected actions would not utilize funds from this proposed project, but rather would be funded by a non-federal partner.

A "Fort Pickens Pier and Ferry Service Environmental Assessment" (EA) was completed in 2011; however, that document did not address the connected actions described above. This EA and its corresponding Finding of No Significant Impact (FONSI) analyzed the potential impacts of the ferry service and now-complete Fort Pickens pier construction project (NPS 2011). The EA and FONSI determined the selected action (Alternative C: Construct a New Fixed Pier Along the Fort Pickens Seawall, which includes the ferry operation) would not have significant adverse impacts to public health, public safety, threatened or endangered species, or other unique characteristics of the region. Based on the evaluation of the impact of that proposed action on aspects affecting the quality of the human

[9] 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).

environment, the EA and FONSI determined that an Environmental Impact Statement was not required. The following Affected Resources and Environmental Consequences sections do not address the actions and topics covered in the 2011 Environmental Assessment, but rather cover only the connected actions of constructing the two new ferry docking and passenger facilities and the operation of the ferries around those facilities.

The need for an alternative means to access the Fort Pickens area of the Seashore was made especially apparent when hurricanes and storms in 2004 and 2005 destroyed large segments of the road, eliminating vehicle access through this eight-mile-long area. For five years the only means of visitor access to this area was by foot, bicycle, private boat, or limited Commercial Use Authorization permit holders. This severely restricted access to the Seashore for everyone, especially those with disabilities, the elderly, and the very young.

To address the need for alternative public access, the 2009 "Fort Pickens/Gateway Community Alternative Transportation Study" examined transportation alternatives to this area and determined that a ferry service to the Seashore's Fort Pickens area from the City of Pensacola and Pensacola Beach would be appropriate. The study also found that if the financial burden of purchasing the ferries could be removed from the ferry service operator, the service would be much more viable financially. This Early Restoration project would allow that by purchasing up to three ferry boats and making those available free of cost to the ferry service operator, who thereafter would be responsible for their maintenance costs. A viable ferry service to this area of the Seashore would allow visitors to enjoy the Seashore not only if the road were to be destroyed again, but also while the road is still there by providing additional visitor access to the Seashore that otherwise would not exist. In so doing, this project would partially restore the visitor use that was lost at the Seashore due to the Spill.

Each ferry would carry up to 149 passengers (see Figure 12-19) and two would operate daily during the peak summer season (mid-May through mid-August), with each making three (or so) trips per day. Ferry operation is expected to be reduced during the off-peak season. The annual duration of ferry operation would be approximately eight months. The ferries would make three stops: City of Pensacola (at a new dock adjacent to Plaza de Luna in Pensacola Harbor), Pensacola Beach (at a new dock connected to the existing public pier at Quietwater Beach), and Fort Pickens within Gulf Islands National Seashore (at the newly constructed pier just east of the auditorium and museum). See Figure 12-20 below. The National Park Service would own the boats. The operating entity should be determined by early 2014, and would likely be either Escambia County or the National Park Service, either of which may contract the actual operation out to a separate entity. "Operation" means all aspects of the ferry service including staffing, ticket sales, vessel maintenance and repairs, acquiring insurance, licensing, etc. The final design of the ferries would be agreed upon by the interested parties, including the City of Pensacola, Escambia County, Santa Rosa Island Authority, and the National Park Service. Once the construction contract is awarded, the boats should be manufactured within approximately 12 months. The ferry vessels are expected to have an operational lifetime of 30 years.

Regarding the actions that are connected to the purchase of the ferries, the new boat dock and queuing area would be immediately adjacent to the City of Pensacola Plaza de Luna facility (see Figure 12-22 below). The ticketing facility, the other queuing area, and the pier extension would be at the Pensacola

Beach Quietwater Beach facility (see Figure 12-19 below). Again, these connected activities would not be paid for with the $4,020,000 in project funds.

The queuing and ticketing facilities would be simple, functional structures that could be permanent, but might also be temporary. The structures would be located on already disturbed (e.g., concrete-, asphalt-, wood plank-, and/or landscape-covered) areas, or on the dock itself (in the case of the Quietwater Beach facility).

Preliminary indications are that the location of the floating boat dock and ramp near Plaza de Luna would likely be at the north end of the existing berth area or at the angled wall on the west side of that same area, either requiring up to approximately 20 pilings be driven into the benthic substrate. The new dock at Quietwater Beach would require up to approximately 16 pilings, would be fixed to the existing public pier, and could be up to 100 feet in length. Additionally, there would be improvements to the existing dock, including railings being installed. The floating docks and ramp would be constructed off-site and delivered to the sites by barge. The landing would also be constructed off-site and would be delivered to the area either by truck or barge. Both docks would be constructed and installed by barge. No dredging in either area would be needed. The ferries would be moored at the City of Pensacola dock at night.

Figure 12-19. Example of a 149-passenger catamaran ferry.

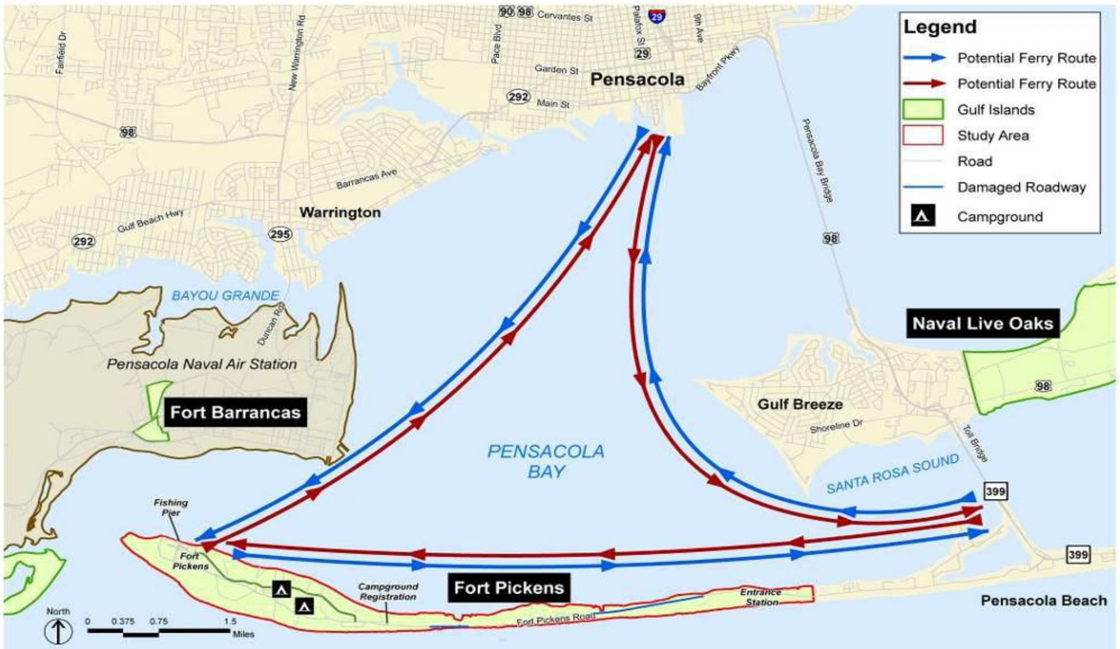

Figure 12-20. Routes and destinations for the ferry system.

Figure 12-21. City of Pensacola connected actions approximate area next to Plaza de Luna facility where parking lot, landing, ramp, dock and passenger queuing area would be.

Figure 12-22. Pensacola Beach's connected actions approximate area (blue rectangle) at Quietwater Beach where a new floating dock and queuing/ticketing structures would be.

12.3.3 Evaluation Criteria

This proposed project meets the evaluation criteria established by OPA and the Framework Agreement. This restoration project has a clear nexus to the injuries caused by the Spill. Visitor use of the Seashore was lost due to the Spill and this project restores some of that use by providing ferries so that a successful ferry service can be established for visitors to use. (See 15 C.F.R. § 990.54(a)(2) and also 6(a-c) of the Framework Agreement). The project is designed to restore lost visitor use of the Seashore during the Spill, and would benefit other natural resources and services to the extent the ferry service reduces vehicular traffic and associated adverse effects, such as emissions. (See 15 C.F.R. § 990.54(a)(5)).

The project cost is based on several quotes received from boat manufacturers. Project expenses are straightforward since they almost exclusively involve the cost to have the boats manufactured. Thus, the project can be conducted at a reasonable cost. (See C.F.R. § 990.54(a)(1)).

The likelihood of project success is high since ferry boat design and construction is commonplace and ordering and purchasing the ferries is a straightforward transaction. Also, with regard to the ferry service, the 2009 Alternative Transportation Study found that as long as the operator of the ferry business did not have to purchase the actual ferry boats, the ferry service would more likely be commercially successful. Finally, the construction of the new docks and passenger facilities are very straightforward actions. (See 15 C.F.R. § 990.54(a)(3) and also 6(e) of the Framework Agreement).

For these reasons, the project is considered feasible and cost effective. It is believed that the project would not be inconsistent with long-term restoration needs. (See C.F.R. § 990.54(a)(1),(3), and Sections 6(d)-6(e) of the Early Restoration Framework Agreement).

12.3.4 Performance Criteria, Monitoring and Maintenance

The goal of this project is to restore a portion of the lost visitor use of the Seashore caused by the Spill. The success criteria for the project would be met if construction of the ferries is completed as specified, on schedule, and on budget. Visitor use of the ferries would be monitored through annual compilations of ridership statistics.

Regular boat maintenance would be the responsibility of the entity operating the service and would be funded by the ongoing sale of tickets.

12.3.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for this proposed recreational use project. NRD Offsets are $8,040,000 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured on DOI lands in Florida, which would be determined by the Trustees' assessment of lost recreational use for the Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[10]

12.3.6 Cost

The total estimated cost to implement this project is $4,020,000. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning and engineering and design of the ferries, construction of the same, and performance monitoring of construction and annual ridership.

[10] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.4 Gulf Islands National Seashore Ferry Project: Environmental Review

The proposed National Park Service (NPS), Gulf Islands National Seashore Ferry Purchase project would fund the purchase of up to three ferries[11] to be used to ferry visitors (no automobiles) between the City of Pensacola, Pensacola Beach, and the Fort Pickens area of Gulf Islands National Seashore in Florida. It involves the connected actions of: constructing two passenger queuing areas – one with a small ticketing facility; constructing a floating dock near Plaza de Luna, a landing, and a ramp between the two in one area; and constructing an additional floating dock at Quietwater Beach. These connected actions would *not* be funded with project funds.

A viable ferry service to this area of the Seashore would allow visitors to enjoy the Seashore if the road to Fort Pickens were destroyed and would allow additional visitor access to the Seashore that would otherwise not be available. This project would partially restore the visitor use lost at the Seashore due to the Spill. Operational responsibility for the boats (i.e., all aspects of the ferry service including preparing a business plan, staffing, ticket sales, vessel maintenance and repairs, insurance, licensing, getting regular inspections, etc.) has not yet been determined but would likely be either the City of Pensacola or the National Park Service (or subcontractors). The estimated cost for this project is $4,020,000.

12.4.1 Introduction and Background

The need for an alternate means to access the Fort Pickens Area of the Seashore was made apparent when hurricanes and storms in 2004 and 2005 destroyed large segments of the road and eliminating vehicle access through this eight-mile-long area. For five years the only means of visitor access to this area was by foot, bicycle, private boat, or limited Commercial Use Authorization permit holders. This severely restricted access to the Seashore for everyone, especially those with disabilities, the elderly, and the very young.

To address the need for alternative public access, the 2009 "Fort Pickens/Gateway Community Alternative Transportation Study" (NPS 2009a) examined transportation alternatives to this area and determined a ferry service to the Fort Pickens area from the City of Pensacola and Pensacola Beach would be appropriate. The study found that if the financial burden of purchasing the ferries could be removed from the ferry service operator, the service would be much more viable financially. This Early Restoration project would allow that by purchasing up to three ferry boats and making those available free of upfront cost to the ferry service operator, who thereafter would be responsible for their maintenance costs. A viable ferry service to this area of the Seashore would allow visitors to enjoy the Seashore not only if the road were to be destroyed again, but also while the road is still there by allowing additional new visitors access to the Seashore that they otherwise would not have. In so doing, this project would partially restore the visitor use that was lost at the Seashore due to the Spill.

A new dock was recently constructed near the visitor center in the Fort Pickens Historic District, per the selected action in the 2011 "Fort Pickens Pier and Ferry Service Environmental Assessment" (NPS, 2011).

[11] Actual number of ferries purchased will be based on the recommendation of the feasibility study currently underway and expected to be completed in October, 2013, and on the actual costs of the ferries.

This dock consists of a 20-foot-wide, 260-foot-long pier for ferry use, an attached 60-foot pier for Seashore administrative use, and associated ramps. A sheltered passenger waiting area/pavilion was also constructed near the walkway leading to the dock.

12.4.2 Project Location

The ferry service – analyzed in the 2011 *Fort Pickens Pier and Ferry Service Environmental Assessment* – is located in Pensacola Bay and would serve the City of Pensacola, Pensacola Beach, and the Fort Pickens area of Gulf Islands National Seashore (see Figure 12-20). One of the ferry docking points, also analyzed in the 2011 Environmental Assessment, has already been built.

The actions that are connected to the purchase of the ferry boat are the construction of docking and ferry passenger facilities and accommodations at the City of Pensacola near the Plaza de Luna marina and park, and at the Pensacola Beach Quietwater Beach area (see Figure 12-20 and Figure 12-22 above).

12.4.3 Construction and Installation

Once the construction contract is awarded, the boats would be manufactured within approximately 12 months. Regarding the actions that are connected to the purchase of the ferries, the new boat dock and queuing area would be immediately adjacent to the City of Pensacola Plaza de Luna facility (see **Error! Reference source not found.** above). The ticketing facility, the other queuing area, and the pier extension or floating dock would be at the Pensacola Beach Quietwater Beach facility (see Figure 12-22, above). These connected activities would not be paid for by the $4,020,000 in project funds.

The queuing and ticketing facilities would be simple, functional structures that could be permanent, but might also be temporary. The structures would be located on already disturbed (e.g., concrete-, asphalt, wood plank-, and/or landscape-covered) areas.

Preliminary indications are that the location of the floating boat dock and ramp near Plaza de Luna would likely be the north end of the existing berth area or at the angled wall on the west side of that same area, either requiring up to approximately 20 pilings be driven into the benthic substrate. The floating dock at Quietwater Beach would require approximately 16 pilings, would be attached to the existing public pier and could be up to 100 feet in length. Additionally, there would be improvements to the existing dock, including railings. The floating docks and ramp would be constructed off-site and delivered to the sites by barge. The landing would also be constructed off-site and would be delivered to the area either by truck or barge. Both docks would be constructed and installed by barge. No dredging would be needed.

12.4.4 Operations and Maintenance

Each ferry would carry up to 149 passengers (see Figure 12-19 above) and operate daily during the peak summer season (mid-May through mid-August), with each making three (or so) trips per day. Ferry operation would be reduced during the off-peak season. The annual duration of ferry operation would be approximately eight months. The ferries would make three stops: City of Pensacola (at a new dock adjacent to Plaza de Luna in Pensacola Harbor), Pensacola Beach (at a new dock connected to the public pier at Quietwater Beach), and Fort Pickens within Gulf Islands National Seashore (at the newly constructed pier just east of the auditorium and museum). The ferries would be moored at the City of

Pensacola dock at night. It is anticipated that a third ferry, if purchased, would only be used as a backup if one of the two in use are out of commission for any reason.

The National Park Service would own the boats. The operating entity should be determined by early 2014, and would likely be Escambia County or the National Park Service, either of which may contract the actual operation out to a separate entity. ("Operation" means all aspects of the ferry service including staffing, ticket sales, vessel maintenance and repairs, insurance, licensing, etc.). The final design of the ferries would be agreed on by the interested parties, including the City of Pensacola, Escambia County, Santa Rosa Island Authority, and the National Park Service. The ferry vessels are expected to have an operational lifetime of 30 years.

Regular boat maintenance would be the responsibility of the entity operating the service and would be funded by the ongoing sale of tickets.

Visitor use in the form of ridership statistics would be monitored annually for this project.

12.4.5 Affected Environment and Environmental Consequences

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 and environmental consequences of the project.

12.4.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.4.5.2 Physical Environment

12.4.5.2.1 Geology and Substrates

Affected Resources

The geology in the project area consists of the benthic substrate into which the dock pilings would be driven and the on-land developed areas that new facilities would be built on. The former consists of sandy substrate that is presumably degraded and contaminated to some extent due to the long-standing development and boat activity around it for so many years (this is especially true of the Plaza de Luna area). The latter consists of concrete, asphalt, or landscaped areas whose natural geological characteristics were lost years ago when these areas were developed.

Environmental Consequences

The ferry operation should have no impact on in-water or on-land geology or substrates at the City of Pensacola or Pensacola Beach ferry facilities. Construction of these facilities, however, particularly driving pilings into the benthic substrate, would have long term minor impacts there. There should be no notable impacts to construction of facilities on land since these areas are already developed.

12.4.5.2.2 Hydrology and Water Quality

Affected Resources

The principal waterbodies associated with the project area are Pensacola Bay and Santa Rosa Sound. Pensacola Bay and Santa Rosa Sound surrounding the Santa Rosa Island area have been designated as Outstanding Florida Waters (OFWs), indicating these bodies of water are worthy of special protection due to natural attributes. An OFW is designated by the Florida Environmental Regulation Commission (ERC), once it is determined that the environmental, social, and economic benefits of the Special Water status outweigh the environmental, social, and economic costs (Rule 62- 302.700(5), FAC). The Florida Department of Environmental Protection (FDEP) is granted the authority by Section 403.061(27), FS, to establish rules for OFWs. The purpose of the designation as an OFW is to protect existing good water quality. FDEP will not issue permits for direct pollutant discharges to OFWs, which would lower ambient (existing) water quality, or for indirect discharge, which would significantly degrade the OFW.

The project area is located in the southwest part of Pensacola Bay at Pensacola Harbor and in the western end of Santa Rosa Sound near Quietwater Beach. Pensacola Bay has been impacted by numerous non-point and point pollution sources resulting in a reduction of natural biodiversity and productivity in the Bay. Non-point sources include urban stormwater runoff, agricultural runoff, marinas, boat traffic, the drainage of wetlands, and seepage of contaminated groundwater into surface waters. Point sources include effluent from two sewer outlets near Pensacola; septic systems on Gulf Breeze peninsula; a chemical plant and coal-fired electric power plant on the Escambia River; a paper mill on the Perdido River; the American Creosote Works hazardous waste site; the Port of Pensacola; and Pensacola NAS, which contains a number of hazardous waste sites (USACE, 2009 as cited in NPS, 2011). Most of these impacts are from the landward areas along Pensacola Bay.

The hydrological features of the project area, of course, are Pensacola Bay and Santa Rosa Sound. These features, outside of tidal influences and the effects of storms, are naturally stable due to their size.

Environmental Consequences

Best management practices, promulgated by the U.S. Department of Transportation and the operating permit, would dictate mitigation measures needed to control and minimize impacts to water quality from the ferry service at the project areas. The ferry service using the new docks would introduce additional vessel traffic; however, currently, recreational and commercial boating traffic is high in these areas. Therefore, minor and long term impacts to water quality would be associated with the operation of the ferry service.

The installation of the two floating docks, ramp and landing could result in increased turbidity. These impacts on water quality should be short term and minor. Additionally, the operation of the boats at these new docks, especially with fueling operations at one or both of them, could result in impacts to water quality in these areas. Some incidental amounts of fuel would enter the water during fueling.

These impacts on water quality should be long term and minor. Mitigation for this dock installation would be determined by the US Army Corps of Engineers in the form of a 404/401 permit and would include appropriate BMPs. Mitigation for fueling operations would include a Spill Prevention, Control, and Countermeasures (SPCC) Plan.

12.4.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

In Table 12-2, below, both State of Florida and federal primary ambient air quality standards for criteria air pollutants are presented.

The USEPA proposed strengthening the air quality standards for ground-level ozone to 0.075 ppm in 2008. To attain this standard, the three-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. The 2006 to 2008 average of the fourth-highest daily maximum 8-hour ozone concentration for Pensacola was 0.079 ppm, and thus Escambia County would be designated as nonattainment according to the proposed 2008 ozone standard (USEPA 2009a).

Table 12-10. State and Federal Ambient Standards for Criteria Air Pollutants.

POLLUTANT	AVERAGING PERIOD	FEDERAL PRIMARY STANDARD	STATE OF FLORIDA STANDARD
Ozone	8-hour	0.075 ppm	Same as Federal
	1-hour (daily max.)	0.12 ppm	Same as Federal
PM2.5	Annual (arithmetic mean)	15.0 μg/m^3	Same as Federal
	24-hour	35 μg/m^3	Same as Federal
PM10	Annual (arithmetic mean)	NA	50 μg/m^3
	24-hour	150 μg/m^3	150 μg/m^3
Carbon Monoxide	8-hour	9 ppm	9 ppm
	1-hour	35 ppm	35 ppm
Nitrogen Dioxide	Annual (arithmetic mean)	0.053 ppm	0.05 ppm
	1-hour	0.100 ppm	Same as Federal
Sulfur Dioxide	Annual (arithmetic mean)	0.03 ppm	0.02 ppm
	24-hour	0.14 ppm	0.10 ppm
	1-hour (per annum)	NA	0.40 ppm
	1-hour (per 7 days)	NA	0.25 ppm
	5-minute	NA	0.80 ppm
Lead	Rolling 3-month average	0.15 μg/m^3	Same as Federal
	Quarterly average	1.5 μg/m^3	Same as Federal
Total Suspended Particulate	Annual (geometric mean)	NA	60 μg/m^3
	24-hour	NA	150 μg/m^3

Escambia County, Florida has an annual fine-particle particulate matter (PM) concentration of 8.4 µg/m^3, which meets the national standard of 12 µg/m^3, and is slightly better than the national average of 9.20 µg/m^3. It also has an annual average sulfur dioxide concentration of 14 ppb, which meets the national sulfur dioxide standard of 75 ppb, and is slightly better than the national average of 19.00 ppb. There is currently no data available for Escambia County regarding carbon monoxide, nitrogen oxide, or lead levels (http://air-quality.findthedata.org/l/159/Escambia-County, 2013). Additionally, there is no trend analysis data is available for visibility, ammonium, nitrate, or sulfate parameters for the Seashore (NPS, 2013).

In 2013, Escambia County was in attainment of the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants as designated by the USEPA.

Greenhouse Gases (GHGs) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The principal GHGs emitted into the atmosphere through human activities are CO_2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (USEPA 2010). CO_2 is the major GHG emitted, and the burning of fossil fuels accounts for 81 percent of all U.S. GHG emissions (USEPA 2010). Currently GHG emissions are not monitored or collected at the Gulf Island National Seashore.

Environmental Consequences

Project implementation would require the use of barges, construction/installation equipment, and ferries. The floating docks and ramp would be constructed off-site and delivered to the sites by barge. The landing would also be constructed off-site and would be delivered to the area either by truck or barge. The docks would be installed by barge. No dredging would be expected. This would temporarily affect air quality and elevate greenhouse gas emissions in the project vicinity due to emissions from the equipment and the ferries. Any air quality impacts that would occur would be localized, and limited by the size of the project. Therefore, impacts to air quality would be minor and short-term. Due to the emissions of the ferry boats themselves, the proposed project would have long term minor impacts on air quality at the City of Pensacola and Pensacola Beach docking facilities.

Engine exhaust from the ferries, the barge, and the construction/installation equipment would contribute to an increase in greenhouse gases. The following table (Table 12-11) describes the likely greenhouse gas emission scenario for the implementation of this project.

Table 12-11. Expected greenhouse gas emissions resulting from the project.

CONSTRUCTION EQUIPMENT	NO. OF HOURS OPERATED	CO_2 (METRIC TONS)	CH4 (CO_2E) (METRIC TONS)[12]	NOX (CO_2E) (METRIC TONS)	TOTAL CO_2 EQUIVALENT (METRIC TONS PER YEAR)
Pickup Truck	80[a]	0.48	0.0003	0.003	0.48
Barge [b]	80[c]	32	0.09	0.36	32.3
Pile Drivers [d]	80[e]	1.17	0.0009	0.009	1.17
Ferries (2)	3,840 [f]	2,160	4.8	19.2	2,184
TOTAL	**4,080**	2,19**4**	4.89	19.57	2,21**8**

[a] Assuming 24 hours of operation for the pickup truck
[b] Because no greenhouse gas emission information is known for barges, the emissions from a tugboat was used for this analysis
[c] Assuming the barge would run for 16 hours
[d] Because no greenhouse gas emission information is known for pile drivers, the emissions from a grader was used for this analysis
[e] Assuming 24 hours of operation for the pile drivers
[f] Assuming 2 ferries, operating 8 hours a day for 8 months

Based on the assumptions described in Table 12-11 above, and the small scale and short duration of the construction portion of the proposed project, predicted greenhouse gas emissions would be short-term and minor and would not exceed 25,000 metric tons per year put forth by the Council on Environmental Quality (CEQ) as a level above which to conduct a detailed analysis of said emissions (CEQ, 2010). For the ferry operation they would be long-term and minor.

12.4.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted sound, and noise levels and impacts are interpreted in relationship to its effects on nearby residents or organisms. Noise associated with recreational uses, such as boating, can be of concern to surrounding communities. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. Table 12-12 presents some familiar sounds and their decibel levels.

[12] CH_4 and NOx emissions assumptions and CO_2e calculations based on EPA 2011

Table 12-12. Familiar sounds and their decibel levels (dB).

SOUND	DECIBEL LEVEL (DB)
Whisper	30
Normal Conversation	50-65
Vacuum cleaner at 10 feet	70
Midtown Manhattan Traffic Noise	70-85
Lawnmower	85-90
Train	100
Nearby Jet Takeoff	130
Source: Occupational Safety and Health Administration 2012.	

For the in-water pile driving portion of the project, impulsive noises that could be somewhere in the range of 154-196 dB re:1 uPa zero-to-peak level, and 176 dB re:1 uPa RMS level (Laughlin, 2006).

The primary sources of ambient (background) noise in the project area are operation of vehicles, commercial and recreational vessels, the nearby Pensacola Airport, and natural sounds such as wind and wildlife. The levels of noise in the project area varies, 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 levels in the project dock areas are primarily from commercial and recreational vessels, vehicles, and human activity. Noise levels fluctuate, with highest levels usually occurring during the spring and summer months due to the increased boating and coastal activities.

Noise-sensitive receptors include humans and wildlife (primarily birds) above water, and marine/estuarine species under water.

In-water work activities contribute to noise in the underwater environment and are a concern for both the NMFS and the USFWS. There are numerous contributing sources to background marine sound conditions, including those from marine mammals (71 dB), lightning strikes (260 dB), waves breaking, and rain on the open surface and by human or mechanical sources including recreational activities and boating (150-195 dB). These levels are maximum source levels. Although there are many sources of noise in the underwater environment, the most common sources of noise associated with construction activities are via hammering. Impulsive noises like this have short duration and consist of a broad range of frequencies (CRS Report 96-603). Similar to above-ground noise, underwater noise levels fluctuate in the project area with the greatest impacts coming during the spring and summer months due, primarily, to increased boating activities.

Environmental Consequences

The ferry service is expected to make three round-trips per day between the three areas in the peak season. The operation of the ferry service would result in long-term, minor adverse impacts to soundscapes by increasing the boat traffic in these areas. The ferry service would have long term minor impacts to underwater fauna near the new docks. This construction work would have short term minor impacts on the natural soundscape on land and under water from the installation of the floating docks, ramp, and landing, and the construction of the two queuing areas and the ticketing facility. The impacts on soundscapes would be localized to the construction area.

12.4.5.3 Biological Environment

12.4.5.3.1 Living Coastal and Marine Resources

Affected Resources

Protected Species

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act and bald eagles protected under the Bald and Golden Eagle Protection Act.

The ferry purchase would not have any impacts to protected species and, as mentioned above, the previous EA and associated Section 7 consultations under the ESA documented that the operation of the ferry service is not likely to adversely affect listed species or critical habitats. However, these prior coordination effects did not evaluate potential impacts from the connected actions. Within and surrounding the two project areas, Gulf sturgeon, five species of sea turtles, and West Indian manatee could be present. Each of these species and critical habitat (where applicable) are described above in section 12.2.5.7; therefore we only describe habitat use here.

Gulf sturgeon and Critical Habitat

Gulf sturgeon could be present in the area of new pier construction between mid- to late fall and early spring during their estuarine/marine wintering period. Gulf sturgeon would be expected to forage, rest, and migrate through this area.

Gulf sturgeon critical habitat is also present in the project areas. All marine and estuarine PCE's are present within the project area. The applicable PCE's for Gulf sturgeon in estuarine environments include 1) abundant food items, 2) appropriate water quality, 3) appropriate sediment quality, and 4) safe and unobstructed migratory pathways.

Sea turtles

Each of the five species of sea turtles (loggerhead, green, Kemp's ridley, leatherback and hawksbill) could be swimming and possibly foraging (if forage is available) in the project area. Neither area supports any habitat suitable for nesting and no nesting is known to occur in either location.

Loggerhead critical habitat has not been proposed in either project location.

West Indian manatee

Manatee could be traversing through the project area when water temperatures are warmer (late spring/early summer to early fall). The project location does not support submerged aquatic vegetation; however, it could be present nearby. Therefore, manatees may be foraging in nearby areas.

Environmental Consequences
The impacts to listed species from the operation of the ferries in Pensacola Bay were addressed during the 2011 EA (discussed above) and the regulating agencies concurred with an "NLAA" determination. Nothing has changed with the proposed operation of the ferries and all previously agreed upon conservation measures would be implemented.

During construction of the connected actions, the piers at Plaza De Luna and Quietwater Beach, turbidity of the water may increase and the noise from the machinery may affect species within the area. If transiting the area, Gulf sturgeon could be startled by in-water construction or have difficulty navigating due to turbidity. We expect Gulf sturgeon to naturally avoid any areas of increased turbidity as they are not known to use turbid habitats. We do not expect this avoidance of the project area to result in changes to normal behaviors. Conservation measures in Table 12-13 should reduce any impacts to Gulf sturgeon from in-water construction to only short-term, minor impacts.

No long-term impacts to Gulf sturgeon's critical habitat or PCE's are expected from this project. There may be a temporary increase in turbidity, as well as changes in food abundance and water quality at the project site during construction but not throughout the critical habitat unit. However, these changes would be temporary and extremely localized and would not affect the open waters of Pensacola Bay. Conservation measures would be implemented to ensure this project has no impacts to Gulf sturgeon critical habitat.

Sea turtles nest on seaward-facing beaches. No such habitat exists within the project area. Therefore the proposed project would not impact sea turtles in their terrestrial habitats. As with Gulf sturgeon above, increases in turbidity could occur due to project construction. We would expect turtles to move from the area of increased turbidity to avoid indirect effects from temporary changes in water quality. These movements would not be expected to change any normal behavior patterns. To avoid direct impacts to sea turtles, the Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) would be implemented. Therefore, any impacts to sea turtles from the connected actions are expected to be short-term and minor. No sea turtle critical habitat is proposed or designated within the action area; therefore, none would be impacted.

West Indian manatees inhabit fresh, brackish, and marine environments in water 5-20 feet deep throughout their range. The new piers, once completed, should have no effect on manatees as they would be used for Ferry operation only rather than new boat slips or marinas (i.e., no increase in other boat traffic due to pier construction). No seagrass beds occur in the vicinity of the new pier locations. Manatees could be in the vicinity while the piers at Plaza De Luna and Quietwater Beach are under construction. Turbidity of the water may increase during construction and the noise from the machinery may affect species within the area. If transiting the area, manatees could be startled by in-water construction or have difficulty navigating due to turbidity. We expect West Indian manatee to naturally avoid any areas of increased turbidity as they are not known to use turbid habitats. We do not expect this avoidance of the project area to result in changes to normal behaviors. Conservation measures should avoid direct impacts manatees from in-water construction. Therefore any impacts to manatees are expected to be short-term and minor.

Table 12-13. Conservation measures to minimize impacts to protected species during implementation of actions connected to the NPS Ferry Purchase.

SPECIES	CONSERVATION MEASURES TO MINIMIZE IMPACTS
Gulf Sturgeon	• Instruct all personnel associated with the construction and operational phases of the project in the potential presence of Gulf sturgeon and the need to avoid collisions with them. Furthermore, inform the construction site personnel and personnel associated with operating the ferry of the civil and criminal penalties for harming, harassing, or killing species that are protected. • Keep construction noise low (in air and in water) to the greatest extent possible. • Construct piers from floating barges using floating turbidity barriers made of materials that would not allow Gulf sturgeon to become entangled. Barriers would be properly secured and would be monitored regularly so that no animals are entangled or trapped. • Care shall be taken in lowering equipment or material below the water surface and into the sediment. These precautions would be taken to ensure no harm occurs to any sturgeon which may have entered the construction area undetected. • Maintain spill response kits on board during construction. • In the unlikely event that a protected Gulf sturgeon approaches (within 100 yards) any near-shore, littoral areas of the proposed project, work would immediately cease until the sturgeon moves away from the area on its own volition. • All vessels associated with the construction project shall operate at “no wake/idle” speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels would preferentially follow deep-water routes (e.g., marked channels) whenever possible.
Loggerhead, green, Kemp’s ridley, leatherback, and hawksbill sea turtles	• Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) would be implemented.
West Indian manatee	• Below represent agreed upon conservation measures as approved in the 2010 consultation and are from the in-water work. If the 2010 and April 2013 in-water manatee construction guidelines differ, the more recent would be followed: ○ All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act. ○ All vessels associated with the construction project shall operate at "Idle Speed/No Wake” at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels would follow routes of deep water whenever possible. ○ Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement. ○ All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shut down if a manatee(s) comes within 50 feet of the operation. Activities would not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving. ○ Any collision with or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-FWCC. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-232-2580) for north Florida or Vero Beach (1-561-562-3909) for south Florida.

SPECIES	CONSERVATION MEASURES TO MINIMIZE IMPACTS
	○ Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Awareness signs that have already been approved for this use by the Florida Fish and Wildlife Conservation Commission (FWC) must be used. One sign measuring at least 3 ft. by 4 ft. which reads *Caution: Manatee Area* must be posted. A second sign measuring at least 81/2" by 11" explaining the requirements for "Idle Speed/No Wake" and the shutdown of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities.

Migratory Birds and Bald Eagles

Affected Resources

Over 300 species of birds have been recorded at the Seashore which is near the project area. Bird species use the Seashore for resting, nesting, foraging, wintering, or migratory rest stops (NPS, 2006, as cited in NPS, 2011). However, the project areas are highly developed, urban piers and marinas. We expect common migratory birds to be present resting and foraging but not nesting. Table 12-14 identifies the types of species common on the seashore and the habitats and behaviors exhibited by these groups while present. Though Bald Eagles could fly over the project area, they are not known to nest in or adjacent to it.

Table 12-14. Types of migratory bird species common on the Seashore (near the project area) and the habitats and behaviors exhibited by these groups while present.

SPECIES*	BEHAVIOR	SPECIES/HABITAT IMPACTS
Wading birds (herons, egrets, ibises, wood stork, American flamingo)	Foraging, feeding, resting, roosting, nesting	Wading birds primarily forage and feed at the water's edge. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily nest and roost in trees or shrubs (e.g. pines, *Bacchurus* and mangroves), which occur outside the project area.
Shorebirds (plovers, oystercatchers, stilts, sandpipers)	Foraging, feeding, resting, roosting, nesting	Shorebirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily nest and roost in the dunes.
Seabirds (terns, gulls, skimmers, double-crested cormorant, American white pelican, brown pelican)	Foraging, feeding, resting, roosting, nesting	Seabirds forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost in the dunes.
Raptors (osprey, hawks, eagles, owls)	Foraging, feeding, resting, roosting, nesting	Raptors forage, feed, and rest in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. Most raptors are aerial foragers and soar long distances in search of food. The areas in the Seashore where these birds roost and nest are not within the project area.

SPECIES*	BEHAVIOR	SPECIES/HABITAT IMPACTS
Goatsuckers (nighthawks, whip-poor-will, Chuck-will's widow)	Foraging, feeding, resting, roosting, nesting	Goatsuckers forage, feed, rest, and roost in the project area. However, they are nocturnal/crepuscular and therefore not active during the project work period. They nest in thickets and woodlands, which are not included in the project area.
Waterfowl (geese, swans, ducks, loons, and grebes)	Foraging, feeding, resting, roosting, nesting	Waterfowl forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting. These birds primarily roost and nest in low vegetation.
Doves and pigeons	Foraging, feeding, resting, roosting	Doves and pigeons could forage, feed, rest, and roost in the project area. However, they are unlikely to utilize sandy habitat.
Rails and coots	Foraging, feeding, resting, roosting, nesting	Rails and coots forage, feed, rest, and roost in the project area. As such, they may be impacted locally and temporarily by the project. However they are most likely to favor marshy areas. It is expected that they would be able to move to another nearby location to continue foraging, feeding and resting if disturbed by the project. These birds primarily roost and nest in marshes, which are not within the project area.
*Gulf Islands National Seashore lists 345 species of birds known to occur there. The above table lists species guilds and the genus type for those most likely to occur there. The full list of species occurrences can be found at: http://www.nps.gov/guis/naturescience/loader.cfm?csModule=security/getfile&pageID=525505		

Bald Eagles

Bald eagles are known to nest within 1 mile of the project site (FDEP, personal communication, September 26, 2013). The bald eagle was delisted by the USFWS and is not listed as threatened or endangered by the FWC. The bald eagle is, however, protected by state law pursuant to 68A-16, Fla. Admin. Code and by the U.S. government under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles feed on fish and other readily available mammalian and avian species and are dependent on large, open expanses of water for foraging habitat. In Florida, conservation measures to protect active nest sites during nesting season must be considered to reduce potential disturbances of certain project activities. If bald eagles are found nesting within 660 feet of a proposed construction area, then activities would need to occur outside of nesting season or coordination with the USFWS would occur to determine if a permit is needed, and Florida's *Bald Eagle Management Plan* guidelines would be followed (FWC 2008).

Environmental Consequences

No bald eagles are known to nest within or adjacent to the project area. Also, although migratory birds may rest in the project area, the area is too developed and busy for them to nest there. If birds do occasionally spend time in the project area, they can move away from areas during construction. As such, impacts from this project on bald eagles and migratory birds would be short term and minor.

Marine and Estuarine Resources

Affected Resources

Seagrass
Appropriate conditions for seagrass growth do not occur at either Plaza de Luna or Quietwater Beach.

Fish
More than 200 species of fish have been observed in waters surrounding the Seashore. The most abundant fish species is the anchovy (*Anchoa* sp.) and the silverside (*Menidia* sp.); both species are also abundant in the shallow nearshore waters. Myriad larval and young fish occupy the shallow waters around the islands and find food and protection in the seagrass beds (USACE, 2009 as cited in NPS, 2011).

Essential Fish Habitat
The 1996 Magnuson-Stevens Fishery Conservation and Management Act (MFCMA) requires cooperation among NMFS, anglers, and federal and state agencies to protect, conserve, and enhance essential fish habitat (EFH). EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. The designation and conservation of EFH seek to minimize adverse effects on habitat caused by fishing and non-fishing activities. NOAA's Estuarine Living Marine Resources (ELMR) Program developed a database on the distribution, relative abundance, and life history characteristics of ecologically and economically important fishes and invertebrates in the nation's estuaries. NOAA has designated EFH for more than 30 estuaries in the northern Gulf of Mexico for a number of species of finfish and shellfish. All of Pensacola Bay is designated as EFH. Species with EFH at the City of Pensacola Plaza de Luna dock area are:

- Brown Shrimp (*Penaeus aztecus*)
- White Shrimp (*Penaeus setiferus*)
- Pink Shrimp (*Penaeus duorarum*)
- Royal Red Shrimp (*Pleoticus robustus*)
- Reef Fish (43 Species)
- Red Drum *(Sciaenops ocellatus)*
- Coastal Migratory Pelagics

Species with EFH at the Pensacola Beach Quietwater dock are:

- Sandbar Shark (*Carcharhinus plumbeus*)
- Scalloped Hammerhead Shark (*Sphyma lewini*)
- Tiger Shark (*Galeocerdo cuvier*)
- Spinner Shark (*Carcharhinus brevipinna*)
- Atlantic Sharpnose Shark (*Rhizoprionodon terraenovae*)
- Silky Shark
- Brown Shrimp (*Penaeus aztecus*)
- White Shrimp (*Penaeus setiferus*)

- Pink Shrimp (*Penaeus duorarum*)
- Royal Red Shrimp (*Pleoticus robustus*)
- Reef Fish (43 Species)
- Red Drum *(Sciaenops ocellatus)*
- Coastal Migratory Pelagics

Shellfish
Several species of shellfish that are commercially, recreationally, and ecologically important occur in waters in the general vicinity of Quietwater Beach, including blue crabs (*Callinectes sapidus*), stone crabs (*Menippe mercenaria*), and many species of shrimp (NPS, 2011).

Marine Mammals
The Atlantic spotted dolphin spends the majority of its life offshore, while the bottlenose dolphins often travel into coastal bays and inlets for feeding and reproduction (NPS, 2006, as cited in NPS, 2011). Noise and other activity associated with proposed in-water construction may temporarily disturb manatees and dolphin species in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise. Standard Manatee Conditions for In-Water Work (USFWS 2011) would be implemented and adhered to during project construction (see Chapter 6 for specific conditions). The permittee must comply with these conditions, and it is anticipated that these conservation measures would result only in short term or minor impacts to manatees from the proposed project. Dolphins are highly mobile species and would be expected to move away from the construction area during in-water activities. This Ferry Project would adhere to all applicable federal, state, and local permit conditions for the protection of marine mammals.

Environmental Consequences

Seagrass
There would be no effects on seagrass at Plaza de Luna or Quietwater Beach because seagrass does not occur there.

Special Status Species
For projects in waters accessible to sea turtles, NMFS has developed standardized *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS 2006). These conditions are typically applied to projects as part of the Clean Water Act Section 404 permit issued for in-water work. It is unlikely that the project site contains submerged aquatic vegetation, which is the preferred foraging habitat of sea turtles. To minimize risks in the aquatic environment, all construction conditions identified in the *Sea Turtle and Smalltooth Construction Conditions* would be implemented and adhered to during project construction to minimize the risk of collisions.

Noise and other activity associated with proposed in-water construction may temporarily disturb manatees and dolphin species in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise. Standard Manatee Conditions for In-Water Work (USFWS 2011) would be implemented and adhered to during project construction (see Chapter 6 for specific conditions). The permittee must comply with these conditions, and it is anticipated that these conservation measures would result only in short term or minor impacts to manatees from the proposed project. Dolphins are highly mobile species and would be expected to move away from the construction area during in-water activities.

Consultation will be initiated with FWS for 18 species. DOI will submit a determination that the project would have “No Effect” on 16 species and would be “Not Likely to Adversely Affect” two species – the Gulf sturgeon and the West Indian Manatee. Therefore, impacts of this project on these species would be short term and minor.

Fish

Due to the high level of mobility in fish and the short term and highly localized nature of this project, impacts on fish from this project would be short-term and minor.

Essential Fish Habitat

There would be permanent impacts on EFH in the two project areas due to the installation of pilings for the docks. However, because the pilings would occupy such a small area and would be placed in areas that are already highly impacted by an existing concrete wall (Plaza de Luna area), dock (Quietwater Beach area) and boat traffic (both areas), impacts on EFH would be long-term and minor.

Shellfish

Due to the mobility of shellfish and the short term and highly localized nature of this project, impacts on shellfish from this project would be short-term and minor.

Marine Mammals (excluding manatees which are discussed above)

Dock construction would be highly localized and short term. As such, impacts to marine mammals would be short term and minor. The proposed project may permanently increase the potential for ferry collisions with certain species near the two new docks once the proposed ferry is operational. The risk of vessel strike impacts to certain species resulting from ferry traffic is very low due to most species’ mobility and the required harm avoidance measures that would be implemented by ferry operators (e.g., training ferry crew members to observe for swimming marine species and restricting ferry speeds when they are observed). Additionally, the introduction of a scheduled ferry service could potentially reduce the number of vessels traversing from the mainland to Fort Pickens which currently make trips in these areas. Based on the above, the risk of vessel strike impacts to marine mammals from ferry operations is long-term and minor. There may be some impacts to marine mammals from the noise of pile driving, however these impacts will be temporary and localized (only during construction), and as such, would be short-term and minor.

Non-Native Species

Affected Resources

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences

Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project would be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.4.5.4 Human Uses and Socioeconomics

12.4.5.4.1 Socioeconomics and Environmental Justice

Affected Resources

An analysis of the Seashore socioeconomic effects of constructing the two docks and other facilities has not be conducted and cannot be until the scope and cost of these facilities is better known. A detailed financial analysis of the ferry operation is currently being prepared but will not be complete until early 2014. Additionally, these actions are small enough in scope and far enough away (e.g., the docks are on the water) from businesses or groups that environmental justice issues and potentially affected parties are few, if any.

Environmental Consequences

Providing alternate access to the Fort Pickens Area would be important to the socioeconomic environment of the local area by providing a key missing infrastructure element for a future regional water transportation system. The ferry operation, as well as the installation of the floating docks, ramp, and landing, and the construction of the two queuing areas and the ticketing facility would likely require new jobs to be established. As a result, there should be no impacts to socioeconomic factors. There should, however, be both short term and long term beneficial effects to socioeconomic factors in the areas served by the ferry operation. There should be no environmental justice impacts either. In fact, there may be long term environmental justice benefits by providing another regional transportation option for people to use.

12.4.5.4.2 Cultural Resources

Affected Resources

A survey of cultural resources in the Plaza de Luna and Quietwater Beach project areas has not yet been conducted. However, both areas are already highly disturbed and urbanized.

Environmental Consequences
The purchase and operation of ferries would not likely have the potential to affect any historic or cultural resources in the area of ferry operation. A complete review of the ferry operation under Section 106 of 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.

12.4.5.4.3 Infrastructure

Affected Resources
There is much existing infrastructure in the areas where the new docks and facilities would be. This includes docks, landings, fueling infrastructure, utilities, parking lots, sidewalks, etc. As already described, two new docks would be added, a landing and a ramp in one area, passenger queuing areas, a ticket booth, and other minor improvements.

Environmental Consequences
This project could have small, long-term beneficial impacts to energy resources due to its effect of reducing car travel to the areas that the ferries will service.

Since the exact scope of the new facilities is still being determined, impacts on infrastructure are not perfectly understood at this time. However, generally speaking, these two new facilities and operation of the ferry system in these areas would have no impact on some infrastructure and long term minor impacts on others. For example, where infrastructure capacity such as transportation routes, ferry passenger waiting areas, ticketing facilities, possibly parking, bathroom capacity, and dock space would be increased, there would be no impacts; in fact there would be long term beneficial impacts in some cases. Where infrastructure capacity, however, such as water and sewer lines and electricity would not be increased, there could be long term minor impacts. Also, where the ferry operation between points around Pensacola Bay and Fort Pickens reduces vehicle miles traveled on the roads between them, there would be a long-term beneficial effect to the road infrastructure here.

12.4.5.4.4 Land and Marine Management

Affected Resources and Environmental Consequences
There would be some small changes to on-land operations at the new ferry facilities that would inevitably result in permits and licenses being issued and minor management actions taking place. There would be minor changes to marine management in the area as well since a new transportation service and facilities are being added. As such, impacts to land and marine management should both be long term and minor.

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. Although operation of the ferries occurs in part on federal land, which is not part of any state's coastal zone, if it is determined that it can affect a state(s)' coastal use or resource, such a consistency determination would be submitted for that part of the operation, as well as the remainder.

12.4.5.4.5 Aesthetics and Visual Resources

Affected Resources and Environmental Consequences

The project areas are currently highly developed and the naturalness of each are significantly and, for all practical purposes, permanently compromised. Impacts to aesthetic and visual resources could be long term and minor for those who prefer more natural landscapes/seascapes. However, it is also possible that the aesthetic experience for those using the ferries in these areas is improved. Thus there may be a small, long term beneficial effect.

12.4.5.4.6 Tourism and Recreational Use

Affected Resources

In the four years prior to Hurricane Ivan (2000-2003), annual attendance in the Fort Pickens Area averaged approximately 682,000 visitors (NPS 2011). After Hurricane Ivan damaged Fort Pickens Road on September 16, 2004, visitation to the Fort Pickens Area fell to virtually zero. Since the road reopened in May 2009, visitation has returned to levels similar to those prior to Hurricane Ivan, although it dropped again after the *Deepwater Horizon* oil spill.

Environmental Consequences

Providing water access to the Fort Pickens Area, via ferry service, would give visitors the opportunity for a water-based experience, which is not currently available. Installation of the floating docks, the ramp, and the landing, and the construction of the two queuing areas and the ticketing facility may have a short-term minor impact to tourism and recreational use if certain nearby areas are closed and inaccessible. However, since these areas would be used by many tourists, this project would have significant long-term, beneficial effects on tourism and recreational use.

12.4.5.4.7 Public Health and Safety and Shoreline Protection

Affected Resources

Levels of public health and safety in these areas is currently high, although there are always some risks to public safety around water and moving vessels such as boats. Construction work in the areas would be done to code, including meeting all OSHA standards for workers. This includes the standards to which the ferry boats themselves are built. Areas under construction would be demarcated so that the public stay out and away from potentially harmful materials or situations. Once passengers are using these areas in the future, all federal, state, and local safety requirements for the operating of the ferry service would be followed. This includes the handling and use of hazardous materials such as boat fuel, solvents, biocides, lubricants, etc. Also, ferry boats moored at the marina could potentially serve as a source of non-point pollution resulting from inadvertent releases of fuel or oil.

Regarding shorelines, the City facility would be built on an already hardened (concrete) “shoreline” and the Pensacola Beach facility would be off the shoreline altogether off the existing dock.

Environmental Consequences

Given the information stated above, impacts of the project to public health and safety would be short term and minor during project construction, and long term and minor during ferry operations around these new dock areas. There may also be some long term beneficial effects if boat trips – presumably safer than car trips – reduce risk to the public who are traveling between the areas serviced by the ferries.

Regarding hazardous materials, in the event of a fuel or oil spill from construction equipment, all procedures, regulations and laws pertaining to Oil Spill Prevention and Response would be adhered to and the incident would be reported to appropriate agencies. As such, there would be no known effects of hazardous materials on public health and safety.

There would be no known effects of the project or ferry operation around these two new docking areas to shorelines.

12.4.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Gulf Islands National Seashore Ferry Project implements restoration techniques within Alternatives 3 and 4.

The proposed Gulf Islands National Seashore Ferry Project involves the purchase of up to three ferries to be used to ferry visitors (no automobiles) between the City of Pensacola, Pensacola Beach, and the Fort Pickens area of the Seashore in Florida. A viable ferry service to this area of the Seashore would allow visitors to enjoy the Seashore not only if the road were to be destroyed again, but also by providing alternative options for visitor access. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and increase the public's use and enjoyment of the natural resources by providing a ferry service between the City of Pensacola, Pensacola Beach, and the Gulf Islands National Seashore. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.4.7 References

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CHAPTER 12: PROPOSED PHASE III EARLY RESTORATION PROJECTS: FLORIDA (continued)

12.5 Florida Cat Point Living Shoreline Project: Project Description

12.5.1 Project Summary

The proposed Cat Point (Franklin County) Living Shoreline project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion and provide habitat off Eastpoint, Florida. Combining these objectives, this project would create breakwaters to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. Proposed activities include expanding an existing breakwater creating up to 0.3 miles of new breakwater and create salt marsh habitat. The total estimated cost for this project is $775,605.

12.5.2 Background and Project Description

The Trustees propose to implement living shoreline techniques at the Apalachicola National Estuarine Research Reserve (ANERR) Office Complex and Nature Center in Eastpoint, Florida in Franklin County (see Figure 12-1 for General location and Figure 12-2 for additional project details). This area has been the location of previous successful living shoreline projects that contribute to shoreline protection. The constructed breakwater would also serve to protect approximately 1 acre of salt marsh habitat that would be planted as part of the project as well as limiting future erosion.

Combining the objectives of reducing shoreline erosion and providing habitat, this project would create breakwaters to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. The restoration work proposed includes placing the breakwater structures approximately 30 feet from the shoreline, which would likely have an approximate 5 foot crest width with a height that falls within the mean high and low water lines of the site. The specific breakwater elevation and technique design would be selected to maximize shoreline protection and meet state regulatory requirements. The living shoreline techniques would be employed along approximately 0.3 mile of shoreline. Additionally, plugs of Saltmarsh Cordgrass *(Spartina alterniflora)* would be planted on 2to3 foot centers in the area located landward of the breakwater. Plants would be installed within 30-days of the first growing period subsequent to construction of the breakwater. The restoration methods proposed here are established methods for this type of restoration project.

Figure 12-1. General location of envisioned Cat Point (Franklin County) Living Shoreline Project.

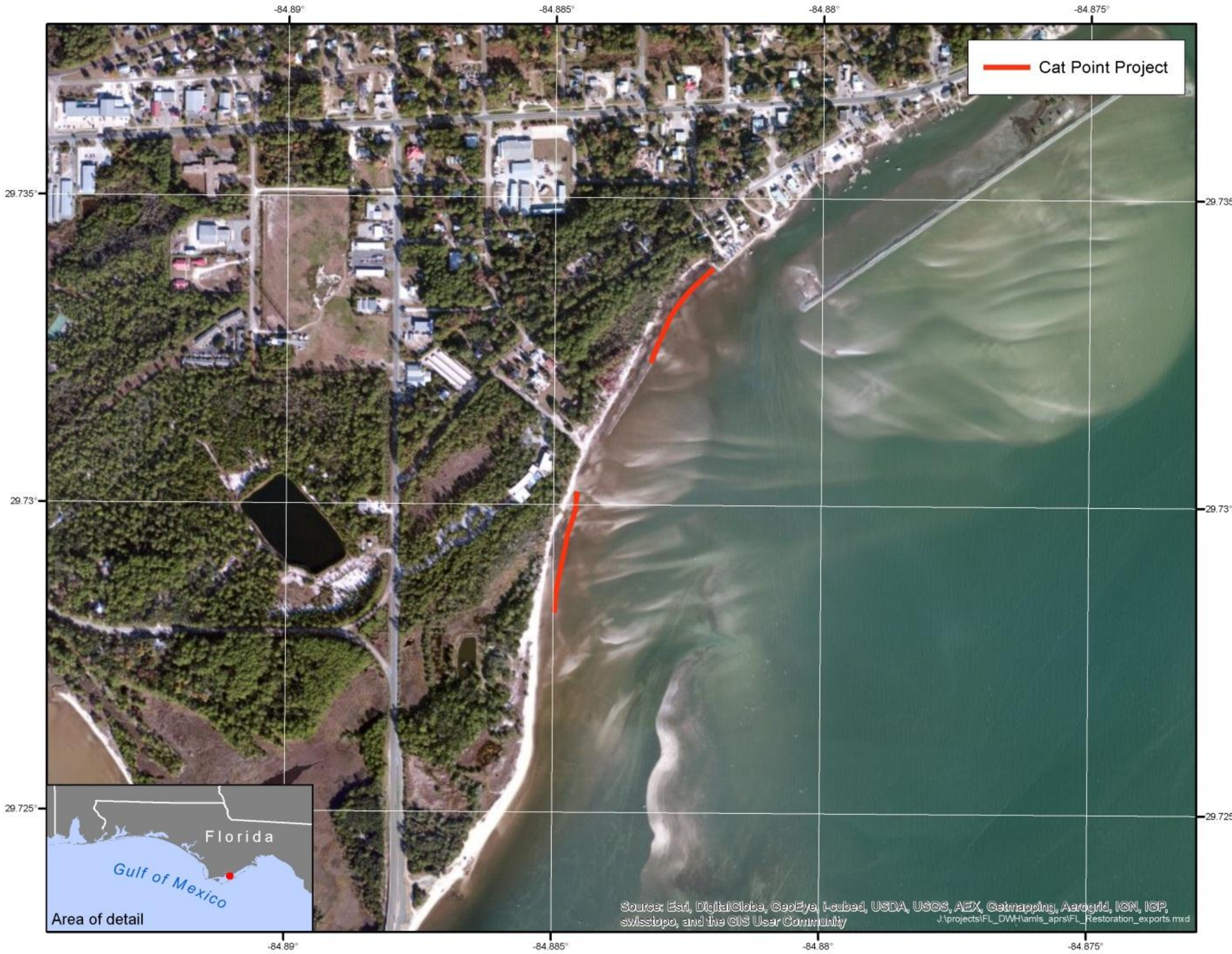

Figure 12-2. Detailed location of envisioned Cat Point (Franklin County) Living Shoreline Project.

12.5.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and associated response activities, benthic secondary productivity and salt marshes along Florida's Panhandle suffered adverse impacts. This project seeks to foster reef development and salt marsh habitat, which would help compensate the public for Spill-related injuries and losses to benthic secondary productivity and salt marsh habitats. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results. Florida agencies have successfully implemented similar projects in the region. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Furthermore, the cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. The project is part of the long-term restoration and resource management plans of the Apalachicola NERR and therefore is consistent with long term restoration needs of the State. See Section 6d of the Framework Agreement.

Many ecological projects, including ones similar to this project, were submitted as a restoration project on the NOAA website (http://www.gulfrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Cat Point living shoreline project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area in which boom was deployed and that was impacted by response and SCAT activities for the Spill.

12.5.4 Performance Criteria, Monitoring and Maintenance

As part of the project costs, monitoring would be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria would be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objective. The project objectives are: 1) to protect created marsh habitat from erosion, and 2) to promote reef development for bivalves and other invertebrates. Monitoring activities would be planned for 5 years following the completion of the project and are estimated to cost approximately $62,578. Specific success criteria include: 1) the construction of breakwaters that meet project design criteria, support benthic secondary productivity, reduce wave energy affecting the shoreline, and are sustained for the expected life of the project; 2) the creation of salt marsh habitat that meets project design criteria and achieves the designed percent cover by native saltmarsh vegetation; and 3) the reduction of shoreline erosion which protects created salt marsh habitat.

Baseline monitoring would be conducted to collect data that would be used as a point of comparison for implementation and post implementation monitoring data. Implementation monitoring would be conducted to ensure that the breakwaters were constructed with the appropriate dimensions. In general, components of this monitoring would evaluate the production and support of organisms on the breakwater (e.g., benthic secondary productivity), the performance of the breakwater protecting the shoreline (e.g., salt marsh habitat) and the creation of salt marsh habitat. Performance criteria would be established to determine whether the project achieves the desired breakwater specifications, benthic secondary productivity, and salt marsh habitat created.

Components of this monitoring may include collecting information with respect to:

- Structural integrity of breakwater/reef structure;
- Height/elevation and width of breakwater/reef structure;
- Consolidation rate of reef structure;
- Shoreline profile;
- Shoreline position;
- Bivalve density, size, biomass, and survival;
- Non-bivalve invertebrate density and biomass; and
- Percent cover and survival of planted vegetation.

Furthermore, a minimum of 80 percent of the plantings must be viable at the end of the first growing season subsequent to initial planting. An increase of at least 30 percent viable aerial coverage shall occur by the end of the second year following initial planting. An increase of at least 50 percent viable aerial coverage shall be evident by the end of the third full growing season following initial planting. Monitoring of the plantings would occur for a minimum of 5 years with a minimum of one site inspection per year. Annual reports and photographs would be prepared during the monitoring period.

12.5.5 Offsets

For the purposes of negotiations of Offsets with BP in accordance with the Framework Agreement, the Trustees used Habitat Equivalency Analysis and Resource Equivalency Analysis to estimate appropriate biological and habitat Offsets for the Cat Point Living Shoreline Project. Habitat Offsets (expressed in DSAYs) were estimated for salt marsh habitat protected by this restoration, based on the expected spatial extent and duration of improvements attributable to the project. In estimating DSAYs, the Trustees considered a number of factors, including, but not limited to, anticipated protection of created salt marsh habitat provided by the project and the time period over which the project would continue to provide benefits. The Trustees and BP agreed that if this restoration is selected for implementation, BP would receive Offsets of 4.3 DSAYs of Salt Marsh Habitat in Florida, applicable to Salt Marsh Habitat injuries in Florida, as determined by the Trustees' total assessment of injury for the Spill.

Benthic Secondary Productivity Offsets (expressed in DKg-Ys) were estimated for expected increases in invertebrate infaunal and epifaunal biomass attributable to the project. In estimating DKg-Ys, the Trustees considered a number of factors, including, but not necessarily limited to, typical productivity in the project area, estimated project lifespan and project size. The Trustees and BP agreed that if this restoration is selected for implementation, BP would receive Offsets of 3,226 DKg-Ys of benthic Secondary Productivity in Florida, applicable to benthic Secondary Productivity injuries in Florida, as determined by the Trustees' total assessment of injury for the Spill. If the Offsets exceed the benthic Secondary Productivity injury in Florida, the Trustees and BP will apply "excess" Offsets to injuries to benthic Secondary Productivity within Federal waters on the Continental Shelf, excluding those associated with mesophotic reefs. These Offsets would not apply to injuries in Mississippi, Alabama, Louisiana and/or Texas.

These Offset types and amounts are reasonable for this project.

12.5.6 Cost

The total estimated cost to implement this project is $775,605. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

12.6 Florida Cat Point Living Shoreline Project: Environmental Review

The proposed Cat Point (Franklin County) Living Shoreline project would use living shoreline techniques including natural and/or artificial breakwater material to stabilize shorelines along an area just off the Apalachicola National Estuarine Research Reserve (ANERR) Office Complex and Nature Center, Eastpoint, Florida. This project would expand on an existing breakwater, creating up to 0.3 mile breakwater to dampen wave energy and create salt marsh habitat. This area has been the location of previous successful living shorelines projects that contribute to shoreline protection. The constructed breakwaters would serve to protect approximately 1 acre of salt marsh habitat that would be plantedby the project as well as limiting future erosion.

The breakwater/living shoreline method would be employed along approximately 0.3 mile of shoreline. The structures would likely be placed approximately 30 feet from the shoreline and would likely have an approximately 5-foot crest width with a height that falls within the mean high and low water lines of the site. The specific breakwater elevation and technique would be selected during the design and permitting stage to maximize shoreline protection and meet state regulatory requirements.

12.6.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* oil spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf of Mexico in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not, fully address all injuries caused by the spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, after public review of a draft, the Trustees released a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the *Federal Register* on behalf of the Trustees, announcing the development of additional future Early Restoration projects for a Draft Phase III ERP.

This living shoreline project in Franklin County was submitted as an Early Restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the state of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and Oil Pollution Act (OPA), the project meets Florida criteria that Early Restoration projects occur in the eight-county panhandle area that deployed boom and was impacted by the Spill.

Apalachicola Bay is located in the northwestern region of Florida. To reduce erosion and restore habitat, living shoreline and marsh creation techniques can be used to stabilize eroding shorelines by dampening wave energy while also providing habitat that was once present in the project area.

Building on previous efforts that were used as mitigation measures for other projects, the Florida Department of Environmental Protection (FDEP) isproposing to employ living shoreline techniques in Apalachicola Bay to reduce shoreline erosion and enhance habitat. The proposed project would construct approximately 1 acre of salt marsh to protect and restore areas that experienced the highest rates of erosion. The breakwaters would create a total of 0.3 mile of intertidal reef to protect the shallow embayment and created salt marsh habitat.

This project would also address the impacts to habitat and biota caused by the *Deepwater Horizon* oil spill (see Code of Federal Regulations [C.F.R.] 990.54(a)(2) and Sections 6a–6c of the Framework Agreement) using established techniques (Gulf and Atlantic States Marine Fisheries Commissions 2004). State and local government agencies have successfully completed similar projects, including an earlier phase of a similar project in Apalachicola Bay at the same location.

12.6.2 Project Location

The proposed Cat Point Living Shoreline Early Restoration project is located along the northwestern portion of St. George Sound, approximately 6 miles east of Apalachicola in Franklin County, Florida. The site is east of the St. George Island bridge on property owned by the state and managed by the ANERR (Figure 12-3 and Figure 12-4).

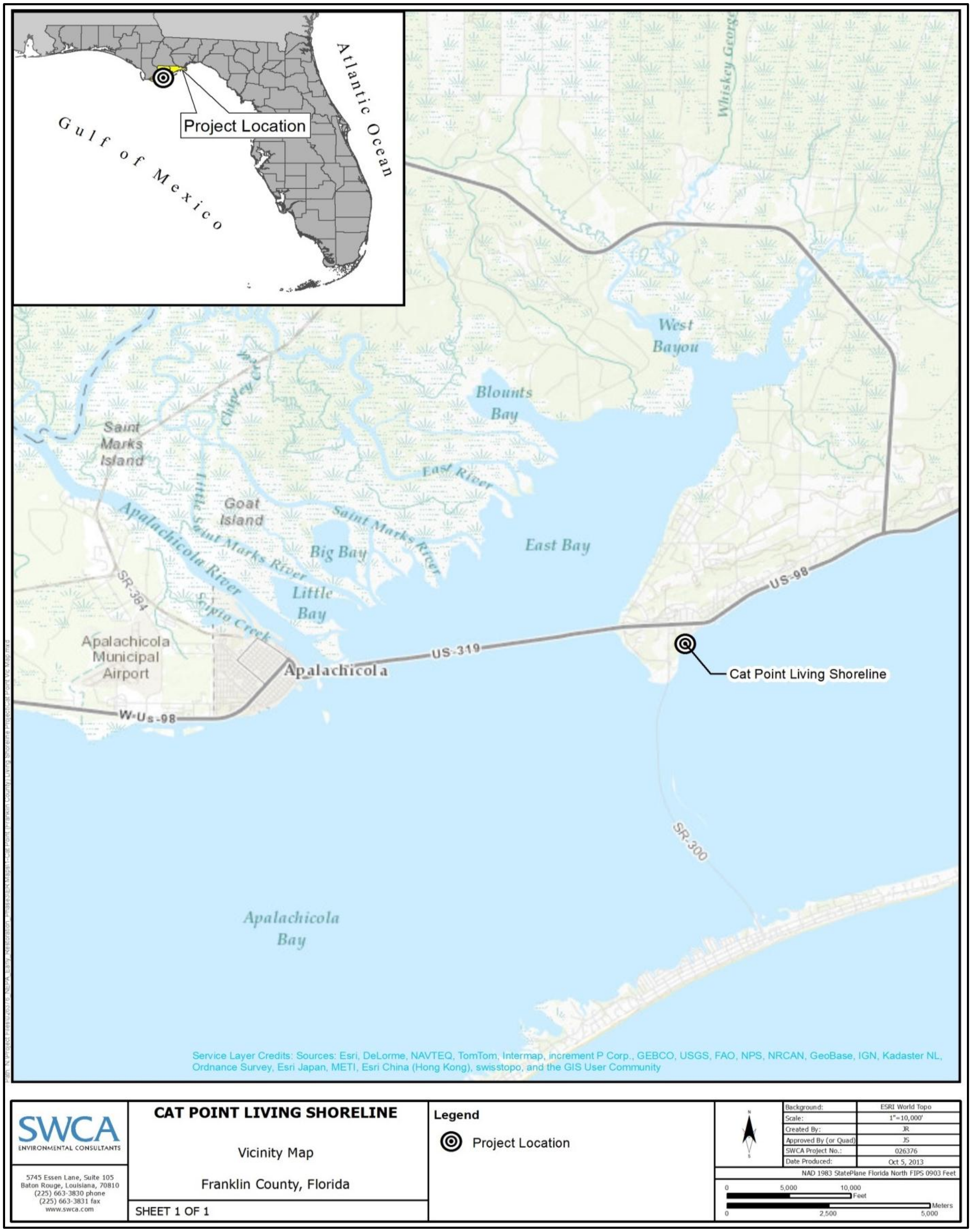

Figure 12-3. Project location map, Franklin County, Florida.

Figure 12-4. Project location map on aerial photograph, Franklin County, Florida.

12.6.3 Construction and Installation

12.6.3.1 Engineering and Design

Building upon the experience of FDEP on similar efforts, such as the original Cat Point Living Shoreline, breakwaters would be constructed along selected shoreline in Apalachicola Bay. Construction activities would include placement of linear structures that may use natural rock or shell-based materials, or both. The proposed project depths are approximately 1 to 2 feet below mean lower low water (MLLW) at the existing breakwater. The specific breakwater elevation and technique would be selected during design and permitting to maximize shoreline protection and meet state regulatory requirements.

The breakwater/living shoreline method would be employed along approximately 0.3 mile of shoreline. The structures would be placed approximately 30 feet from the shoreline and have an approximately 5-foot crest width with a height that falls within the mean high and low water lines of the site. Additionally, the project would create and restore approximately 1 acre of salt marsh habitat. One of the breakwater units could be constructed with bagged shell material while the other would probably be constructed of rock riprap. No long-term maintenance is anticipated for the breakwaters after materials are placed and stabilized.

The project area would be accessed by an existing road (Millender Street). Materials and equipment would be staged in the state-owned lands adjacent to the road right-of-way. Preliminary construction details are as follows.

Northern Structure—Riprap Structure
Total project length = 689 feet
Crest width = 5 feet
Assumed bottom elevation = −1.5 feet, MLLW (based upon nautical charts)
Total structure height = 2.5 feet [(5.24−4.29) − (−1.5) = 2.45 feet → 2.5 feet]
Bagged shell veneer depth = 0.50 foot
Riprap depth = 1.50 feet
Estimate initial settlement = 0.5 foot
Design side slopes are 2 horizontal to 1 vertical
Breakwater distance from shoreline = 30 feet
Reach of each breakwater = 70 feet
Length of each gap between breakwater = up to 25 feet

Southern Structure—Bagged Shell Structure
Total project length = 750 feet
Crest width = 5 feet
Assumed bottom elevation = −1.5 feet, MLLW (based upon nautical charts)
Total structure height = 2.5 feet [(5.24−4.29) − (−1.5) = 2.45 feet → 2.5 feet]
Bagged shell veneer depth = 0.50 foot
Riprap depth = 1.50 feet
Estimate initial settlement = 0.5 foot
Design side slopes are 2 horizontal to 1 vertical

Breakwater distance from shoreline = 30 feet
Reach of each breakwater = 70 feet
Length of each gap between breakwater = up to 25 feet
In addition, vegetative plantings would be installed behind the breakwater structures along the shoreline for approximately 1 acre of marsh creation. Marsh construction would involve planting of native marsh plant species on 2- to 3-foot centers. This activity would commence once the constructed breakwater material placement is complete and stabilized so the restored areas would be protected to the fullest extent possible.

12.6.4 Operations and Maintenance

Monitoring would be conducted to ensure project designs are correctly implemented and to evaluate project effectiveness. Performance criteria would be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objectives, which are to protect created marsh habitat from erosion and to promote reef development for bivalves and other invertebrates. Monitoring activities are planned for 5 years following the completion of the project. Specific success criteria includes the construction of breakwaters that meet project design criteria, support benthic secondary productivity, reduce wave energy affecting the shoreline, and are sustained for the expected life of the project.Also included is the creation of salt marsh habitat that meets project design criteria and achieves the designed percent cover of native salt marsh vegetation; and the reduction of shoreline erosion, which would protect created salt marsh habitat.

Baseline monitoring would be conducted to collect data that would be used as points of comparison for implementation and post-implementation monitoring data. Implementation monitoring would be conducted to ensure that the breakwaters were constructed with the appropriate dimensions. In general, components of this monitoring would evaluate the production and support of organisms on the breakwater (e.g., benthic secondary productivity), the performance of the breakwater in protecting the shoreline (e.g., salt marsh habitat), and the creation of salt marsh habitat. Performance criteria would be established to determine whether the project achieves the desired breakwater specifications, benthic secondary productivity, and salt marsh habitat created.

Components of this monitoring may include collecting information with respect to:

- Structural integrity of breakwater/reef structure;
- Height/elevation and width of breakwater/reef structure;
- Consolidation rate of reef structure;
- Shoreline profile;
- Shoreline position;
- Bivalve density, size, biomass, and survival;
- Non-bivalve invertebrate density and biomass; and
- Percent cover and survival of planted vegetation.

Furthermore, a minimum of 80% of the plantings would be viable at the end of the first growing season subsequent to initial planting. An increase of at least 30% viable aerial coverage shall occur by the end of the second year following initial planting. An increase of at least 50% viable aerial coverage shall be evident by the end of the third full growing season following initial planting. Monitoring of the plantings would occur for 5 years, with a minimum of one site inspection per year. Annual reports and photographs would be prepared during the monitoring period.

12.6.5 Affected Environment and Environmental Consequences

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 and environmental consequences of the project.

12.6.5.1 No action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue the this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected environment subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.6.5.2 Physical Environment

12.6.5.2.1 Geology and Substrates

Affected Resources

The existing geology and substrates in the project area at Cat Point can be described as gently sloping sandy/silty beaches in an estuarine system, specifically the Apalachicola River and Bay Basin. The estuarine embayments are in the Gulf Coastal Lowlands subdivision. The lowlands are a series of parallel terraces rising from the coast in successively higher levels (Scott et al. 2006). They formed during the Pleistocene Epoch (Great Ice Age), when fluctuating sea levels were associated with the growth and melting of ice caps. Dunes, barrier islands, beach ridges, and other topographical features were stranded inland as seas receded. Land surfaces of the lowlands are generally level and less than 100 feet above sea level. Substantial areas are less than 30 feet above sea level and are characterized by extensive wetlands.

The Apalachicola Bay area has been sculptured from an alluvial plain underlain by sand, gravel, silt, and clay. The *Soil Survey for Franklin County* identifies the areas chosen for placement of the marsh creation and living shorelines structures as “Waters of the Gulf of Mexico” and no soils data are provided. The natural bay shoreline is fringed by wide, shallow sandflats between 3 and 5 feet deep (Williams 2004).

Environmental Consequences

The proposed project would have minor, short-term impacts to the geology and substrates along the shoreline without causing any known negative impacts. The existing sandy substrate would be covered with hard structure reef materials. However, the project footprint is very small and encompasses approximately 0.3 acres of area. Disturbance to geologic features or soils would be detectable, but would be small and localized. There would be no changes to local geologic features or soil characteristics.

In the long term, the net benefits of habitat protection and restoration outweigh this direct impact by increasing benthic habitat diversity and creating structural complexity that supports a greater diversity and abundance of marine aquatic species.

12.6.5.2.2 Hydrology and Water Quality

Affected Resources

Cat Point is located within the Apalachicola NERR and characterized by its good water quality conditions. Briefly, the NERR is a system of 28 sites nation-wide that are protected through partnerships with the coastal states and NOAA.

Hydrology

Apalachicola Bay is a lagoon and estuary that encompasses St. George Sound, St. Vincent Sound, and East Bay. The entire bay area encompasses approximately 200 square miles. There are several rivers that drain into the bay, and these include the Apalachicola River and Carabelle River.

Water Quality

Apalachicola Bay is mostly designated as a Class II Shellfish Harvesting Area. It has excellent water quality, and the waters of the bay are tested regularly.

Floodplains

The project is located in Federal Emergency Management Agency (FEMA)–designated flood zone according to the Flood Insurance Rate Maps (FIRMs) for Franklin County (FIRM No. 12037C0532E, Franklin County). The project is located in Zone VE, with a base flood elevation of 14 feet above mean sea level (AMSL). VE zones are coastal flood zones with velocity hazards.

Wetlands

The project would take place in open water, off an existing paved road, and on bay beach areas. There are no wetlands identified in these areas (Department of the Interior [DOI] 2013).

Environmental Consequences

The effect on hydrology would be measurable, but it would be small and localized. The footprint of the project is near to the shore and encompasses approximately 0.3 acre of land.

The effect to water quality would be short term and minor. During the construction phase of the project, it is likely that sandy soils would be disturbed as the substrate is placed in the water. This would result in a detectable change to water quality, but the change would be expected to be small and localized. Impacts would quickly become undetectable. State water quality standards as required by the CWA would not be exceeded.

The project area is classified as a high-velocity flood zone. Impacts may result in a detectable change to natural and beneficial floodplain values, but the change would be expected to be small and localized. There would be no appreciable increased risk of flood loss, including impacts on human safety, health, and welfare.

The project area is not in a wetland. However, by installing the living shoreline/breakwaters, wetlands would be created behind the breakwaters. This is a beneficial effect as it would create additional estuarine habitat that can host many species that are present in the region.

Construction activities would use best management practices (BMPs) and are anticipated to last 3 to 6 months from the time site preparation and access activities begin. The calendar year timing would depend on the timing of funding availability and the contract award along with any permit constraints required as a result of listed species considerations. BMPs may include, but would not necessarily be limited to, the following:

- Installation of floating turbidity barriers
- Installation of erosion control measures along the perimeter of all work areas
- Stabilization of all filled areas with sod, mats, barriers, or a combination
- Storing and fueling vehicles away from aquatic areas
- Re-vegetation of exposed soils when construction activities are complete

12.6.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources
The current air quality index in the project area is good, with respect to both National Ambient Air Quality Standards (NAAQS) and carbon dioxide (CO_2) emissions. Air quality in the Florida panhandle is in attainment with the NAAQS (Environmental Protection Agency [EPA] 2013).

The rock and shell-based materials would be placed by heavy equipment (e.g., front-end loader, crane) from shore, as the area where the materials would be placed is exposed at low tide. A vehicle would be used to transport riprap boulders and oyster shell material from staging areas near the shoreline to a location where they would be picked up by the crane, which would place the material in the intertidal areas to construct the breakwater structure(s). Some engine emissions would be generated from the vehicle and crane for 8 hours per day, 5 days per week, for up to 3 months to construct the structure and restore the shoreline including any material staging areas. Plantings for the restored/created salt marsh would be made primarily using hand tools or light equipment if minor re-grading and equipment moving/boring is needed. Table 12-1 lists the greenhouse gas emissions expected from use of mechanized equipment.

Environmental Consequences
Negative impacts to air quality would be minor because the construction phase of the living shoreline project would be short in duration and would use minimal heavy equipment. The impact on air quality may be measurable, but would be localized and temporary, such that the emissions would not exceed the EPA's de minimis criteria for a general conformity determination. The contributions to greenhouse gases may be measurable, but below 25,000 metric ton/year of CO_2 or its equivalent. Marsh plantings would have a moderate beneficial impact to air quality. Over time, the plantings would propagate and the marsh area would fill in. This would create additional land area where seagrasses and other relevant plant materials would enrich the environment.

Table 12-1. Greenhouse Gas Emissions for various mechanized equipment.

EQUIPMENT1	TOTAL HOURS USED	CO_2 FACTOR-MT/100 HRS	CO_2 (MT)[2]	CH_4 FACTOR-MT/100 HRS	CH_4 (CO_2E) (MT)[3]	N_2O FACTOR-MT/100 HRS	NOX (CO_2E) (MT)	TOTAL CO_2E (MT)
Crane	480	0.29	1.39	0.0001	0.0005	0.001	0.0048	1.39
Dump Truck	96	0.344	0.33	0.0002	0.002	0.002	0.002	0.33
Boat[4]	480	1.3	6.24	0.002	0.01	0.01	0.05	6.3
Pickup Truck[5]	180	0.16	0.29	0.0001	0.0002	0.001	0.002	0.3
TOTAL	1,236							8.32

[1] Emissions assumptions for all equipment based on 8 hours of operation

[2] CO_2 emissions assumptions for diesel and gasoline engines based on Environmental Protection Agency (EPA) 2009

[3] CH_4 and NOx emissions assumptions and CO_2e calculations based on EPA 2011

[4] Fuel economy assumptions for a 300-hp marine diesel powerboat and 1,000-hp marine diesel passenger ferry based on Becker 2013.

[5] Emissions assumptions for an 8-cylinder, 6.2-liter gasoline engine Ford F150 pickup based on Department of Energy (DOE) 2013 and 18-gallon (half-tank) daily fuel consumption.

mt = metric tons; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; NOx = nitrogen oxide/dioxide; CO_2e = carbon dioxide equivalent

12.6.5.2.4 Noise

Affected Resources

Existing ambient noise levels along the shoreline at Cat Point are generally low and predominantly result from daily boating activities in St. George Sound. Noise can be defined as unwanted sound and noise levels, and its effects are interpreted in relation to effects on nearby visitors to the recreational areas and wildlife in the project vicinity. The Noise Control Act of 1972 (42 USC 4901–4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale that approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 12-2 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Table 12-2. Common noise levels.

NOISE SOURCE OR EFFECT	SOUND LEVEL (DBA)
Rock-and-roll band	110
Truck at 50 feet	80
Gas lawnmower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Source: Adapted from Bonneville Power Administration (BPA) 1986, 1996.

Noise levels in the project area vary depending on the season, time of day, number and types of noise sources, and distance from noise sources. Existing sources of noise in the project area are from vehicles, recreational boating, overhead aircraft, and ambient natural sounds such as wind, waves, and wildlife. Existing ambient noise levels in the ANERR are generally low and predominantly result from human visitation and offshore boating activities.

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 receptors in the project vicinity include Apalachicola NERR use and wildlife.

Environmental Consequences

During the construction phase of the project, increased noise from operation of the crane and other construction equipment could attract attention, but their contribution to the soundscape would be localized and not of consequence, nor would it affect current user activities. Once built, the proposed project would not cause long-term noise impacts.

12.6.5.3 Biological Environment

12.6.5.3.1 Living Coastal and Marine Resources

Vegetation

Affected Resources

The project area has both an onshore (road to access project area and staging areas on the beach) and offshore component. According to the Natural Vegetation of Florida map the project area is located on previously existing sand pine (*Pinus clausa*) scrub forest. This vegetation type is mostly on excessively drained deep sandy soils and occurs on dunes of coastal strand and old dunes or dry sands in the interior (Davis 1967). Based on aerial reviews, the project site appears to contain mainly unvegetated sandy beach areas.

Offshore, there are a variety of aquatic plants that are present in the existing marsh areas near the project area. During the original construction of the existing Cat Point Living Shoreline, several species of native saltwater plants were placed behind the living shoreline to facilitate marsh creation. These included saltgrass (*Distichlis spicata*), marsh-hay cordgrass (*Spartina patens*), railroad vine (*Ipomoea pes-caprae*), and saltmarsh cordgrass (*Spartina alterniflora*).

In addition to these plants, there are seagrasses present on the other side of the bay, approximately 5 miles from the project site (Florida Fish and Wildlife Conservation Commission [FWC] 2011). These include primarily shoal grass (*Halodule wrightii*). Seagrass communities are essential breeding, rearing, and feeding grounds for many important recreational and commercial fisheries, and wildlife including the endangered West Indian manatee (*Trichechus manatus*) and various species of sea turtles.

Environmental Consequences

The current project would include expansion of the current living shoreline, and work would take place in the water. As part of the project, the area behind the newly constructed living shoreline would be planted with several species of native saltwater plants. As the plants would be placed behind the breakwater by hand, the disturbance would be minor and localized to the areas that are being actively planted. Breakwater materials would be placed in the project area via crane or front end loader from the shore. During the creation of the original living shoreline, any exotic species were removed concurrent with planting and will be removed as part of this project.

Overall, impacts on native vegetation may be detectable, but would not alter natural conditions and would be limited to localized areas. Infrequent disturbance to individual plants could be expected, but without affecting local or range-wide population stability. Infrequent or insignificant one-time disturbance to locally suitable habitat could occur, but sufficient habitat would remain functional at both the local and regional scales to maintain the viability of the species. In the long term, the marsh plantings would likely create additional habitat for marine species and wading birds, prevent further erosion of the shoreline, improve water quality, reduce wave activity, and increase sediment deposition in the area.

The FDEP may require permits and impose reasonable conditions as necessary to ensure that the construction complies with the provisions of Chapter 62-346.050 (3) of the Florida Administrative Code (FAC), which states in part that dredging and filling in, on, or over surface waters of the state remain subject to the requirements of Chapter 62-312, FAC, including the need to obtain a separate permit under that chapter until the effective date of the rules adopted under Section 373.4145(1)(b), Florida Statutes (FS). The FDEP permit also grants state-owned submerged lands authorization from the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees) pursuant to Article X, Section 11 of the Florida Constitution, and Section 253.77, FS and Chapter 258, FS. On November 18, 2011, FDEP issued Environmental Resource Permit No. 19-0304982-001-EI to construct the existing breakwaters and created salt marsh areas as mitigation to offset wetland impacts associated with a separate project constructed by a power company. Both the project and mitigation authorized by the permit issued from FDEP (as well as USACE Permit No. SAJ-2011-00557) are complete. Mitigation monitoring of the existing created salt marsh habitat is ongoing. However, the current FDEP and USACE permits only authorized construction of the original structures. The proposed project includes extensions of the existing living reef system (breakwaters); therefore, new Clean Water Act Section 404 permits to construct the project will be required.

12.6.5.4 Wildlife Habitat

Affected Resources

The onshore portion of the project area (mainly the beach area to be used for staging) provides habitat for wildlife such as wading birds (herons and egrets), swimmers (cormorants and anhingas), brown pelicans (*Pelecanus occidentalis),* and birds of prey that feed on juvenile and adult fish. The most common resident marsh and wading birds are great blue heron (*Ardea Herodias*), little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), tricolored egret (*Egretta tricolor*), yellow-crowned night heron (*Nyctanassa violacea*), and black-crowned night heron (*Nycticorax nycticorax*). Urban and open, vacant land adjacent to the project area serves as a refuge and staging area for many passerine birds during migration, and large concentrations of shorebirds are sometimes observed feeding in the mudflats occurring in the vicinity of the project area.

Based on the types of habitat present, and because of its size, elevation, and location, it is expected that ruderal species such as raccoon, opossum, grey squirrel, and other non-game mammals be present in upland areas in the project vicinity.

Environmental Consequences
Construction activities in the terrestrial portions of the project area are limited to use of an existing, paved road and staging of equipment and materials on the beach. Terrestrial populations of animals, including small mammals and some birds, would potentially be subject to short-term, minor impacts to their habitats. The natural processes sustaining them would be detectable, but localized and would not measurably alter natural conditions. Small changes to local population numbers, population structure, and other demographic factors could occur. Sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species.

In the long term, the addition of the living shorelinewould provide additional feeding sources for some of the terrestrial animals as habitat for aquatic species would be expanded. The addition of the breakwaters would reduce wave velocity and decrease erosion, which may create a more stable shoreline; this would ultimately result in a protected nearshore environment for the species that live there.

12.6.5.5 Marine and Estuarine Fauna (fish, shell beds, benthic organisms)

Affected Resources
The project area provides habitat for numerous fish and other marine species. The value of marine habitats at the project site has been affected by population growth, development, and wastewater disposal. Increased coastal development, in particular, has contributed to displaced habitats, loss of wetlands, and greater amounts of stormwater runoff entering the bay and its tributaries (Northwest Florida Water Management District [NWFWMD] 2011). Nonetheless, the marine environment at the project site provides habitat to an array of aquatic species including ladyfish (*Elops saurus*), hardhead catfish (*Arius felis*), gafftopsail catfish (*Bagre marinus*), and pigfish (*Orthopristis chrysoptera*), among others. Benthic organisms such as bivalves, gastropods and other mollusks, anemones, amphipods, annelids, crustaceans, and echinoderms are also abundant in these waters.

Environmental Consequences
The proposed project would likely result in short-term, minor adverse impacts due to construction of the breakwater structures in shallow, intertidal habitat that may harbor invertebrates or sessile organisms. Small fish that frequent the intertidal area within the construction envelope are highly mobile and would be displaced to suitable habitat in the restoration area. However, these species are typically numerous in the area and recolonize quickly. The proposed breakwaters would benefit the fish and invertebrate community by providing additional structures that attract prey. Impacts would be detectable and localized but small. Disturbance of individual species would occur; however, there would be no change in the diversity or local populations of marine and estuarine species. Any disturbance

would not interfere with key behaviors such feeding and spawning. There would be no restriction of movements daily or seasonally.

The proposed project would provide long-term benefits to marine species providing additional fish habitat, increased benthic productivity, and enhanced recruitment and production of fish and invertebrates. The proposed breakwaters and restoration of the salt marsh communities would benefit numerous aquatic species such as blue crab (*Callinectes sapidus*), bivalves (*oysters*) and gastropods (*Gastropoda sp.),* red drum (*Sciaenops ocellatus*), and speckled sea trout (*Cynoscion nebulosus).* Over the life of the project, the quality of fish habitat would increase, and the stabilization of shoreline community would allow it to become more productive. The greater overall beneficial impact resulting from the restored habitat would outweigh potential short-term impacts to these species. Therefore, short- and long-term effects to marine and estuarine fauna are expected to be minor as a result of project construction.

12.6.5.6 Protected Species

Affected Resources

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA). The federally listed threatened and endangered species reported for the project area in Franklin County include Gulf Sturgeon and its critical habitat five species of sea turtles, West Indian manatee, piping plover (*Charadrius melodus*), and one proposedspecies, the red knot (*Calidris canutus rufa*) (Niles et al. 2008; USFWS 2013). Table 12-3 lists the threatened or endangered species potentially found in the project area.Other state-listed threatened species reported to occur in the project area are addressed below, under State-Listed Species.

Sea Turtles and Marine Mammals

There are five species of endangered or threatened sea turtles that may occur or have the potential to occur in the project area. These include green turtle, hawksbill turtle, Kemp’s ridley turtle, leatherback turtle, and loggerhead turtle. Sea turtles forage in the waters of the coastal Florida panhandle region and have the potential to occur in the waters where in-water work is proposed. The project site contains potentially suitable sea turtle nesting habitat along the sandy beach, but the site is on the bay side where nesting is uncommon.

Twenty-two marine mammals are native to the Gulf of Mexico: 21 pelagic species of whales and dolphins, and the West Indian manatee (see Chapter 3). Of these species, the endangered West Indian manatee has the potential to occur in the project area waters. Manatees typically seek out shallow seagrass areas as preferred feeding habitat. Additionally, bottlenose dolphin (*Tursiops truncatus*) populations are known to migrate into bays, estuaries, and river mouths and could be located in the proposed project area (NMFS 2013a). Bottlenose dolphins have been observed entering and leaving nearshore coastal waters (NMFS 2012).

Table 12-3. List of threatened and endangered species protected under the ESA potentially occurring in the project area.

RESOURCE CATEGORY	COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Birds	Piping plover	*Charadrius melodus*	T (CH)	T	• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants. **Potential habitat present; no critical habitat in the action area**
Birds	Red knot	*Calidris canutus rufa*	P		• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants. **Potential habitat present**
Fish	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T (CH)	T	• Estuarine: various • Marine: various habitats • Riverine: alluvial and blackwater streams **Critical habitat present in the action area**
Mammal	West Indian manatee	*Trichechus manatus*	E	E	• Estuarine: submerged vegetation, open water • Marine: open water, submerged vegetation • Riverine: alluvial stream, blackwater stream, spring-run stream **Potential habitat present**
Reptiles	Green turtle	*Chelonia mydas*	E	E	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**
Reptiles	Hawksbill turtle	*Eretmochelys imbricata*	E	E	• Marine: open water; nesting **Potential marine habitat present**
Reptiles	Kemp's ridley turtle	*Lepidochelys kempii*	E	E	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**
Reptiles	Leatherback turtle	*Dermochelys coriacea*	E	E	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**
Reptiles	Loggerhead turtle	*Caretta caretta*	T	T	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**

E=endangered, T=threatened, P=proposed, C=candidate, SSC=species of special concern, CE=consideration encouraged, CH=Critical Habitat, BGEPA=Bald and Golden Eagle Protection Act

Smalltooth Sawfish and Gulf Sturgeon

Smalltooth sawfish (*Pristis pectinata)* do not typically use northern Gulf of Mexico waters (NMFS 2013b). Gulf sturgeon are restricted to the Gulf of Mexico and its drainages, occurring primarily from the Pearl River in Louisiana to the Suwannee River, in Florida (NMFS 2009). Adult fish reside in rivers for 8 to 9 months each year and in estuarine or Gulf of Mexico waters during the 3 to 4 cooler months of each year (NMFS 2009). Important marine habitats include seagrass beds with sand and mud substrates (Mason and Clugston 1993).

Gulf sturgeon critical habitat was jointly designated by the NMFS and USFWS on April 18, 2003 (50 C.F.R. 226.214). The proposed project site is located within the Florida Nearshore Gulf of Mexico Critical Habitat Unit 11, which contains winter feeding and migration habitat for Gulf sturgeon. Critical habitat was designated based on seven primary constituent elements (PCEs) essential for its conservation, as defined in the 2003 *Federal Register*.

These seven elements are listed below. PCEs present at the project site include elements applicable to esturine and marine habitats (i.e., elements 1, 5, 6, and 7).

1. Abundant food items, such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages; and abundant prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and/or crustaceans, within estuarine and marine habitats and substrates for subadult and adult life stages;
2. Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;
3. Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths; these are believed necessary for minimizing energy expenditure during freshwater residency and possibly for osmoregulatory functions;
4. A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging;
5. Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
6. Sediment quality, including texture and chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and
7. Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage) (Figure 12-5).

Figure 12-5. Critical habitat for Gulf sturgeon near the Cat Point Living Shoreline project area.

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity.” The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum, brown shrimp, pink shrimp, and white shrimp. There are no marine components of EFH in the vicinity of the project site.

The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. Table 12-4 provides a list of the species that NMFS manages under the federally Implemented Fishery Management Plan in the vicinity of the Cat Point Living Shoreline project site which is located along the northwestern portion of St. George Sound within the Apalachicola National Estuarine Research Reserve (ANERR).

Table 12-4. List of species managed by NMFS in vicinity of the project study area (NMFS EFH mapper, 2013).

MANAGEMENT UNIT / SPECIES	LIFESTAGE(S) FOUND AT LOCATION	FMP
Red Drum (Sciaenops ocellatus)	ALL	Red Drum
Highly Migratory Species		
Atlantic Sharpnose Shark	All	Highly Migratory Species
Blacknose Shark	All	
Blacktip Shark	All	
Bonnethead Shark	All	
Bull Shark	Juvenile, Adult	
Finetooth Shark	Juvenile, Adult	
Great Hammerhead Shark	All	
Nurse Shark	Juvenile	
Scalloped Hammerhead Shark	Neonate, Juvenile	
Spinner Shark	All	
Shrimp		
Brown shrimp (*Penaeus aztecus*)	ALL	Shrimp
White shrimp (*Penaeus setiferus*)		
Pink shrimp (*Penaeus duararum*)		
Royal red shrimp (*Pleoticus robustus*)		
Coastal Migratory Pelagics		
King mackerel (*Scomberomorus cavalla)*	ALL	Coastal Migratory Pelagics
Spanish mackerel (*Scomberomorus maculatus*)		
Cobia (*Rachycentron canadum*)		
Dolphin (*Coryphaena hippurus*)		
Reef Fish		
Balistidae - Triggerfishes		
Gray triggerfish (Balistes capriscus)		

MANAGEMENT UNIT / SPECIES	LIFESTAGE(S) FOUND AT LOCATION	FMP
Carangidae - Jacks Greater amberjack (Seriola dumerili) Lesser amberjack (Seriola fasciata) Almaco jack (Seriola rivoliana) Banded rudderfish (Seriola zonata) **Labridae - Wrasses** Hogfish (Lachnolaimus maximus) **Lutjanidae - Snappers** Queen snapper (Etelis oculatus) Mutton snapper (Lutjanus analis) Blackfin snapper (Lutjanus buccanella) Red snapper (Lutjanus campechanus) Cubera snapper (Lutjanus cyanopterus) Gray (mangrove) snapper (Lutjanus griseus) Lane snapper (Lutjanus synagris) Silk snapper (Lutjanus vivanus) Wenchman (Pristipomoides aquilonaris) Vermilion snapper (Rhomboplites aurorubens) **Malacanthidae – Tilefishes** Goldface tilefish (Caulolatilus chrysops) Blueline tilefish (Caulolatilus microps) **Serranidae – Groupers** Speckled hind (Epinephelus drummondhayi) Yellowedge grouper (Epinephelus flavolimbatus) Red grouper (Epinephelus morio) Warsaw grouper (Epinephelus nigritus) Snowy grouper (Epinephelus niveatus) Nassau grouper (Epinephelus striatus) Black grouper (Mycteroperca bonaci) Yellowmouth grouper (Mycteroperca interstitialis) Gag (Mycteroperca microlepis) Scamp (Mycteroperca phenax) Yellowfin grouper (Mycteroperca venenosa)	ALL	Reef Fish

Piping Plover

The sandy beaches and shorelines adjacent to the project area offer suitable foraging and resting habitat for the piping plover during the winter migratory season, and piping plover may forage in the shallow waters of the project area. Natural shorelines in the proposed project vicinity provide suitable winter migration resting habitat for the piping plover. Piping plover wintering habitat includes beaches, mudflats, and sandflats, as well as barrier island beaches and spoil islands (Haig 1992 as cited by USFWS 2013). On the Gulf Coast, preferred foraging areas are associated with wider beaches, mudflats, and small inlets (USFWS 2013).

Red Knot

The red knot, a proposed species for listing under the ESA, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate to specific wintering locations in South America (Niles et al. 2008) and could be present at the project site. Wintering and migrating red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sandflats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

State-Listed Birds, MBTA and BGEPA

There are numerous state of Florida–listed bird species with potential for occurrence in and around the Cat Point Living Shoreline project site. These include Arctic peregrine falcon (*Falco peregrinus tundrius*), least tern (*Sterna antillarum*), southeastern American kestrel (*Falco sparverius paulus*), Florida sandhill crane (*Grus canadensis pratensis*), American oystercatcher (*Haematopus palliates*), and southeastern/Cuban snowy plover (*Charadrius alexandrinus tenuirostris*.

The proposed project site is located across the bay from the St. George Island Causeway, more than 1 mile away. This causeway island, approximately 1.3 miles long and 50 yards wide, is one of the most important nesting sites in the panhandle for terns, skimmers, oystercatchers, and laughing gulls. Documented nesting species include least tern, gull-billed tern, caspian tern, royal tern, sandwich tern, sooty tern (one pair in 2007 and 2008), black skimmer, and American oystercatcher (Audubon 2012). Many of the species that could be in the vicinity of the project site are also state listed. St. George Sound provides important foraging habitat for many MBTA birds and raptors that may be present during the nesting season or may use the area as overwintering habitat.

Bald eagles are known to nest within 1 mile of the project site (FDEP, personal communication, September 26, 2013). The bald eagle was delisted by the USFWS and is not listed as threatened or endangered by the FWC. The bald eagle is, however, protected by state law pursuant to 68A-16, Fla. Admin. Code and by the U.S. government under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles feed on fish and other readily available mammalian and avian species and are dependent on large, open expanses of water for foraging habitat. In Florida, conservation measures to protect active nest sites during nesting season must be considered to reduce potential disturbances of certain project activities. If bald eagles are found nesting within 660 feet of a proposed construction area, then activities would need to occur outside of nesting season or coordination with the USFWS would occur to determine if a permit is needed, and Florida's *Bald Eagle Management Plan* guidelines would be followed (FWC 2008).

Environmental Consequences

The proposed restoration activities would provide breakwaters that would not only serve to reduce erosion of Apalachicola NERR uplands, but would also provide a structure for estuarine organisms that would function as the forage base for many forms of aquatic fauna including protected species. The proposed action has been evaluated for potential short- and long-term impacts to state and federally listed threatened and endangered species that can occur in and adjacent to the project area based on available suitable habitat and restoration goals. Descriptions of the evaluations for these species are provided below.

Sea Turtles and Marine Mammals

For projects in waters accessible to sea turtles, NMFS has developed standardized *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS 2006). These conditions are typically applied to projects as part of the Clean Water Act Section 404 permit issued for in-water work. It is unlikely that the project site contains submerged aquatic vegetation, which is the preferred foraging habitat of sea turtles.

If sea turtles are present in the in-water work area, short-term disturbances from noise and turbidity would occur. Sea turtles are a highly mobile species and would be expected to move away during in-water activities. Additionally, should a sea turtle be encountered during installation of the project, the crews would allow these species to exit from the project vicinity before commencing with construction activities. Therefore, potential impacts or disturbances to listed sea turtles would be short term and minor.

Sea turtles and their nests may experience short-term, minor impacts from the proposed project if it is implemented during sea turtle nesting and hatching season. As such conservation measures to avoid or minimize impacts to sea turtles are under development. These measures could include seasonal restrictions (i.e., project implementation outside of nesting and hatching season), daily surveys, the use of an on-site monitor, etc.

To minimize risks in the aquatic environment, all construction conditions identified in the *Sea Turtle and Smalltooth Construction Conditions* (NOAA 2006) would be implemented and adhered to during project construction to minimize the risk of collisions.

Noise and other activity associated with proposed in-water construction may temporarily disturb manatees and dolphin species in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise. Standard Manatee Conditions for In-Water Work (FWC 2011) would be implemented and adhered to during project construction (see Chapter 6 for specific conditions). The permittee must comply with these conditions, and it is anticipated that these conservation measures would result only in short term or minor impacts to manatees from the proposed project. Dolphins are highly mobile species and would be expected to move away from the construction area during in-water activities. The Cat Point Living Shoreline project would adhere to all applicable federal, state, and local permit conditions for the protection of marine mammals.

Smalltooth Sawfish, Gulf Sturgeon, and Gulf Sturgeon Critical Habitat

Smalltooth sawfish are a mobile species and relatively rare in northern Gulf of Mexico waters and the immediate project area. Gulf sturgeon use Choctawhatchee Bay as a migratory corridor from breeding grounds to winter foraging grounds. Minor, short-term disturbances may occur as a result of in-water work associated with the proposed project. In waters accessible to the smalltooth sawfish and Gulf sturgeon, the project would comply with NMFS Smalltooth Sawfish Construction Conditions (NMFS 2006) which are also protective of Gulf sturgeon.

Disturbances to the water column from in-water work would temporarily affect certain Gulf sturgeon critical habitat PCEs due to turbidity, dispersal of potential prey, and substrate disturbance. These would be limited to the area immediately surrounding the work area and would occur only during construction. Therefore, impacts to Gulf sturgeon critical habitat would be short term and minor.

Essential Fish Habitat

An EFH assessment will be coordinated through the National Marine Fisheries Service Habitat Conservation Division. If necessary, species specific measures would be recommended by NMFS and would be incorporated into the project construction plan. The project would not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of potential effect during the construction process. The project may result in minor, adverse short term impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans.

The proposed work in the EFH area reflects the expansion of an existing breakwater through the installation of approximately 0.3 linear feet of new breakwater. Additionally, approximately 1 acre of salt marsh habitat, anticipated to be protected by the breakwater, would be planted. Installation of the breakwaters and planting native salt marsh vegetation may result in a small area of existing habitat being converted from one EFH habitat to another type; however, both habitat changes will be small and are anticipated to have a net beneficial impact to habitat quality and species found in the area. As a result, disturbance to species will be limited in their spatial extent, minor in scope, and brief in duration. Construction activities may have a minor, short term impact on habitat. During construction, all appropriate BMPs will be followed to minimize the potential impacts of construction activities on EFH and species in the area. During construction, adjacent areas with equivalent or better habitat will be available and undisturbed and organisms could move away from disturbed areas. Therefore, the project is not likely to adversely affect EFH.

Piping Plover and Red Knot

The main risk to piping plover and red knot would be from human disturbance during resting and foraging in habitats adjacent to work areas. The proposed project would result in short-term increases in noise, which could startle individuals, though normal activity is expected to resume within minutes; alternatively, the noise is expected to cause the plovers or red knots to move to a nearby area as alternate available habitat is abundant. Piping plovers and red knots are highly mobile species and, if disturbed by construction activities, may be temporarily displaced from foraging and resting areas within normal movement patterns. These effects would be considered short term and minor.

The proposed project would change the shoreline by adding approximately 1 acre of marsh to the area. This would change the habitat that the plovers and red knots use for feeding. However, the area is not critical habitat for either bird and there is appropriate feeding habitat nearby.

State-listed Birds, MBTA, BGEPA
Many migratory bird species may be present foraging or resting in the project area. State-listed birds such as oystercatchers or least terns may nest on beaches or mudflats in the vicinity of the project area. If restoration activities occur during the nesting season (March 1 to August 1), birds could be disturbed by noise generated by in-water activities. In such circumstances, FWC nesting shorebird avoidance measures will be followed. These measures generally call for surveys within 300 feet and an avoidance buffer of 300 feet for nesting birds.

There is a known bald eagle nest within 1 mile of the project site but greater than 660 feet from project activities. Based on the distance from proposed project activities, nesting of the known occurrences of bald eagle would not be impacted. However, if a bald eagle nest were observed in the vicinity of the project site, conservation measures to protect bald eagles will be implemented (see Chapter 6 for specific measures).:

Consultation with FWC concerning the proposed project and anticipated construction schedule relative to known bald eagle nest sites in the project vicinity and the nesting season in Florida (October 1 to May 15) would be required prior to commencement of activities. To minimize potential for impacts to nesting bald eagles, the consultation protection measures may include 1) addressing prescribed nest tree protection zones, and 2) preparation of a bald eagle nest protection plan (including nesting behavior disturbance monitoring). Bald eagles have been known to tolerate certain potential disturbances in their breeding territories. Should these conservation measures be implemented for active nest sites adjacent to enhancement activities in the project area, potential impacts to the bald eagle would be short term and minor.

Section 7 and Essential Fish Habitat Consultations
Section 7 ESA consultations with the USFWS and NMFS are ongoing for the proposed project. An EFH consultation under the Magnuson-Stevens Fishery Conservation and Management Act also would be completed to address any situations where proposed project activities may affect EFH habitat. The project would incorporate any additional conservation recommendations provided by the NMFS and the USFWS during the consultation to avoid, minimize, mitigate, or otherwise offset the impacts of the proposed project on listed species or EFH.

Invasive Species

Affected Resources
Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences
Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.6.5.7 Human Uses and Socioeconomics

12.6.5.7.1 Socioeconomics and Environmental Justice

Affected Resources
The population of Franklin County is approximately 11,686. The following table shows population data for Franklin County and Florida (Table 12-5).

Table 12-5. Census data for Franklin County and the State of Florida.

PEOPLE QUICKFACTS	FRANKLIN COUNTY	FLORIDA
Population, 2012 estimate	11,686	19,317,568
Population, 2010 (April 1) estimate base	11,549	18,802,690
Population, percent change, April 1, 2010, to July 1, 2012	1.2%	2.7%
Population, 2010	11,549	18,801,310
Persons under 5 years, percent, 2012	4.6%	5.5%
Persons under 18 years, percent, 2012	16.5%	20.7%
Persons 65 years and over, percent, 2012	18.9%	18.2%
Female persons, percent, 2012	42.4%	51.1%

Source: U.S. Census Bureau 2013.

Environmental Consequences
This project would have a short-term, minor impact to the local population through disruption of localized fishing, use of the public road, and use of the public beach during construction. Limiting access to the road and beach in that location may prevent people from visiting the area during the construction period; this may have a small effect on local retail sales (food, gasoline, or similar items). A few individuals, groups, businesses, properties, or institutions would be impacted. Impacts would be small and localized. These impacts are not expected to substantively alter social and/or economic conditions. Actions would not disproportionately affect minority populations and low-income populations.

Direct, short-term, moderate benefits through local job creation would result from construction activities. Long-term, indirect, moderate benefits would result from increasing recreational and fishing value of the area. Greater fishing success may increase the number of fishing trips in the area, which could generate ancillary purchases such as license fees, fuel, equipment, or other ancillary purchases.

This project is not designed to create a benefit for any group or individual, but rather would provide benefits on a local and regional basis. Because the project occurs in an area that is not disproportionately minority or low income (see Table 12-5), there are no indications that the proposed living shoreline project would be contrary to the goals of Executive Order 12898 or would create disproportionate adverse human health or environmental impacts on minority or low-income populations of the surrounding community.

12.6.5.7.2 Cultural Resources

Affected Resources

A review of the Florida Master Site Files indicates that there are no previously recorded archaeological sites, historic standing structures, shipwrecks, or other historic properties that are eligible or may be eligible for listing on the National Register of Historic Places (NRHP). However, it is unclear if the project area has yet been subject to formal cultural resources surveys.

Environmental Consequences

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.

12.6.5.7.3 Infrastructure

Affected Resources

The landward side of the proposed project area is developed with a variety of infrastructure that includes shoreline protection, roads, parks, and residential development. The breakwater/living shoreline creation would take place in nearshore, open-water habitats. The breakwater and associated marshlands are well away from existing infrastructure.

Environmental Consequences

As Millender Street would be used to access the site area during the construction phase of the project, there may be a minor, short-term, temporary increase in traffic and slow-moving construction equipment in this transportation corridor. The action would affect public services or utilities but the impact would be localized and within operational capacities. Once construction is complete, there would be no effect to infrastructure.

12.6.5.7.4 Land and Marine Management

Affected Resources

The landward side of the proposed project has a variety of land uses that include recreational, commercial, and residential land uses as well as publicly owned lands. The lands in the immediate vicinity of the project area include a public park, public beach area and a previously constructed living shoreline. The current project would build on this existing project.

The project area would be located in a coastal area that is regulated by the federal CZMA of 1972 and the Florida Coastal Management Act of 1978.

Environmental Consequences
Although the action would require several permits for the short-term construction period, it would not require a variance, zoning change, or amendment to a land-use area or comprehensive management plan. The long-term impact of the project would be minor because it would not affect overall use and management beyond the project area. It would be consistent with current land use.

Pursuant to the Coastal Zone Management Act of 1972, federal activities must be consistent with 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.

12.6.5.7.5 Aesthetics and Visual Resources

Affected Resources
The landward side of the proposed project has a variety of land uses that provide access for residents, visitors, and commuters. The breakwater would be constructed in an area characterized as open water.

Environmental Consequences
Aesthetics would be reduced in the project area during construction due to the physical presence of the equipment used to transport the material and the presence of other land-based support equipment. There would be a change in the viewshed that would be readily apparent but would not attract attention, dominate the view, or detract from current user activities or experiences. The current aesthetic is consistent with a beach environment (including sand and water).

After the construction event, the view of the environment would still include a sandy beach and bay area, along with additional marshlands. The living shoreline would likely be just above or below the water line pending on the tides. This should not alter the view from the beach.

12.6.5.7.6 Tourism and Recreational Use

Affected Resources
Access to the project area would be via Millender Street, which is a public road. The equipment and materials would be staged on the state-owned public park area on either side of Millender Road. Recreational activities that take place on or along the beach may include but are not limited to fishing, swimming, sunbathing, and exercising.

Environmental Consequences
For a short time, the construction process would limit recreational activities, especially near the construction areas. The impact would be detectable and/or would only affect some recreationalists. Users would likely be aware of the action but changes in use would be slight. There would be partial closures to protect public safety. Impacts would be local.

Once completed, the project would result in a neutral impact by providing greater recreational uses for the project area, more protections from wave action by the living shoreline structure, and improved wildlife habitat.

12.6.5.7.7 Public Health and Safety and Shoreline Protection

Affected Resources
The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Emergency Planning and Community Right-to-Know Act; and the Hazardous Materials Transportation Act. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites that have already been contaminated by releases of hazardous materials, wastes, or substances.

Environmental Consequences
Project construction would require mechanical equipment that uses oil, lubricants, and fuels. The contractor would be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills. If a release should occur, it would be contained and cleaned up promptly in accordance with all applicable regulations, and the incident would be reported to appropriate agencies. As a result, no impacts associated with construction-related hazardous materials would be anticipated. The period of time during which a release could occur from construction activities would be short, and any release would be expected to be minor.

12.6.6 Summary and Next Steps
Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Cat Point Living Shoreline Projectimplements restoration techniques within Alternatives 2 and 4.

The proposed Florida Cat Point Living Shoreline Project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion and provide habitat off EastPoint, Florida. Combining these objectives, this project would create reefs to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. Proposed activities include expanding an existing breakwater creating up to 0.3 miles of new breakwater and create 1 acre of salt marsh habitat. The project is consistent with Alternative 2 (Contribute to Restoring Habitats and Living Coastal and Marine Resources) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would provide long-term benefits by creation of approximately 1 acre of salt marsh, and approximately 0.3 miles of living shoreline. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.6.7 References

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12.7 Florida Pensacola Bay Living Shoreline Project: Project Description

12.7.1 Project Summary

The proposed Pensacola Bay Living Shorelines project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion and provide habitat at two sites within a portion of Pensacola Bay. This project would create reefs to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. Proposed activities include completing and expanding an existing breakwater at the Project GreenShores Site II, constructing approximately 2,400 feet of breakwater at the Sanders Beach site, and creating salt marsh habitat at both sites. In total, approximately 18.8 acres of salt marsh habitat and 4 acres of reefs would be created. The estimated cost for this project is $10,828,063.

12.7.2 Introduction and Background

The proposed Pensacola Bay Living Shoreline project is located in Escambia County along an urban shoreline of Pensacola Bay that has been the location of previous successful living shoreline projects. This project proposes to implement living shoreline techniques at two neighboring sites, Project GreenShores Site II (PGS II) and Sanders Beach (see Figure 12-6 for general location and Figure 12-7 for additional detail). PGS II is located immediately west of Muscogee Wharf and would complete and expand the construction of a third breakwater at this site, building off work completed as part of a previous Project GreenShores effort. The Sanders Beach site is 3 miles to the west, near the mouth of Bayou Chico. The project design for the Sanders Beach site is in the initial planning phase but the intention is to expand on the Project GreenShores effort by implementing similar design and restoration techniques.

Combining the objectives of reducing shoreline erosion and providing habitat, this project would create reefs to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. Reefs would be created by placing approximately one mile of breakwaters, linear structures that may utilize artificial and/or shell-based materials, with variable crest widths (30-80 ft) based on desired wave reduction and with a height that falls within the mean high and low water lines (intertidal) of the site. The specific breakwater elevation and technique design would be selected to maximize protection of salt marsh habitat created and to meet state regulatory requirements.

Figure 12-6. General location of proposed Pensacola Bay Living Shorelines Project.

Figure 12-7. Detailed location of proposed PGS Site II and Sanders Beach Sites.

12.7.3 Evaluation Criteria

This proposed project meets the evaluation criteria established under OPA and the Framework agreement. As a result of the *Deepwater Horizon* oil spill and associated response activities, benthic secondary productivity and salt marsh habitats along Florida's Panhandle suffered adverse impacts. This project seeks to foster reef development and salt marsh habitat, which would help compensate the public for Spill-related injuries and losses to benthic secondary productivity and salt marsh habitat. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results. Several studies of living shoreline techniques have found that these projects can successfully reduce shoreline erosion while providing habitat and water quality benefits (LaPeyre, et al. 2013[1], Scyphers et al. 2011[2], Berman et al. 2007[3]). Similar projects have also been successfully implemented in Florida, including Project GreenShores efforts in Pensacola Bay. Project GreenShores, a multi-partner phased effort led by FDEP, included multi-million dollar habitat restoration and creation projects along the urban shoreline of Pensacola Bay. The first phase of Project GreenShores was completed in 2003 and received several awards including the 2003 Coastal America Partnership Award, the 2004 EPA Gulf of Mexico Program's Gulf Guardian Award and The Conservation Award from the Francis M. Weston Audubon Society in 2007. Over time the living shorelines techniques implemented at the Project GreenShores sites have resulted in 50-90% coverage by oysters of breakwater structures constructed, over 60 species of birds (migratory and resident populations) observed using created habitats, and fish species such as grey snapper, sheepshead, redfish, mullet, flounder, speckled trout, blue crab, and stone crab identified during aquatic surveys (FDEP 2012[4]). For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement.

Furthermore, the cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. Finally, this proposed project is part of restoration plans put forward by Florida state agencies as funding priorities, and are therefore consistent with the long term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

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Many ecological projects, including ones similar to this project, were submitted as a restoration project on the Gulf Spill Restoration website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Pensacola Bay Living Shoreline meets Florida's criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by the Spill.

12.7.4 Performance Criteria, Monitoring and Maintenance

As part of the project costs, monitoring would be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria would be used to determine project success or the need for corrective actions. The monitoring would be designed around the project objectives. The project objectives are: 1) protect created marsh habitat from erosion, and 2) promote reef development for bivalves and other invertebrates. Monitoring activities would be planned for up to a 7 year period and are estimated to cost approximately $669,723. Specific success criteria include: 1) the construction of reefs that meet project design criteria, support benthic secondary productivity, reduce wave energy affecting the shoreline, and are sustained for the expected life of the project; 2) the creation of salt marsh habitat that meets project design criteria and achieves the designed percent cover by native saltmarsh vegetation; and 3) the reduction of shoreline erosion which protects created salt marsh habitat.

Baseline monitoring would be conducted to collect data that will be used as a point of comparison for implementation and post implementation monitoring data. Performance criteria would be established to determine whether the project achieves the desired breakwater specifications, benthic secondary productivity, and salt marsh habitat created. Components of this monitoring may include collecting information with respect to:

- Structural integrity of breakwater/reef structure;
- Height/elevation and width of breakwater/reef structure;
- Consolidation rate of reef structure;
- Shoreline (salt marsh) profile;
- Shoreline (salt marsh) position;
- Wave energy;
- Bivalve density, size, biomass, and survival;
- Non-bivalve invertebrate density and biomass; and
- Percent cover and survival of planted vegetation.

Adaptive management procedures will be used to correct deficiencies or maintenance needs identified through monitoring. Adaptive management activities may include adding additional material to the surface of a breakwater, adding additional hardened structure (e.g. riprap), adding additional natural materials (e.g. fossilized oyster shell), and/or replacing warning signs. Furthermore, a minimum of 80 percent of the plantings must be viable at the end of the first growing season subsequent to initial planting. An increase of at least 30 percent viable aerial coverage shall occur by the end of the second year following initial planting. An increase of at least 50 percent viable aerial coverage shall be evident by the end of the third full growing season following initial planting. All monitoring and adaptive management procedures would follow disturbance minimization measures, especially as they relate to vessel use around the project area.

12.7.5 Offsets

For the purposes of negotiations of Offsets with BP in accordance with the Framework Agreement, the Trustees used Resource Equivalency Analysis and Habitat Equivalency Analysis to estimate appropriate biological and habitat Offsets for the Pensacola Bay Living Shoreline Project. Habitat Offsets (expressed in DSAYs) were estimated for salt marsh habitat created by this proposed project, based on the expected spatial extent and duration of improvements attributable to the project. In estimating DSAYs, the Trustees considered a number of factors, including, but not limited to, anticipated protection of existing marsh provided by the project, new marsh created by the project, the time period it would take for created marsh to provide different levels of ecological benefits, the time period over which the project would continue to provide benefits, and the ecological benefits of created marsh relative to existing marsh habitats that were not affected by the Spill. The Trustees and BP agreed that if this Early Restoration project is selected for implementation, BP would receive Offsets of 86.63 DSAYs of Salt Marsh Habitat in Florida, applicable to Salt Marsh Habitat injuries in Florida, as determined by the Trustees' total assessment of injury for the Spill.

Benthic Secondary Productivity Offsets (expressed in DKg-Ys) were estimated for expected increases in invertebrate infaunal and epifaunal biomass attributable to the project. In estimating DKg-Ys, the Trustees considered a number of factors, including, but not necessarily limited to, typical productivity in the project area, estimated project lifespan and project size. The Trustees and BP agreed that if this Early Restoration project is selected for implementation, BP would receive Offsets of 28,813 DKg-Ys of benthic secondary productivity, applicable to benthic Secondary Productivity injuries in Florida, as determined by the Trustees' total assessment of injury for the Spill. If these benthic Secondary Productivity Offsets exceed the specified injury, the Trustees and BP will apply "excess" Offsets for Benthic Secondary Productivity within Federal waters on the Continental Shelf, excluding those associated with mesophotic reefs. These Offsets would not apply to injuries in Alabama, Mississippi, Louisiana or Texas. These Offset types and amounts are reasonable for this project.

12.7.6 Cost

The total estimated cost to implement this project is $10,828,063. This cost reflects cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

12.8 Florida Pensacola Bay Living Shoreline Project: Environmental Review

The National Oceanic and Atmospheric Administration (NOAA) and the Florida Department of Environmental Protection (FDEP) propose to employ living shoreline techniques which utilize natural and artificial breakwater materials to stabilize shorelines by dampening wave energy while also increasing benthic secondary productivity and providing salt marsh habitat that was once abundant in the region. The restoration goals of this project are to create approximately 4 acres of breakwaters and 18.8 acres of salt marsh habitat.

The proposed living shoreline project is located in Escambia County along an urban shoreline of Pensacola Bay that has been the location of previous successful living shoreline projects. This project proposes to implement living shoreline techniques at two neighboring sites, Project GreenShores Site II (PGS II) and Sanders Beach (see Figure 12-8 for general location and Figure 12-9 for additional detail). PGS II is located immediately west of Muscogee Wharf and would complete and expand the construction of a third breakwater at this site, building off work completed as part of a previous Project GreenShores effort. The Sanders Beach site is three miles to the west, near the mouth of Bayou Chico. The project design for the Sanders Beach site is in the initial planning phase but the intention is to expand on the Project GreenShores effort by implementing similar design and restoration techniques at this site.

Combining the objectives of shoreline stabilization and providing habitat, this project would create breakwaters to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. Breakwaters would be created by placing approximately one mile of breakwaters, linear structures that may utilize artificial and/or shell-based materials, with variable crest widths (30-80 ft) based on desired wave reduction and with a height that falls within the mean high and low water lines (intertidal) of the site. The specific breakwater elevation and technique design would be selected to maximize protection of created salt marsh habitat and meet state regulatory requirements. Additional information on the PGS II and Sanders Beach components of this project includes:

PGS II Site Reefs: expand and complete an existing breakwater with a crest width anticipated to be 100 ft and total height anticipated to be 3.5 ft. Average water depth is estimated to be -4 ft (below) Mean Lower Low Water (MLLW), therefore the final crest elevation is anticipated to be -0.5 ft (below) MLLW. The calculated volume of needed material is approximately 11,000 tons of riprap/fossilized oyster shell. It is anticipated that a crane mounted on the barge would be used to distribute material according to the design cross-section. A footprint of approximately 1.9 acres of fine-grained sediment would be covered with riprap/fossilized oyster shell. Additionally, up to 6 warning signs placed on 12-inch diameter posts would be driven adjacent to the breakwater with appropriate signage for marine traffic. No materials are anticipated for removal from the site.

Sanders Beach Site Reefs: construct a breakwater anticipated to be 2,400 ft long with a crest width of 30 ft and total height of 3.5 ft. Average water depth is estimated to be -2.5 ft below MLLW, therefore the final crest elevation is anticipated to be +0.63 ft above MLLW. The calculated volume of needed material is approximately 14,000 tons of riprap/fossilized oyster shell. It is anticipated that a crane mounted on the barge would be used to distribute material to the design cross-section. A footprint of approximately 3.15 acres of fine-grained sediment would be covered with a riprap. Additionally, 8 warning signs placed on 12-inch diameter posts would be driven adjacent to the breakwater with appropriate signage for marine traffic. No materials are anticipated for removal from the site.

PGS II and Sanders Beach Created Salt Marsh Habitats: Similar approaches would be used create a total of approximately 18.8 acres of salt marsh habitat landward of the breakwaters for both sites. Initial project plans currently estimate the creation of approximately 0.8 acres at PGS II and approximately 18 acres at the Sanders Beach site. Suitable sand/fill materials would be dredged from offshore borrow sites near each project area or obtained from a suitable land-based source. Additional site evaluation and sediment testing would be conducted to identify the most suitable offshore borrow sites. The salt marsh creation areas and elevation requirements would be based on further site evaluations and engineering studies to maximize successful establishment of a marsh platform that would be planted with local, native vegetation such as *Spartina alterniflora* and *Juncus romerianus*. Based on similar efforts, it is estimated that approximately 6,650 to 8,170 cubic yards of fill would be required to create 0.8 acres at PGS II and 126,350 to 155,230 cubic yards of fill would be required to create 18 acres at the Sanders Beach Area site. Selection of the type(s) of dredge and other equipment for marsh creation would be based on the final design and environmental considerations.

12.8.1 Introduction and Background

In April 2011, the Trustees and BP entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is under way. The Framework Agreement is intended to expedite the start of restoration in the Gulf in advance of the completion of the injury assessment process. Early restoration is not intended to and does not fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects will be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement), the Trustees released, after public review of a draft, a Phase I ERP in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, NOAA issued a public notice in the Federal Register on behalf of the Trustees announcing the development of additional future Early Restoration projects for a Draft Phase III Early Restoration Plan (ERP). This living shoreline project in Pensacola Bay within Escambia County was submitted as an Early Restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the project meets Florida's criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by the Spill.

Pensacola Bay, the fifth large estuarine system in Florida (Butts 1998), is located in the northwestern region of Florida. Historical records show that Pensacola Bay once contained extensive seagrass meadows, salt marshes, and harvestable oysters. The influences of overfishing, inadequate sewage disposal, urban stormwater runoff, industrial discharges, dredging, filling, and shoreline hardening have led to a depletion and degradation of these natural resources (Thorpe et al. 1997). Instead of hardening shorelines, a living shorelines approach can be used to reduce shoreline erosion by dampening wave energy while also providing habitat that was once abundant in the region.

The NOAA and the FDEP are proposing to employ living shoreline techniques in Pensacola Bay to reduce shoreline erosion and enhance habitat. The proposed project would create a total of approximately 18.8 acres of salt marsh habitat and approximately 4 acres of breakwaters to increase benthic secondary productivity.

This project would address the impacts to habitat and biota caused by the *Deep Water Horizon* Oil Spill (See C.F.R. § 990.54(a)(2) and Sections 6a-6c of the Early Restoration Framework Agreement) using established techniques. State and local government agencies have successfully completed similar projects including an earlier phase of the Project Greenshores effort in Pensacola Bay.

12.8.2 Project Location

The proposed Pensacola Bay Living Shoreline Early Restoration project is located in the northern portion of Pensacola Bay in Escambia County, Florida and include the Sanders Beach (30° 23’ 59 N; 87° 13’ 56 W) and Project Greenshores Site II (PGS II) (30° 24’ 37 N; 87° 12’ 10 W) areas (see Figure 12-8). The project would be located on City of Pensacola Sovereign Submerged Lands.

Figure 12-8. Relative location of proposed living shoreline components in Pensacola Bay.

Figure 12-9. **Pensacola Living Shoreline project areas.**

12.8.3 Construction and Installation

12.8.3.1 Engineering and Design

Building upon the experience of NOAA and FDEP on similar efforts such as Project Greenshores, a living shorelines approach would be used in Pensacola Bay. Construction activities would include placement of breakwaters, linear structures that may utilize artificial and/or shell-based materials. The final engineering and design process would determine material needs for breakwater construction. Materials such as riprap and fossilized oyster shell would be evaluated. The specific breakwater elevation and technique design would be selected to reduce shoreline erosion and meet state regulatory requirements. The estimated depths for the placement of breakwater structures are approximately 4 feet below Mean Lower Low Water (MLLW) at the PGS II and approximately 2 ft below MLLW at the Sanders Beach site. Over time, the breakwaters are expected to develop into reefs colonized by benthic species including, but not limited to, bivalve mollusks (e.g. oysters, clams), annelid worms, shrimps, and crab.

12.8.3.2 Constructing Breakwaters

Two construction areas are identified under the Pensacola Bay Living Shoreline project: 1) PGS II, and 2) Sanders Beach site.

1. Construction activities at PGS II would include completion and expansion of an existing breakwater with a crest width anticipated to be 100 ft and total height anticipated to be 3.5 ft. Average water depth is estimated to be -4 ft (below) MLLW, therefore final crest elevation is anticipated to be -0.5 ft (below) MLLW. The calculated volume of material is approximately 11,000 tons of riprap/fossilized oyster shell. It is anticipated that a barge mounted crane (or

other similar heavy equipment) would be used to distribute material according to the design cross-section. A footprint of approximately 1.9 acres of fine-grained sediment would be covered with riprap/fossilized oyster shell. Additionally, up to 6 warning signs placed on 12-inch diameter posts would be driven adjacent to the breakwater with appropriate signage for marine traffic. No materials are anticipated for removal from the site.

2. Activities at the Sanders Beach site would include construction of breakwaters approximately 2,400 ft long with a crest width anticipated to be 30 ft and total height anticipated to be 3.5 ft. Average water depth is estimated to be -2.5 ft (below) MLLW, therefore final crest elevation is anticipated to be +0.63 ft (above) MLLW. Calculated volume of material is approximately 14,000 tons of riprap/fossilized oyster shell. It is anticipated that a barge mounted crane (or other similar heavy equipment) would be used to distribute material to the design cross-section. A footprint of approximately 3.15 acres of fine-grained sediment would be covered with a riprap/fossilized oyster shell. Additionally, 8 warning signs placed on 12-inch diameter posts would be driven adjacent to the breakwater with appropriate signage for marine traffic. No materials are anticipated for removal from the site.

12.8.3.3 Anticipated Breakwater Construction Process

Breakwaters would be constructed at both sites using a similar process; however, the PGS II has deeper water (approximate 4.5' depth, on average) and a firmer (sandy) bottom compared to the Sanders Beach site, which has an average water depth of approximately 3.0 ft. A survey would be conducted to determine the placement, alignment, and boundaries for construction of the breakwaters. The outer limits of the breakwaters would be marked with poles driven into the bottom and extending approximately 3 ft above the water surface. Prior to working in the area, existing bottom elevations along the breakwater would be surveyed and elevation controls would be established. The height of the breakwater would be based on bottom elevations and crest elevation. Barriers, navigation warning signs (lighted and unlighted), and other markers would be established along the work area to protect boaters. These would be maintained throughout the project until permanent markers are established. It is anticipated that one or more work barges with crane (or other similar heavy equipment) would be positioned along the seaward side of the breakwater. A material barge would be positioned seaward of the work barge in sufficient depth of water, but within reach of the equipment. The work and material barges would safely meet the draft requirements in the areas and be operated and maintained in sufficient draft to the extent practical. Placement of the riprap/fossilized oyster shell would be monitored to ensure the breakwater dimensions, slopes and crest elevation are achieved.

12.8.3.3.1 Salt Marsh Habitat Creation

After the breakwaters have been constructed, selected landward areas would be filled with dredge material obtained from suitable source areas near the project sites. Selection of the type(s) of dredge to be used for marsh creation would be based on the final design and environmental considerations. Due to larger sediment grain size and weight characteristic of the area, which settle more quickly, perimeter containment dikes are not anticipated for construction. Turbidity levels would be monitored during construction and industry-accepted Best Management Practices (BMPs) would be implemented at the site if levels exceed state standards.

The marsh creation areas would be filled with dredged material beginning at the most landward extent designed for the marshes and filling seaward. Filling with dredge material would continue until marsh elevations determined through the final design process are achieved. Marsh elevations would be designed to meet the requirements of native marsh plant species and to withstand normal wave heights for the project area. Sediment controls would remain in place throughout the dredging and filling process. Once the entire marsh creation area(s) are constructed, local, native emergent vegetation would be planted. The created marsh areas would be monitored to determine success and identify any corrective action needed.

12.8.3.3.2 Anticipated Construction Schedule

Construction is anticipated to take between 6-10 months for all elements. A full schedule would be dependent on the date funding becomes available, contractor award, and any species-specific restrictions required from reviews pursuant to the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §1531 et seq.). Species-specific issues and BMPs are being addressed with NOAA and DOI as part of separate ESA reviews.

12.8.3.3.3 Best Management Practices

The following industry-accepted BMPs are anticipated for the proposed project. Anchoring sites would be situated to avoid impacts to seagrass, if found to be in the project area. Access over existing seagrass would be avoided to the extent practicable to minimize prop-scarring impacts. Turbidity levels would be monitored during construction. BMPs would be implemented if turbidity levels exceed local and state regulatory/permit levels. Some temporary shading from workboats during construction periods may occur; however, it is anticipated that no more than 4 barges would be located on the project site at any time during construction. Assuming barge dimensions of 35'x195', the total shadow effect of the boat/barges is 27,300 sq. ft. In addition to specific measures noted above, the project would adhere to recommendations for Sea Turtle and Smalltooth Sawfish Construction Conditions (2006) as well as standard manatee conditions for in-water work (2011) and any applicable federal and state permit conditions. In addition, BMPs recommended through the ESA consultation process to avoid impacts to Gulf Sturgeon and other protected species would be implemented.

12.8.4 Operations and Maintenance

Anticipated pre and post project monitoring activities: Monitoring activities would be performed at various times beginning prior to construction and continuing up to seven years post construction. The monitoring activities would include:

- Topographic/bathymetric surveys,
- Vegetation surveys (i.e. species composition and % cover), and
- Biological monitoring (i.e. oyster and invertebrate density and biomass)

Monitoring would ensure project designs are correctly implemented during construction and in a subsequent period, defined by contract, where corrective actions could be taken. Post construction performance monitoring would also be conducted to evaluate the project's performance over time with respect to the agreed upon Offsets, goals, and objectives. In general, components of this monitoring would evaluate the production and support of organisms on the breakwater for the establishment of reefs (e.g., benthic secondary productivity) and the performance of the created salt marsh habitats.

Components of this monitoring would include collecting information with respect to: the breakwater height and structural integrity; salt marsh coverage; water quality parameters (e.g., salinity, dissolved oxygen), survival of planted species/vegetated area, bivalve and algal presence, coverage, and composition on the reef.

Anticipated Maintenance / Adaptive Management Activities: If the breakwaters are not performing as designed or anticipated, then adaptive management procedures would be used to correct the structures. Adaptive management activities may include adding additional material to the surface of a breakwater, adding additional hardened structure (e.g. riprap), adding additional natural materials (e.g. fossilized oyster shell), and/or replacing warning signs. All monitoring and adaptive management procedures would follow disturbance minimization measures as described below, especially as they relate to vessel use around the project area.

Anticipated short term maintenance activities: For the breakwaters, one maintenance activity would take place within the first four years following construction. The maintenance activity would allow for the capping of the breakwaters with riprap and fossilized oyster shell material. The breakwaters are anticipated to experience the greatest consolidation of the subgrade in the first years following construction. The need for additional placement of rock and shell on the breakwater would be assessed based upon the monitoring plan. Maintenance activity construction methods are similar to the breakwater construction process as described in the Construction and Installation section above.

Anticipated long term maintenance activities: No long term operations or maintenance requirements are anticipated.

12.8.5 Affected Environment and Environmental Consequences

12.8.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.8.5.2 Physical Environment

12.8.5.2.1 Geology and Substrates

Affected Resources

Geology

The Pensacola Bay system is generally shallow with a total surface area greater than 144 square miles. The system is comprised of several embayments of which Pensacola Bay is the largest followed by East Bay, Escambia Bay, Santa Rosa Sound, Blackwater Bay, and Big Lagoon. The estuarine embayments are within the Gulf Coastal Lowlands subdivision. The lowlands are a series of parallel terraces rising from the coast in successively higher levels. They formed during the Pleistocene Epoch (Great Ice Age) when fluctuating sea levels were associated with the growth and melting of ice caps. Dunes, barrier islands, beach ridges, and other topographical features were stranded inland as seas receded. Land surfaces of the lowlands are generally level and less than 100 ft above sea level. Substantial areas are less than 30 ft above sea level and are characterized by extensive wetlands. Higher elevations are present in the general area of Pensacola, on the west side of Pensacola and Escambia bays (Thorpe et al. 1997).

Soils

The Pensacola Bay area has been sculptured from an alluvial plain underlain by sand, gravel, silt, and clay. The Soil Survey for Escambia County identifies the areas identified for the proposed project as "Waters of the Gulf of Mexico" and no soils data is provided. The natural bay shoreline is fringed by wide, shallow sand flats between 3 and 5 ft deep.

Environmental Consequences

The geological and substrate resource in the project area would be affected by the proposed actions through the modification of soft bottom bay habitat into a reef and the excavation of fill materials to create salt marsh habitat. The proposed PGS II would have a footprint of approximately 1.9 acres where fine-grained sediment would be covered with riprap/fossilized oyster shell for the life of the project. Additionally, up to 6 warning signs placed on 12-inch diameter posts would be driven adjacent to the breakwater with appropriate signage for marine traffic. The excavation area for fill to create 0.8 acres of salt marsh habitat has not been identified, but would be located near the project site or a land-based borrow site would be used. Fill material would be tested/certified as appropriate for use at the location. Excavation of fill material within the project site would disturb geologic and substrate resources, including infaunal species, through their direct removal.

The proposed Sanders Beach site would have a footprint of approximately 3.15 acres where fine-grained sediment would be covered with a riprap/fossilized oyster shell. Additionally, 8 warning signs placed on 12-inch diameter posts would be driven adjacent to the breakwater with appropriate signage for marine traffic. The excavation area for fill to create 18 acres of salt marsh habitat has not been identified, but would be located near the project site or a land-based borrow site would be used. Fill material would be tested/certified as appropriate for use at the location. Excavation of fill material within the project site would result in a short-term disturbance to geologic and substrate resources, including infaunal species, through their direct removal.

The proposed breakwater construction to create a reef would result in long-term, moderate benefits to substrate resources through the creation of benthic habitat associated with hard structure reef materials and the dampening of wave energy resulting in a reduction of shoreline erosion. Benefits would be achieved directly at the proposed projects sites and at immediately adjacent areas.

Finding: There would be long-term, moderate direct impacts to geologic and soil (substrate) resources over the life of the project because the existing sandy substrate would be covered with hard structure breakwater materials. However, the net benefits of the habitat creation and erosion reduction outweigh this direct impact by increasing benthic habitat diversity and creating structural complexity which supports a greater diversity and abundance of marine aquatic species. No long term indirect impacts to geologic and soil resources are anticipated due to the abundance of similar benthic habitat nearby that would be unaffected by the project. Short-term disturbance due to on-site excavation of fill material, if required, would be localized and minor. The excavated sites would recover quickly due to sediment movement and repopulation of infauna from adjacent areas.

12.8.5.2.2 Hydrology and Water Quality

Affected Resources

The Pensacola Bay system watershed covers nearly 7,000 square miles in northwest Florida and southern Alabama. It includes a series of interconnected estuaries, including Escambia Bay, Pensacola Bay, Blackwater Bay, East Bay, and Santa Rosa Sound, and three major river systems: the Escambia, Blackwater, and Yellow Rivers. The entire system discharges into the Gulf of Mexico south of Pensacola, Florida. Pensacola Bay borders the City of Pensacola to the north, Escambia Bay to the east, Big Lagoon to the west, and the Gulf Breeze Peninsula and Santa Rosa Island to the south. Pensacola Bay provides the system's outlet to the Gulf of Mexico through an approximately ½ mile wide pass (Caucas Channel). Sources of water to the bay include the system's rivers through adjacent bays, the Gulf of Mexico, and several bayou basins, including Bayou Grande and Bayou Chico. Pensacola Bay is the deepest of the component bays of this system, with an average depth of 19.5 ft (Olinger et al. 1975). Pensacola Bay is a micro tidal estuary with a mixed diurnal/semi-diurnal tide, sometimes there are two highs and two lows in a day and other times only one of each. The nearest National Ocean Service tide gage is located at the Port of Pensacola.

Currents

The circulation in the Pensacola Bay is dependent upon factors such as astronomical tides, wind, river flow, bathymetry, and density variations. The Pensacola Bay is located along a section of coast with a low amount of tidal energy to drive currents within the bay system resulting in a relatively weak tidal driven circulation. Predicted currents within the Bay have a mean ebb velocity of about 3.0 ft per second directed toward the west-southwest diagonally across the main channel. The mean flood velocity is 2.7 ft per second directed east-northeast. Low slack water occurs from 1 to 3 hours after low water with high slack water occurring approximately 3 to 4 hours after high water. Normal currents have been recorded to be between 3.9 and 4.2 ft per second over a two hour period during the strongest ebb tides and 2.8 ft per second during the strongest flood tides (Ketchen and Staley 1979).

Water circulation within the adjacent Gulf of Mexico consists of interrelated systems, open ocean and inshore areas. The large scale circulation in the Gulf is influenced by the loop current and associated eddies, wind, waves, and density structures of the water column. The general circulation pattern within the inshore region is more strongly influenced by the astronomical tides, local winds, and also influenced by the open Gulf circulation features which act as a forcing mechanism. The combination of local winds and tides are contributors to the nearshore shelf circulation (U.S. ACOE 1985).

Tides

The tides of Pensacola Bay and Gulf of Mexico are mixed and dominated by diurnal components for much of the lunar cycle, although, some semi-diurnal characteristics are evident during neap tide. Mixed tides are common along most of the Gulf coast with varying strengths of semi-diurnal and diurnal components (Lillycrop 1983). The mean tidal range at the Pass entrance is 1.1 ft and 1.6 ft in the upper reaches of the bay system with neap tide ranges averaging 0.5 ft. The long-term predicted tide range at Pensacola varies from being almost negligible to a maximum 2.7 ft.

Water Quality

Pensacola Bay is within an urbanized watershed. It receives nonpoint source pollution via surface runoff and discharges from the City of Pensacola, the associated Naval Air Station, Bayou Grande, Bayou Chico and Bayou Texar. The most significant point source discharges are the Main Street and Naval Air Station Sewage Treatment Plants. The most significant of these is the Main Street Plant, with its discharge via an outfall into the bay. Pensacola Bay is identified as an impaired water body by FDEP. Total Maximum Daily Loads have been developed for coliform, identified as the primary source of impairment. Component bayous, formerly centers of productivity in the system, are now among the most anthropogenically stressed. Most act as sinks for sustained urban runoff and other nonpoint source pollution, and Bayou Chico has also received substantial historic point source discharges.

The Clean Water Act requires that the surface waters of each state be classified according to designated uses. Florida has six classes with associated designated uses, which are arranged in order of degree of protection required. According to 62.302.400, F.A.C., the majority of the project occurs within Class III waters. Therefore, standards to meet the following uses apply to the project area: Fish Consumption, Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife. The surface waters of the state are Class III unless described in Florida rule. The Pensacola Bay watershed is also identified as a priority waterbody under the Surface Water Improvement Management (SWIM) Program (Thorpe et al. 1997). The SWIM Program was created by Florida to develop comprehensive plans for at-risk water bodies and direct the work needed to restore damaged ecosystems, prevent pollution from stormwater runoff and other sources, and educate the public.

Outstanding Florida Waters

Florida Statutes grant the FDEP the authority to establish rules that provide for a special category of waterbodies within the state called Outstanding Florida Waters. Waterbodies with this designation receive special protection because of their natural attributes. There are no waters that are designated as Outstanding Florida Waters located within or adjacent to the project area. A complete listing of Outstanding Florida Waters is provided in Rule 62-302.700 (9), Florida Administrative Code.

Aquatic Preserves

In 1975, Florida enacted the Aquatic Preserve Act to protect Florida's coastline in shallow waters and estuaries. Two aquatic preserves are located in the general area. Ft. Pickens Aquatic Preserve is approximately 4-miles south of the project area. The Yellow River Marsh Aquatic Preserve is located approximately 9-miles to the west. Waters in aquatic preserves and state parks require additional water quality considerations; the State would be consulted to determine any concerns due to proposed project activities.

Floodplain

The project is located in FEMA designated Flood Zones according to the Flood Insurance Rate Maps for Escambia County. FIRM No. 12033C0390G Escambia County, (Effective Date September 29, 2006). The project is located in Zone VE with base flood elevation 11ft. VE indicates coastal flood zones with velocity hazards (wave action) with base flood elevations determined. The Pensacola Bay System includes three major river systems: the Escambia, Blackwater, and Yellow Rivers and smaller tributaries of these rivers and embayments.

Wetlands

The proposed project would be located in open waters. Restoration of salt marsh habitat has occurred within Pensacola Bay as part of Project GreenShores efforts. Wetlands are not known to occur within the Sanders Beach site project area.

Environmental Consequences

Hydrology

Hydrology, including tides and currents, would be unaffected because the proposed project would have a minimal footprint located adjacent to the shoreline.

Water Quality

The project would have minor direct impacts to the water quality in the area. Instead, there would be long term benefits to water quality by the filtering action of the oysters and other shellfish expected to colonize the constructed breakwater. No indirect, long-term impacts to overall water quality are expected in the vicinity of the project site due to the small footprint of the project.

Turbidity

Minor siltation may be associated with the dredging and placement operations and its re-suspension may result in a slight increase in turbidity. No significant elevation of turbidity is expected. The State of Florida's waters would not be significantly affected and water clarity would return to ambient conditions shortly after sediment placement at the disposal site. No long-term impacts and only minor short-term impacts are expected to result from the placement of the fill material.

Contaminants

Pre-construction sediment sampling would be conducted to select excavation sites that would provide clean dredged material for the creation of salt marsh habitat. Samples would be analyzed for presence of contaminants and only uncontaminated sources of soils would be utilized. Therefore, no impacts due to contaminants are anticipated as a result of the dredging and placement of fill material.

Outstanding Florida Waters
The project area is not directly in an area designated as an Outstanding Florida Waters, and therefore no direct or indirect impacts are anticipated.

Aquatic Preserves
No impacts are anticipated to Aquatic Preserves due to their distance from the project area.

Floodplains
The majority of the project is located below the mean high water level and would not impact floodplains in or near the project area.

Wetlands
The project is not anticipated to adversely impact wetlands. A more detailed description of salt marsh habitat can be found above. The project would benefit salt marsh habitat through the creation of approximately 18.8 acres.

Findings: There would be no direct adverse effect on hydrology expected from the proposed project. Short term, direct impacts due to proposed construction activities would result in a detectable change to water quality, but the change would be expected to be small and localized. These impacts would quickly become undetectable and State water quality standards as required by the Clean Water Act would not be exceeded. There are no expected short or long term indirect adverse impacts to hydrology, water quality, protected waters, floodplains, or wetlands. The proposed project would result in long-term, moderate, beneficial effects on wetlands from the creation of marsh habitat as well as water quality from the establishment over time of reefs on constructed breakwaters that would support species such as oysters that filter water and improve water clarity.

12.8.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources
The U.S. Environmental Protection Agency (U.S. EPA) has established the 8-hour ground-level ozone standard. Under this standard, U.S. EPA can designate an area as “nonattainment” if it has violated the 8-hour ozone standard. U.S. EPA may also designate an area as “attainment/unclassifiable,” which is an area where monitored air quality data show either that the area has not violated the ozone standard over a three-year period or that there is not enough information to determine the air quality in the area. The entire state of Florida was designated as attainment area for the 8-hour ozone standard.

Environmental Consequences
Air quality would be temporarily and insignificantly affected by the proposed action. Emissions are expected to occur and would result from the operation of the construction equipment, and any other support equipment which may be on or adjacent to the job site. The project area is currently in attainment with National Ambient Air Quality Standards parameters. The proposed action would not affect the attainment status of the project area or region. A State Implementation Plan conformity determination (42 United States Code 7506 (c)) is not required since the project area is in attainment for all criteria pollutants.

Finding: There would be only short term, minor direct impacts to air quality by the proposed action. No indirect impacts to air quality are expected.

12.8.5.2.4 Noise

Affected Resources
Ambient noise levels in the project area are low to moderate. The major noise producing source of the area year round is related urbanized areas and roads adjacent to the project area.

Environmental Consequences
Noise from the dredge and other associated support equipment would be evident in the project area. While this noise would be evident to those workers on the job and any users of the beach in proximity of the project, it would be short-term and insignificant. Normal noise levels would be achieved at the end of each workday and after completion of the job. The project is not anticipated to increase vessel traffic or noise impacts in the long term. Pile driving would be performed for warning signage. These posts would be less than 12-inches in diameter. Short term impacts associated with construction should be minor.

Finding: The proposed activities would result in short term, minor impacts to noise due to use of construction equipment. There would be short term indirect impacts due to construction noise to wildlife that may occur within the vicinity of the project. However, these effects would be minor due to the mobility of potentially affected wildlife and availability of unaffected areas nearby. Pre-construction surveys would identify any nesting bird species that may be disturbed by construction noise and BMPs developed in consultation with U.S. FWS would be implemented to minimize this potential disturbance.

12.8.5.3 Biological Environment
The Pensacola Bay system supports an array of biological communities and species characteristic of a northern Gulf of Mexico estuary. Estuarine habitats include tidal flats, benthic microalgae communities, seagrass beds, oyster beds, tidal marshes, and planktonic and pelagic communities. These resources in the Pensacola Bay system have been subject to sustained anthropogenic stress for some time.

12.8.5.3.1 Living Coastal and Marine Resources

Coastal and Submerged Aquatic Vegetation

Affected Resources
Submerged Aquatic Vegetation (SAV) or seagrasses are rooted vascular plants that grow in fresh, brackish, and saltwater in areas dominated by soft substrates such as sand or mud. Marine species of seagrasses, grow in the littoral (intertidal) and sublittoral (subtidal) zones of oceans. Freshwater and brackish seagrass species are important components of estuary systems and inland waters. In the northern Gulf of Mexico six species of seagrasses are common (Table 12-6). Seagrasses were formerly abundant in this system but have functionally “disappeared” from the system since the mid-1970s, with the exception of Santa Rosa Sound (Collard 1991a; 1991b).

Table 12-6. Common Seagrass species in the Gulf of Mexico.

Species Common Name	Scientific Name
Manatee grass	*Syringodium filiforme*
Shoal grass	*Halodule wrightii*
Turtle grass	*Thalassia testudinum*
Widgeon grass	*Ruppia maritima*
Paddle grass	*Halophila decipiens*
Star grass	*Halophila engelmannii*

The presence and productivity of seagrasses in nearshore environments largely depends upon light availability. Although seagrasses have been recorded at 230-foot depths in clear waters, they are more generally restricted to shallow ocean or estuarine waters due to the rapid decline of light with depth (Green and Short 2003). In addition to the availability of light, a number of other factors also affect seagrasses. These include water temperature, salinity, sediment and water nutrient content, wave fetch (length of open water over which the wind can blow unimpeded), turbidity, and water depth (U.S. Fish and Wildlife Service [USFWS] 1999a; Koch 2001; Merino et al. 2005). Seagrasses generally grow in salinities that range from freshwater to 42 parts per thousand (ppt) and can tolerate short-term salinity fluctuations, but most have an optimum salinity range from 24 to 35 ppt.

Seagrasses, as well as freshwater and brackish SAV, provide essential food, shelter, and nursery habitats for commercial- and recreational-fishery species and for the many other organisms such as shrimp that live and feed in seagrass beds or shallow marshes. In addition, seagrass beds can serve as Essential Fish Habitat (EFH) for federally managed species. A single acre of seagrass can produce more than 10 tons of leaves per year and can support as many as 40,000 fish and 50,000,000 invertebrates (Dawes et al. 2004). More than 70 percent of recreationally and commercially important fish and invertebrates in the Gulf of Mexico spend some portion of their lives in seagrass systems (FWC 2003). Besides offering habitat, food, and shelter for many species, seagrasses filter contaminants and sediments, improve water quality, produce and export organic matter, dampen wave energy and currents, and improve the overall ecosystem through landscape-level biodiversity (Dawes et al. 2004).

A great deal has been written concerning the loss of seagrasses in the Pensacola Bay system (Hopkins 1973; Rogers and Bisterfield 1975; Olinger et al. 1975; Stith et al. 1984; Reidenauer and Shambaugh 1986). The most current study of seagrass coverage for the Pensacola Bay area was conducted more than 10 years ago by the U.S. Geological Survey National Wetlands Research Center by using natural-color aerial photography taken in 1992 at a 1:24,000 scale as part of the northeastern Gulf of Mexico seagrass mapping project. The larger Pensacola Bay system contains four species of true seagrasses—turtle grass, manatee grass (*Syringodium filiforme*), star grass (*Halophila engelmannii*), and shoal grass—and two brackish water species, water celery (*Vallisneria americana*) and wigeon grass (*Ruppia maritima*) (Schwenning et al. 2007).

Major causes of seagrass loss in Pensacola Bay were sewage and industrial waste discharges, dredge and fill activities, beachfront alteration, and changing watershed and land-use characteristics. According to the U.S. EPA (1975), the disappearance of several small beds near the north end of the Pensacola Bay

Bridge was documented in 1951 and was likely attributable to dredging. In 1960, 372 ha (918 acres) of seagrass were mapped. In that same year, the Port of Pensacola was enlarged, which involved extensive dredge and fill activities. Additional dredging was done to the port in 1967. Most beds declined along the southern shore of Pensacola Bay and East Bay and disappeared by 1974. Based on historical data, seagrasses in Pensacola Bay declined from 372 ha (918 acres) in 1960 to 56 ha (137 acres) in 1980. In 1992, seagrass beds had increased to 114 ha (282 acres). Santa Rosa Sound and Big Lagoon are two of the few remaining bodies of water within the Pensacola Bay system that still harbor seagrass beds (Schwenning et al. 2007).

The Project GreenShores initiative included efforts to restore seagrasses. In 2003, the first phase at Project GreenShores at Site I planted 3,900 propagated seedlings of *Ruppia maritima*. Subsequent surveys have shown that of the total of 30 plots of seagrass planted, most were lost due to Hurricane Ivan in 2004. Additional plantings were held at Site 1 to continue efforts to establish seagrasses. From 2004 to 2006 a series of *Ruppia maritima* plots and mats totaling 74.23 m^2 were planted. In May 2007, surveys by the FDEP found 10,051 m^2 present from those plantings occurring landward of the created marsh islands. During the 2007 survey, *Ruppia maritima* was the only species found except at one monitoring site, which contained *Halodule wrightii* (50% cover, 1m^2 plot).

Volunteer plantings of *Ruppia maritima* and *Halodule wrightii* also took place in 2007-2008 at Project GreenShores Site II. Observations since plantings indicate that predominately *Ruppia maritima* has survived within an area called Hawkshaw Lagoon, an artificially created lagoon adjacent to shoreline revetted with a mix of limestone and concrete rubble. At the Project Greenshores Site II, some *Ruppia maritima* and *Halodule wrightii* may be present in the general area as a result of previous restoration attempts (last known planting was in 2008), but seagrasses are not believed to be within or adjacent to the footprint of the proposed breakwater structure or marsh creation areas. Seagrasses are not known to be present in the Sanders Beach project area.

Environmental Consequences

The occurrence of seagrasses at within or adjacent to construction activities is unlikely due to site conditions such as water depth, wave energy, water quality, and other past disturbance. Therefore, no environmental consequences to seagrass beds are anticipated. Instead, the proposed project is likely to benefit water quality and reduce near-shore wave energy within the project area, which may make conditions more favorable for the re-establishment of seagrasses.

Finding: Due to the either lack of existing seagrass beds or minimal coverage of seagrass in the project area, no direct, adverse impacts from the proposed activities are expected. If determined as necessary, surveys for seagrass would be conducted within the footprint of construction activities. Additionally, best management practices to avoid impacts to seagrass have been incorporated into the construction process including 1) anchoring sites would be situated to avoid impacts to seagrass, if found to be in the project area; 2) access over existing seagrass would be avoided to the extent practicable to minimize prop-scarring impacts; and 3) turbidity levels would be monitored during construction and additional BMPs would be implemented if turbidity levels based upon local and state regulatory/permit levels. No indirect adverse impacts to seagrass beds are expected due to the small footprint of the proposed activities. The project may result in long term indirect benefits to seagrass beds due to the anticipated reduction in wave energy and improvements to water quality within the project area.

12.8.5.4 Salt Marsh

Affected Resources

The northeast Gulf of Mexico shoreline contains about 60 percent of the coastal and freshwater marshes in the United States, including 400,000 to 500,000 acres of salt marsh in northern Florida alone. Salt marshes act as a transitional zone from terrestrial uplands to ocean life; they absorb and trap potential pollutants before they reach estuaries and fragile waterways. Salt marshes also stabilize coastal shorelines, preventing erosion and sediments from washing offshore, especially during storm events. Widely considered one of the most productive ecosystems in the world, salt marshes produce up to 80 metric tons per hectare of plant material annually. Tidal waters distribute plant cellulose (created when plants die and decompose), and flush salt and toxins from the system, bringing in nutrients that stimulate growth. Salt marshes are important to wildlife as well. They are a habitat for early life stages of many ocean species that feed on invertebrates and their shallow brackish waters provide protection from predation to many marine fishes. Estuaries near Gulf Coast salt marshes provide a nursery for at least 70 percent of Florida's recreational and commercial fishes, shellfish and crustaceans - all dependent on coastal wetlands.

Most marsh habitat in the Pensacola Bay system occurs in the lower portions of river floodplains and tidal creeks (Stith et al. 1984). Such marshes may be divided into two habitat types—fresh-to-slightly brackish and saline. In higher salinity areas, dominant species of vegetation include black needlerush (*Juncus roemerianus*) and saltmarsh cordgrass (*Spartina alterniflora*). Giant reed (*Phragmites australis*), bulrush (*Scirpus sp.*) and big cordgrass (*Spartina cynosuroides*) may also be present and species such as saltmeadow cordgrass (*S. patens*) are present in higher elevations. In areas more dominated by freshwater inflow, typically freshwater species such as sawgrass (*Cladium jamaicense*), pickerelweed (*Pontederia lanceolata*), bulrush (*Scirpis validus*), cattail (*Typha spp*.), and duck potato (*Sagittaria lancifolia*) may predominate (Thorpe et al. 2007).

Project GreenShores included the creation of salt marsh habitat at two sites (Figure 12-10). In 2003, eight acres of salt marsh was created at Site 1 using 35,000 cubic yards of fill and planted with 40,000 *Spartina alterniflora* plants. In 2007, three intertidal marsh islands were created at Site 2 using 16,000 cubic yards of fill and planted with 30,000 *Spartina alterniflora* plants. These created marsh areas have suffered losses in area due to storms and other site conditions that resulted in erosion and migration of the intertidal marsh islands.

Environmental Consequences

The proposed project activities would include construction of breakwaters in open water areas that currently do not support salt marsh habitat. The breakwaters would be sited and designed to reduce the wave energy affecting the shoreline within the project area, resulting in long-term beneficial effects to existing salt marsh habitat. The project goals also include the creation and planting of approximately 18.8 acres of salt marsh habitat. The selection of sites for the excavation of fill to create salt marsh would be based upon additional engineering studies and surveys of the project area. Selected excavation sites, as well as sites for marsh creation, would be chosen to prevent or minimize potential adverse effects on existing marsh areas within the project area.

Figure 12-10. Project Green Shores Site 1 & 2.

Finding: No adverse direct impacts to salt marsh habitats are anticipated due to the selection of open water sites for breakwater construction and dredging activities. Instead, the proposed project would have long-term direct benefits by creating and protecting approximately 18.8 acres of salt marsh through the proposed living shoreline techniques. In addition, the proposed project would have long-term indirect benefits to salt marsh habitat at adjacent locations by reducing the wave energy affecting the shoreline and reducing the potential erosion of existing habitats.

12.8.5.5 Protected Species

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA).

Additionally, the Florida Fish and Wildlife Commission (FWC) identifies and lists species under the Florida Endangered and Threatened Species Act (FAC Title XXVIII ch. 379 s.2291). The following section briefly describes the federal and state protected species that may occur in the project area based on available information (Table 12-7).

Table 12-7. List of State and Federally Protected Threatened and Endangered Species for Escambia County.

SPECIES	COMMON NAME	HABITAT	FEDERAL STATUS	STATE STATUS	MAY OCCUR IN PROJECT AREA
Birds					
Charadrius melodus	Piping plover	Sandy beaches, sand flats, and mudflats along coastal areas	Threatened	Threatened	
Sterna antillarum	Least tern	Areas along the coasts including estuaries and bays	Endangered	Threatened	X
Charadrius nivosus	Snowy plover	Florida's narrow fringe of sandy beaches along the Gulf of Mexico coast	MBTA	Threatened	
Calidris canutus	Red Knot	Exposed unconsolidated substrate; dunes, sandy beaches, and inlet areas.	Proposed	Not Listed	
Falco sparverius	Southeastern kestrel	Various estuarine habitats	MBTA	Threatened	
Pandion haliaetus	Osprey	Coast, lakes, rivers, and swamps	MBTA	State Species of Special Concern	X
Haliateetus leucocephalus	Bald eagle	Coastal areas, bays, rivers, lakes, and other bodies of water	Bald and Golden Eagle Protection Act	Not Listed	X
Pelecanus occidentalis	Brown Pelican	Beaches, sandbars, docks, dredge spoil islands, estuarine islands, mangrove islands, sand spits, and islets	Delisted; MBTA	State Species of Special Concern	X
Haematopus palliates	American Oystercatcher	beaches, sandbars, spoil islands, shell rakes, salt marsh, and oyster reefs	MBTA	State Species of Special Concern	X
Rynchops niger	Black skimmer	Estuaries, beaches, and sandbars	MBTA	State Species of Special Concern	X
Egrets cerulean	Little blue heron	Fresh, salt, and brackish water environments in Florida including swamps, estuaries, ponds, lakes, and rivers	MBTA	State Species of Special Concern	X

SPECIES	COMMON NAME	HABITAT	FEDERAL STATUS	STATE STATUS	MAY OCCUR IN PROJECT AREA
Eudocimus albus	White ibis	Prefer coastal marshes and wetlands, feeding in fresh, brackish, and saltwater environments	MBTA	State Species of Special Concern	X
Mycteria americana	Wood stork	Marshes	Endangered	Endangered	
Cistohorus palustris marianae	Marians marsh wren	Marshes dominated by black needle rush and cordgrass on the Florida Gulf coast	MBTA	State Species of Special Concern	X
Fish					
Acipenser oxyrhynchus desotoi	Gulf sturgeon	Migrates from large coastal rivers to coastal bays and estuaries	Threatened	Threatened	X
Pristis pectinata	Smalltooth sawfish	estuaries, river mouths, and bays	Endangered	Endangered	
Fundulus jenkinsi	Saltmarsh topminnow	Low-salinity salt marshes and estuaries dominated by Spartina cordgrasses	Candidate	State Species of Special Concern	
Mammals					
Trichechus manatus	West Indian Manatee	Fresh and salt water in large coastal rivers, bays, and estuaries	Endangered	Endangered	X
Tursiops truncatus	Bottlenose dolphin	There are coastal populations that migrate into bays, estuaries and river mouths as well as offshore populations that inhabit pelagic waters along the continental shelf.	MMPA	MMPA	X
Stenella frontalis	Atlantic spotted dolphin	Generally occurs in coastal or continental shelf waters 65-820 ft deep, but can be found occasionally in deeper oceanic waters.	MMPA	MMPA	

SPECIES	COMMON NAME	HABITAT	FEDERAL STATUS	STATE STATUS	MAY OCCUR IN PROJECT AREA
Reptiles					
Caretta caretta	Loggerhead sea turtle	Open ocean; also inshore areas, bays, salt marshes, ship channels, and mouths of large rivers	Threatened	Threatened	X
Chelonia mydas	Green sea turtle	Shallow coastal waters with submerged aquatic vegetation and algae, nests on open beaches	Endangered	Endangered	X
Dermochelys coriacea	Leatherback sea turtle	Open ocean, coastal waters	Endangered	Endangered	X
Eretmochelys imbricata	Hawksbill sea turtle	Coral reefs, open ocean, bays, estuaries	Endangered	Endangered	X
Lepidochelys kempii	Kemp's Ridley sea turtle	Nearshore and inshore coastal waters, often in salt marshes; neritic zones with muddy or sandy substrate (NOAA Fisheries 2013)	Endangered	Endangered	X

Affected Resources

12.8.5.6 Sea Turtles

There are five species of sea turtles that are found within the Gulf of Mexico: green sea turtle, hawksbill sea turtle, loggerhead sea turtle, Kemp's ridley sea turtle, and leatherback sea turtle. All five species of sea turtles found in the Gulf of Mexico are listed under the ESA. The Gulf populations of green (breeding populations in Florida), hawksbill, Kemp's ridley, and leatherback sea turtles are listed as endangered. Loggerhead (northwest Atlantic distinct population segment) and green (except the Florida breeding population) sea turtles are listed as threatened.

Sea turtles in the Gulf (with the exception of the leatherback turtle) have a life history cycle where hatchlings develop in open ocean areas (e.g., continental shelf) and juvenile and adult turtles move landward and inhabit coastal areas. Leatherback turtles spend both the developmental and adult life stages in the open oceanic areas of the Gulf of Mexico (Dow et al. 2012). Sea turtles nest on low and high energy ocean beaches and on sandy beaches in some estuarine areas. Immediately after hatchlings emerge from the nest, they begin a period of frenzied activity. During this active period, hatchlings move from their nest to the surf, swim, and are swept through the surf zone, and continue swimming away from land for up to several days (NOAA 2009a). Once hatchling turtles reach the juvenile stage, they move to nearshore coastal areas to forage. As adults, they utilize many of the same nearshore habitats as during the juvenile developmental stage. Sea turtles utilize resources in coral reefs, shallow water habitat (including areas of seagrasses), and areas with rocky bottoms.

Turtles maintain a variety of Gulf habitats including SAV beds and coral reefs. Grazing on SAV by turtles helps to increase nutrient cycling in those habitats and prevents an over-accumulation of decaying SAV on the seafloor (Thayer et al. 1984). In addition to maintaining habitats, sea turtles also aid in balancing the food web in their marine environments. Leatherbacks, for example, prey primarily upon jellyfish and help to prevent the proliferation of this group that can easily outcompete fish species in the same area (Lynam et al. 2006). Each species of sea turtle in the Gulf is unique and affects the diversity and function of their environment differently; however, all species of sea turtles are critical in maintaining the health, function, and resiliency of the Gulf ecosystem as a whole.

All five species of sea turtles are migratory and thus have a wide geographic range (Dow et al. 2012). All five species have been observed within the Gulf Island National Seashore nesting, swimming, or feeding on the Gulf side of Santa Rosa Island or swimming or feeding on seagrass on the bay side of Santa Rosa Island (NPS 2010). Sea turtle nesting does not occur on the bay side of Santa Rosa Island (NPS 2010). The most observed nesting beaches have been found in Florida (primarily used by loggerheads, green, and leatherback sea turtles) (Dow et al. 2012); however, the PGS II does not contact beach habitat and the Sanders Beach site does not contain suitable nesting areas for sea turtles due the very small geographic area containing sand and high recreational use.

Marine Mammals

Twenty-two marine mammals are native to the Gulf of Mexico: 21 pelagic species of whales and dolphins, and the West Indian manatee. Three species commonly occur at nearby Gulf Islands National Seashore and may therefore occur in the waters surrounding the proposed project: the bottlenose dolphin, *Tursiops truncatus,* Atlantic spotted dolphin, *Stenella frontalis*, and the West Indian manatee. Whales are rare transients in the national seashore waters.

Dolphin Species

The bottlenose dolphin, *Tursiops truncatus*, and the Atlantic spotted dolphin, *Stenella frontalis*, are the two most common marine mammals found in the Gulf of Mexico. Both species feed primarily on fish, squid and crustaceans. While *S. frontalis* spends the majority of its life offshore, *T. truncatus* often travel into coastal bays and inlets for feeding and reproduction.

West Indian Manatee

The Florida manatee (*Trichechus manatus latirostrus*), a subspecies of the West Indian manatee, is listed as a federally endangered species protected under the ESA. The main threat to the Florida manatee is increased boat traffic and other accidents associated with the expanding development in Florida. Manatees inhabit both salt and fresh water and can be found in shallow (5 ft to usually <20 ft), slow-moving rivers, estuaries, saltwater bays, canals, and coastal areas throughout their range where they feed on seagrass and other aquatic vegetation such as hydrilla and water lettuce.

The distribution of manatees is well known in Florida through telemetry and other studies over the past 20 years. When ambient water temperatures drop below 20° C (68°F) in autumn and winter, manatees aggregate within the confines of natural and artificial warm-water refuges (U.S. FWS 2010) or move to the southern tip of Florida. On the West coast of Florida, the northernmost natural winter refugia is Crystal River; however, several artificial (power plant warm-water outfalls, boat basins) and minor winter refugia may be used temporarily. As water temperatures rise manatees disperse from winter aggregation areas. While some remain near their winter refuges, others undertake extensive travels along the coast and far up rivers and canals. On the west coast, sightings drop off sharply west of the Suwannee River in Florida (Marine Mammal Commission 1986), although a small number of animals are seen each summer in the Wakulla River at the base of the Florida Panhandle (U.S. FWS 2010).

At nearby Gulf Islands National Seashore manatee sightings are rare but have been documented primarily in the Gulf of Mexico. Some individuals have (less frequently) been documented in Pensacola Bay and likely in the area north of Santa Rosa Island (east of the project area), as well as the Perdido Key area (Perdido Key is also located within the Gulf Islands National Seashore, but is west of the project site), where seagrass beds are present (NPS 2010).

The West Indian Manatee is designated as endangered under the ESA and depleted under the Marine Mammal Protection Act (16 United States Code [U.S.C.] 1361 et seq.). In the Gulf Coast geographic area manatees are divided into two regional management units: the northwest and the southwest regional management units. Each regional unit is composed of individuals that tend to return to the same network of warm water refuges each winter and have similar non-winter distribution patterns (FWC 2007). In addition, Florida enacted the Manatee Sanctuary Act in 1978 and declares the entire State of Florida to be a manatee "refuge and sanctuary" (FWC 2007).The FWC has developed a Florida Manatee Management Plan to provide a framework for conserving and managing manatees in Florida (FWC 2007).

Gulf Sturgeon

The NMFS and USFWS listed the Gulf sturgeon (*Acipenser oxyrinchus desotoi)* as a threatened species on September 30, 1991. The Gulf sturgeon, also known as the Gulf of Mexico sturgeon, is a subspecies of the Atlantic sturgeon. Adults are 180 to 240 cm (71-95 inches) in length, with adult females larger than adult males. Adult fish are bottom feeders, eating primarily invertebrates, including brachiopods, insect larvae, mollusks, worms and crustaceans. The Gulf sturgeon is an anadromous fish that migrates from salt water into coastal rivers during the warmer months to spawn. Historically, the Gulf sturgeon occurred from the Pearl River to Charlotte Harbor, Florida. It still occurs, at least occasionally, throughout this range, but in greatly reduced numbers. River systems where the Gulf sturgeon are known to be viable today include the Mississippi, Pearl, Escambia, Yellow, Choctawhatchee, Apalachicola, and Swannee Rivers, and possibly others. The Gulf sturgeon often stays in the Gulf of Mexico and its estuaries and bays in cooler months (NOAA 2013). Most adult feeding takes place in the Gulf of Mexico and its estuaries. Telemetry data in the Gulf of Mexico usually locate sturgeon in depths of 6 m (19.8 ft) or less (federal notice). The fish return to breed in the river system in which they hatched. Spawning occurs in areas of deeper water with clean (rock and rubble) bottoms. The eggs are sticky and adhere in clumps to snags, outcroppings, or other clean surfaces. Sexual maturity is reached between the ages of 8 and 12 years for females and 7 and 10 years for males. The Gulf sturgeon historically was threatened because of overfishing and then by habitat loss due to construction of water control structures, dredging, groundwater extraction, and flow alterations.

USFWS and NMFS designated critical habitat essential to the conservation of the Gulf sturgeon. In accordance with regulations, critical habitat determinations were based on the best scientific data available for those physical and biological features (Primary Constituent Elements) essential to the conservation of the species. Nearshore waters within one nautical mile of the mainland from Pensacola Pass to Apalachicola Bay and the Perdido Key area and the area north of Santa Rosa Island were designated as critical habitat, as they are believed to be important migratory pathways between Pensacola Bay and the Gulf of Mexico for winter feeding and genetic exchange (DOI 2003). The proposed project area is located in critical habitat Unit 9 (Pensacola Bay), which provides juvenile, subadult, and adult feeding, resting, and passage habitat for Gulf sturgeon from the Escambia River and Blackwater/Yellow River subpopulations.

Saltmarsh Topminnow

The saltmarsh topminnow was identified by NMFS as a federal Candidate Species in 1991 (56 FR 26797) and transferred to the Species of Concern list on April 15, 2004 (69 FR 19975).The saltmarsh topminnow is also protected as a State Species of Special Concern by Florida's Endangered and Threatened Species Rule. The saltmarsh topminnow (*Fundulus jenkinsi*) ranges from Galveston Bay, Texas to Pensacola/Escambia Bay, Florida. In Florida the range is limited to Perdido Bay and Pensacola/Escambia Bay estuaries (Gilbert and Relyea 1992; Lopez et al. 2010b; Peterson et al. 2003; Thompson 1999; NOAA 2009a). Small, interconnected dendritic intertidal creeks linking the mid and high salt marshes are key components to the survival of the species (Lopez et al. 2010; Lopez et al. 2010b; Thompson 1999). Marsh erosion, low stem density, conversion of marsh to deeper open areas, dredging, hard shoreline structures, and sea level rise are also major factors contributing to the habitat decline in areas used by the saltmarsh topminnow (Lopez et al. 2010b; Peterson et al. 2003; Thompson 1999). The population of saltmarsh topminnows appears to be declining with loss of habitat (NOAA 2007). Patchy populations within the Pensacola Bay system indicate that the species is more prevalent than first believed (Bass et al. 2004).

Smalltoosh Sawfish

The smalltooth sawfish, *Pristis pectinata*, is federally listed as an endangered species. Formerly common from Texas to North Carolina, its current distribution is mainly restricted to South Florida and the Keys; adults are uncommon in the Florida panhandle (NOAA 2009b). Juveniles inhabit shallow coastal waters, especially shallow mud banks and mangrove habitats. Very few juveniles have been documented in areas north of the current range of mangroves (*i.e.*, north of 29N latitude). Adults are found with juveniles but also in deeper water habitat (NOAA 2009b). The decline of this species is mainly attributed to mortality as bycatch in commercial and sport fisheries. The current range of this species has contracted to the peninsula of Florida, though smalltooth sawfish are common only in the Everglades region at the southern tip of the state.

Protected Bird Species
The USFWS and FWC have identified several bird species that require special protection status. Table 12-7 lists coastal and marine protected bird species that may occur within the project area based on their preferred habitat requirements and FWC and USFWS reports of protected species occurrence for Escambia County. However, limited habitat availability and quality in the project area is likely to reduce their direct use and occurrence within the project area.

Threatened and Endangered Bird Species
Two Federally listed bird species, the piping plover and the wood stork, and one proposed species, the red knot, are known to occur in the Florida panhandle.

The piping plover is a small North American shorebird that inhabits sandy beaches, sand flats, and mudflats along coastal areas. Piping plovers do not breed in Florida, but spend a large portion of their year wintering in the state. The final rule designating critical habitat for the wintering population of piping plover was published in the Federal Register (Vol. 66, No. 132) on July 10, 2001 (50 C.F.R. Part 17). In Escambia County Florida, designated critical habitats for wintering populations of piping plovers are outside the project area at Big Lagoon State Recreation Area, areas near Big Sabine Point on Santa Rosa Sound, and Navarre Beach.

The red knot, a federal proposed species, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate down to specific wintering locations in South America (Niles et al. 2008). Wintering and migrating red knots forage along sandy beaches, tidal mudflats, saltmarshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sand flats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

The U.S. breeding population of wood storks is listed as federally endangered The wood stork is the largest wading bird breeding in the United States and is a highly colonial species usually nesting in large rookeries and feeding in flocks. Wood storks generally utilize freshwater wetlands as primary habitat; however, during times of drought, depressions in brackish marshes become important habitat components. Colonies in South Florida form late November to early March, while wood storks in Central and North Florida form colonies from February to March. Wood storks move north after breeding. There have been occasional sightings in all States along and east of the Mississippi River.

Bald and Golden Eagle Protection Act
The bald eagle was delisted by the USFWS and is not listed as threatened or endangered by the FWC. The bald eagle is, however, protected by state law pursuant to 68A-16, Fla. Admin. Code and by the U.S. government under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles occur most commonly in areas close to coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources, including fish, waterfowl, and wading birds. Usually the bald eagle nests in tall trees (mostly live pines) that provide clear views of surrounding area. Bald eagles feed on fish and other readily available mammalian and avian species and are dependent on large, open

expanses of water for foraging habitat. In Florida, conservation measures to protect active nest sites during nesting season must be considered to reduce potential disturbances of certain project activities. If bald eagles are found nesting within 660 feet of a proposed construction area, then activities would need to occur outside of nesting season or coordination with the USFWS would occur to determine if a permit is needed, and Florida's *Bald Eagle Management Plan* guidelines would be followed (FWC 2008). The nearest Bald eagle nest is approximately 4 to 5 miles from the project site.

Migratory Birds

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711) decreed that all migratory birds and their parts (including eggs, nests, and feathers) were fully protected. The migratory bird species protected by the Act are listed in 50 C.F.R. 10.13. More than 250 species of birds have been reported as migratory or permanent residents within the Pensacola Bay system, several of which breed there as well. These birds can be grouped generally as (1) species that occur year-round, both nesting and overwintering, (2) species that nest during the warm season and overwinter to the south, (3) species that overwinter and nest further north, and (4) species that pass through during spring migrations to more northern nesting sites and/or during fall migrations to overwintering areas. Different populations of the same species sometimes exhibit more than one type of migratory behavior. Shorebirds include species such as osprey (*Pandion haliaetus*), great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), stilt (*Himantopus mexicanus*), sandpipers (*Calidris spp*.), gulls (*Lanius spp.*), brown and white pelicans (*Pelecanus spp*.), American oystercatcher (*Haematopus palliatus*), and terns (*Sterna spp*.) (Thorpe et al. 1997).

Waterfowl

Waterfowl include swans, geese, and ducks that migrate from summer nesting areas in the northern U.S. and Canada along well-described routes or "flyways" to wintering grounds along the Gulf Coast. In addition to waterfowl, other water-dependent birds of the Gulf region include loons, grebes, northern gannet, pelicans and frigate birds, cormorants and an ally, the anhinga, gulls, terns, and various seabirds.

Pelagic seabird species

Pelagic seabird species live most of their lives in open marine waters roosting and feeding at the water surface the entire year; in the breeding season, mature adults return briefly to nesting areas along coastlines. Nesting of pelagic species in the Gulf of Mexico region is very limited and includes only a few locations containing tern colonies. Species regularly observed within the Gulf of Mexico include tropicbirds, boobies, gannets, shearwaters, storm-petrels, jaegers, and phalaropes (Peake and Elwonger 1996). Gull and tern species are also considered pelagic species; however, as colonial nesting species they are discussed with colonial water birds below.

Raptors

Raptors that occur along the Gulf Coast include vultures, osprey, kites, hawks, harriers, caracaras, eagles, and falcons. Raptors may be found as year-round resident species, migrants, and wintering species. Year-round resident species include turkey vulture, black vulture, white-tailed kite, red-shouldered hawk, red-tailed hawk, and American kestrel. In addition to these resident raptor species, the crested caracara and white-tailed hawk are resident raptor species with restricted North American ranges and are considered unique to the Gulf Coast region. Osprey, northern harrier, sharp-shinned hawk, Cooper's hawk, merlin, and peregrine falcon winter along the Gulf Coast, though some species such as the osprey may also be present as residents in parts of the Gulf Coast (Brinkley 2008).

Colonial waterbirds

Colonial waterbirds are birds that nest in social nesting groups (colonies) often containing a mix of species of a similar group, e.g., a wading bird colony may include multiple species of herons and egrets. This guild consists of two principal groups: wading birds (e.g., herons, egrets, ibises) and ground- or beach-nesting species. Ground-nesting species can be further divided into species that feed in pelagic (open water) habitats such as cormorants, gulls, and terns. In addition, brown pelicans may occasionally nest on the ground (FWS 2002).

Colonial waterbirds feed mostly on aquatic organisms, and as a result, nesting colonies are usually concentrated within appropriate coastal habitats. The location and size of nesting colonies depend directly on the presence of suitable nesting habitat and adequate food availability (Duke and Kruczynski 1992). A substantial percentage of the U.S. population of several species nest within the nearshore environment of the Gulf of Mexico: laughing gull; Forster's, gull-billed, sandwich, least, royal, and Caspian terns; and black skimmer. Florida, Louisiana, and Texas are the primary states in the southern and southeastern U.S. for nesting colony sites and total number of nesting coastal and marine birds (U.S. DOI 2006).

Wading birds

Wading birds consist of birds with long legs, long necks, and long bills that facilitate foraging in shallow water, probing or actively capturing fish, frogs, aquatic insects, crustaceans, and other prey (Terres 1991). Wading bird families found along the Gulf Coast include herons and egrets (family Ardeidae), storks (Ciconiidae), ibises and spoonbills (family Threskiornithidae), and cranes (family Gruidae). Typical wading bird species include great blue heron, great egret, snowy egret, little blue heron, and tricolored heron. Reddish egret and roseate spoonbill are two species within the U.S. restricted in range to the Gulf Coast region. Wading bird colonies are also referred to as "rookeries" or "heronries".

Shorebirds

Shorebirds are generally restricted to coastline and inland water margins (beaches, mudflats, etc.). As a group, shorebirds are highly migratory and many of these species stop to rest and forage during migration flights or spend the winter in nearshore habitat along the Gulf Coast. The Gulf Coast contains some of the most important shorebird habitat in North America. For migrating and wintering shorebirds the wetlands and barrier islands of this region represent the first large expanses of suitable habitat between northern breeding grounds and more distant wintering grounds in South America (Withers 2002).

Marsh birds
"Marsh bird" is a general term for birds that live in or around marshes and swamps. Passerine species associated with marshes include red-winged blackbird and boat-tailed and great-tailed grackle; however, other marsh species are more secretive. Gulf Coast marshes and freshwater wetlands provide habitat for secretive marsh birds, which are cryptically colored with secretive behaviors and specially adapted to life in the treeless, dense marsh vegetation (FWS 2006). Along the Gulf Coast, bird species found in salt and freshwater marshes include grebes, bitterns, rails, gallinules, limpkin, and passerines exemplified by marsh wren, sedge wren, and the seaside sparrow species complex. Other marsh bird species with more northern breeding ranges winter in Gulf Coast marshes such as yellow rail, sora, Virginia rail, and Nelson's sparrow.

Passerines
Passerines (e.g., flycatchers, vireos, crows, swallows, chickadees, nuthatches, wrens, thrushes, warblers, sparrows, tanagers, grosbeaks, blackbirds, and finches) and near passerines (e.g., pigeons, doves, cuckoos, owls, nightjars, swifts, hummingbirds, kingfishers, and woodpeckers) encompass the majority of land bird species. Many species are neotropical migrants that use a variety of nesting habitats in North America and winter in the Caribbean, and Central and South America. As with shorebirds, the northern Gulf Coast is an important stopover for migrating passerines and near passerines providing resting and foraging habitat. In addition, some land bird species may overwinter along the Gulf Coast and many species are also year-round residents.

Essential Fish Habitat
The 1996 Magnuson-Stevens Act, as amended, requires cooperation among NMFS and federal and state agencies to protect, conserve, and enhance Essential Fish Habitat (EFH). EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. The designation and conservation of EFH seek to minimize adverse effects on habitat caused by fishing and non-fishing activities. NOAA's Estuarine Living Marine Resources Program developed a database on the distribution, relative abundance, and life history characteristics of ecologically and economically important fishes and invertebrates in the nation's estuaries. NOAA has designated EFH for more than 30 estuaries in the northern Gulf of Mexico for a number of species of finfish and shellfish. All of Pensacola Bay and waters surrounding Gulf Island National Seashore are designated as EFH. EFH in Pensacola Bay provides habitat for several species of fish and shellfish (NPS 2006).

The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum brown shrimp, pink shrimp, and white shrimp. The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. EFH consists of the following waters and substrate areas in the Gulf of Mexico:

- Red Drum FMP: All estuaries; Vermilion Bay, Louisiana, to the eastern edge of Mobile Bay, Alabama, to depths of 25 fathoms; Crystal River to Naples, Florida, between depths of 5 and 10 fathoms; and Cape Sable, Florida, to the boundary between the areas covered by the GMFMC and the South Atlantic Fishery Management Council (SAFMC) between depths of 5 and 10 fathoms.

- Coastal Migratory Pelagics FMP: All estuaries; the U.S./Mexico border to the boundary between the areas covered by the GMFMC and the SAFMC, from estuarine waters to depths of 100 fathoms.
- Shrimp FMP: All estuaries; the U.S./Mexico border to Fort Walton Beach, Florida, from estuarine waters to depths of 100 fathoms; Grand Isle, Louisiana, to Pensacola Bay, Florida, between depths of 100 and 325 fathoms; Pensacola Bay, Florida, to the boundary between the areas covered by the GMFMC and the SAFMC to depths of 35 fathoms, with the exception of waters extending from Crystal River to Naples, Florida, (GMFMC 2005:15) between depths of 10 and 25 fathoms and in Florida Bay between depths of 5 and 10 fathoms.
- Reef Fish FMP: EFH for reef fish consists of Gulf of Mexico waters and substrates extending from the U.S./Mexico border to the boundary between the areas covered by the GMFMC and the SAFMC, from estuarine waters to depths of 100 fathoms.

Highly Migratory Species FMP:
EFH occurs for several species of fish and shellfish in and around project area and is identified in Table 12-8 for key species that occur in Pensacola Bay.

Table 12-8. Essential fish habitat for key species that occur in the project area.

SPECIES/MANAGEMENT UNIT	LIFESTAGE(S) FOUND AT LOCATION	FISHERY MANAGEMENT PLAN
Sandbar Shark	Neonate	Highly Migratory Species
Red Drum	ALL	Red Drum
Scalloped Hammerhead Shark	Neonate	Highly Migratory Species
Tiger Shark	Neonate Juvenile	Highly Migratory Species
Atlantic Sharpnose Shark	Neonate	Highly Migratory Species
Shrimp (4 Species) Brown shrimp (*Penaeus aztecus*) White shrimp (*Penaeus setiferus*) Pink shrimp (*Penaeus duorarum*) Royal red shrimp (*Pleoticus robustus*)	ALL	Shrimp
Coastal Migratory Pelagics	ALL	Coastal Migratory Pelagics
Reef Fish (43 Species) **Balistidae - Triggerfishes** Gray triggerfish (*Balistes capriscus*) **Carangidae - Jacks** Greater amberjack (*Seriola dumerili*) Lesser amberjack (*Seriola fasciata*) Almaco jack (*Seriola rivoliana*) Banded rudderfish (*Seriola zonata*) **Labridae - Wrasses** Hogfish (*Lachnolaimus maximus*) **Lutjanidae - Snappers** Queen snapper (*Etelis oculatus*) Mutton snapper (*Lutjanus analis*) Blackfin snapper (*Lutjanus buccanella*)	ALL	Reef Fish

SPECIES/MANAGEMENT UNIT	LIFESTAGE(S) FOUND AT LOCATION	FISHERY MANAGEMENT PLAN
Red snapper (*Lutjanus campechanus*)		
Cubera snapper (*Lutjanus cyanopterus*)		
Gray (mangrove) snapper (*Lutjanus griseus*)		
Lane snapper (*Lutjanus synagris*)		
Silk snapper (*Lutjanus vivanus*)		
Yellowtail snapper (*Ocyurus chrysurus*)		
Wenchman (*Pristipomoides aquilonaris*)		
Vermilion snapper (*Rhomboplites aurorubens*)		
Malacanthidae - Tilefishes		
Goldface tilefish (*Caulolatilus chrysops*)		
Blueline tilefish (*Caulolatilus microps*)		
(Golden) Tilefish (*Lopholatilus chamaeleonticeps*)		
Serranidae - Groupers		
Speckled hind (*Epinephelus drummondhayi*)		
Yellowedge grouper (*Epinephelus flavolimbatus*)		
Red hind (*Epinephelus guttatus*)		
Goliath grouper (*Epinephelus itajara*)		
Red grouper (*Epinephelus morio*)		
Warsaw grouper (*Epinephelus nigritus*)		
Snowy grouper (*Epinephelus niveatus*)		
Nassau grouper (*Epinephelus striatus*)		
Marbled grouper (*Epinephelus inermis*)		
Black grouper (*Mycteroperca bonaci*)		
Yellowmouth grouper (*Mycteroperca interstitialis*)		
Gag (*Mycteroperca microlepis*)		
Scamp (*Mycteroperca phenax*)		
Yellowfin grouper (*Mycteroperca venenosa*)		

Environmental Consequences

Section 7 ESA consultations with the USFWS and NMFS will be initiated for the proposed projects. Conservation measures recommended during consultation would be incorporated into project descriptions to avoid and minimize impacts to protected species and critical habitats.

Sea Turtles

Effects on sea turtles include the risk of harm from construction activities, including physical impacts from construction materials or operating construction machinery. Due to these species' mobility and the implementation of NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions, the risk of impacts from construction would be minimal. Sea turtles may be affected by being temporarily unable to use a project site due to potential avoidance of construction activities and related noise, but these effects would be short term and minor.

Sea turtles do not nest and are not likely to forage within the project site given the shallow water depths and sand substrate. Due to a lack of seagrasses and other suitable sea turtle foraging habitat, impacts from project installation and short-term turbidity would be short term and mior for sea turtles that may occur within the project area. Additionally, any effects would be short term and minor given the small footprint and short duration of the proposed project activities in relation to similar adjacent habitats available for foraging.

12.8.5.7 Marine Mammals

Noise and other activity associated with proposed construction may temporarily disturb certain dolphin species in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise, and may temporarily increase the potential for boat collisions with certain species in the project area during construction. However, the mobility of these species reduces the risk ofharm due to construction activity. Based on mobility of this species and the short duration of construction activities, effects on dolphin species are not anticipated.

12.8.5.8 West Indian Manatee

West Indian manatees may be occasionally found in the shallow waters of the project area during the warmer months of the year. Given their slow-moving and low visibility nature, it is possible that manatees could wander into proximity of construction activities. To minimize contact and potential harm to manatees, the Standard Manatee Conditions for In-Water Work (USFWS 2011) would be strictly observed. Specific conditions are described in the Appendix to Chapter 6.

By adhering to these measures and recommendations, effects on Florida manatees would be short term and minor.

12.8.5.9 Gulf Sturgeon

The Gulf sturgeon critical habitat Unit 9 primary constituent elements (PCE's) include: water quality, safe and unobstructed migratory pathways, sediment quality, and abundant prey items. Water quality impacts from project activities are expected to be minimal and temporary because increases in water turbidity would be reduced through the use of BMPs described in the Construction and Installation section. There is no indication of sediment contamination within the project area. However, this conversion of habitat is not expected to reduce the PCE's ability within Unit 9 to support Gulf sturgeon conservation because of the small overall footprint for breakwater construction (5.05 acres), the rapid recovery of forage species that may be affected due to construction, and the availability of more suitable Gulf sturgeon migratory and foraging areas within Pensacola Bay.

Potential impacts on Gulf sturgeon include the risk of harm from construction activities, which would be minimal due to the species' mobility and the implementation of BMPs including NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions which are protective of Gulf sturgeon. Some sandy bottom habitat would be converted to hard bottom (breakwater construction) as described in above and again, prey is not expected to be limiting from project implementation

The creation of a reef may provide an indirect benefit to Gulf sturgeon by enhancing the diversity of prey available to Gulf sturgeon by creating patchwork reefs that, over time, provide more structurally complex habitat for prey species. The use of breakwaters to create reefs, while reducing shoreline erosion, also encourages nektonic production that could lead to greater prey availability in the immediate surroundings for Gulf sturgeon.

Effects to Gulf Sturgeon resulting from the proposed dredging and disposal activities for marsh creation would be confined to direct impacts associated with the dredge equipment. Effects resulting from the use of hopper dredges were considered in the Regional Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining Areas Using Hopper Dredges by COE Galveston, New Orleans, Mobile, and Jacksonville Districts (Consultation Number F/SER/2000/01287) dated November 19, 2003. Implementation would abide by the applicable reasonable and prudent measures set forth in that opinion. No impacts to Gulf Sturgeon are anticipated with the use of a hydraulic cutter-head dredge, as they are not known to affect Gulf Sturgeon.

In 2006, the NMFS issued a biological opinion based on a request for consultation on the effects of Project GreenShores Phase II by the U.S. ACOE. Project specific information was provided related to the proposed action of nearshore restoration to create oyster reef breakwaters, emergent marsh, and seagrass beds at Project GreenShores Site II. NMFS issued an opinion that the proposed action was not likely to destroy or adversely modify designated Gulf sturgeon critical habitat. It is therefore determined that the proposed action may have short term minor impacts for Gulf sturgeon.

12.8.5.10 Saltmarsh Topminnow

Suitable habitat for saltmarsh topminnow is restricted to salt marshes; the species also spawns in upper marshes during the highest tides. Additionally, saltmarsh topminnow does not disperse widely from suitable habitat. The proposed activities would not impact suitable habitat for saltmarsh topminnow and therefore no mpacts are anticipated.

12.8.5.11 Smalltooth Sawfish

Smalltooth sawfish historically were found in and around the project area; however, the current distribution is mainly restricted to South Florida and the Keys. Critical habitat for the smalltooth sawfish lies between Charlotte Harbor and the Florida Everglades, outside and south of this project site; therefore no impacts are anticipated (NOAA 2009c).

12.8.5.12 Protected Bird Species

The upland habitat located within the project area is best described as landscaped parklands. The habitat quality is very low given the high level of human use and the landscaped nature of the vegetation. Additionally, the shorelines are predominately altered through the use of concrete seawalls with granite rip-rap boulders. This limits the available natural shoreline for wading bird foraging habitat.

Potential effects for birds would include noise and other disturbance from construction activities that may impact birds using open water and nearby shoreline within the project area. These effects would be minor and short term in scope. A small number of bird species protected under the Migratory Bird Treaty Act may nest near or within the project area; however, bird monitoring by FDEP indicate that the Project Greenshores area is used during migration and as winter habitat. Therefore, disturbance to nesting birds from proposed project activities is not anticipated. Short term minor impacts to prey resources may occur during construction; however these effects would be local in scope. Potential short term, minor impacts for birds would be outweighed by the expected habitat and water quality benefits of restoration at the project site.

To reduce the risk of impacts to migratory bird species, a pre-construction bird survey would be conducted during the nesting season and within 300 ft of the construction activities. If nests are observed prior to construction, the USFWS would be contacted to assist with specific conservation measures to avoid impacts. Pre-construction surveys would include bald eagle nests. If a bald eagle nest is located, best management practices provided by the USFWS and State of Florida would be followed to avoid disturbance.

Due to these species' mobility and the implementation of NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions (required by SPGP IV-R 1 Special Condition 10), Florida's Manatee Construction Conservation Measures, and U.S FWS recommended conservation measures for listed species and other trust resources, the risk of impacts would be minimal to the protected species discussed above. Sea turtles, Florida manatees, Gulf sturgeon, and a small number of protected bird species may be affected by being temporarily unable to use the site due to avoidance of construction activities and related noise. Because of the mobility of these protected species, small project footprint, short-term scope of the constructions activities, and best practices that would be implemented, as described above, the risk of potential impacts are likely to be minor and short term. Overall, the net benefits of this habitat protection and restoration project outweigh any minor and short term impact by increasing benthic habitat diversity, creating structural complexity for benthic habitat, and restoring salt marsh which would support a greater diversity and abundance of marine species.

Essential Fish Habitat (EFH)

The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. The habitat in the project area includes the lower Pensacola Bay and Gulf of Mexico waters and consists primarily of sandy substrate consistent with sediment along the northern Gulf of Mexico. Based on the phased approach for the implementation of the dredging and disposal activities and the time that it would take to complete each phase and the size of the proposed placement areas in relation to the total available acreage of similar habitat within the Gulf of Mexico, it has been determined that the proposed action would not result in long-term impacts to essential fish habitat.

Marine and Estuarine Resources (benthic organisms, oysters, fish)

Affected Resources

In general, researchers have found relatively low overall biomass of infauna, epibenthic invertebrates, and fishes in the Pensacola Bay system (Livingston 1999). Benthic microalgae, microphytobenthos, periphyton, and biofilms communities in Pensacola Bay are dominated by Bacillariophyceae (Allison, 2000). In many estuaries, light limits production, but this is not the case in Pensacola Bay. Pensacola Bay has low turbidity and high light penetration indicating that primary production occurs through much of the water column and benthos (Murrell 2009). In fact, Allison (2000) found that the average photic depth of Pensacola Bay is approximately 5 m, meaning that 78% of the bay could potentially support microphytobenthos production. However, Allison (2000) found that Pensacola Bay has relatively low overall productivity coupled with a relatively low benthic respiration rate, which they attribute to the proportionally large area of sandy sediments with low organic levels. Additionally, Collard (1989) suggests, based on his study of the benthic macroinvertebrates in the Pensacola estuarine system, that biological conditions are highly variable.

Oysters

The eastern oyster is the primary oyster species found in the Gulf and is the major commercial species. Oysters are important as both organisms and habitat with an integral role in the functioning of the ecosystem. The eastern oyster lives in shallow, well-mixed estuaries, lagoons, tidal sloughs of barrier islands, and oceanic bays. This species is found from 1 foot above the mean low tide line to 40 ft below the mean low tide line and within the Gulf of Mexico is typically found at depths of 0 to 13 ft (Eastern Oyster Biological Review Team 2007).

Oysters are tolerant of a wide range of temperatures, salinities, and concentrations of suspended solids. Eastern oysters spawn in the late spring and early summer because increasing coastal water temperatures stimulates external spawning of eggs and sperm by adults. Adult oysters may spawn intermittently from late March through October (Shumway 1996). Tides and currents carry the larvae, or spat, throughout the estuary until they settle and crawl to find suitable hard substrate to attach and undergo metamorphosis into sedentary stage. Spat (<1 inch) grow to seed (>1 inch) and adult sizes (>2 inches) with increasing shell size (Louisiana Sea Grant 2012). Free-swimming larvae develop before attachment to hard substrate. In general, oyster spat are plentiful in most areas of the Gulf and thus easily colonize suitable substrate (Banks and Brown 2002; Supan 1983; Piazza et al. 2005).

The eastern oyster feeds by filtering large quantities of water through their gills and each adult oyster can filter approximately 1.3 gallons of water per hour, effectively contributing to cleaning the water column (Berrigan et al. 1991). Within an oyster reef community, oysters are the dominant species, though over 300 other macrofauna species may be living on an oyster reef (Wells 1961). In addition to enhancing habitat, productivity, and biodiversity, oyster reefs provide benefits to the physical environment. Reefs act as natural breakwaters and attenuate wave energy which can stabilize and protect coastal habitats such as salt marshes and SAV, and prevent shoreline erosion (Grabowski and Peterson 2007; Coen et al. 2007; GSMFC 2012).

Historically, oysters were harvested from Pensacola Bay; landings in oysters peaked about 1970 (Macauley 2005). As much as 90% of the oyster population was lost to disease by 1971, and oyster beds are no longer commercially viable, although an oyster fishery still exists in the Pensacola bay System, accounting for 1.7% of the state's oyster landings (Livingston 2010). There are no areas classified for oyster harvest in the project area.

Fish

More than 200 species of fish and shellfish have been reported in the estuarine waters of the Pensacola Bay system. Four anadromous fish are known to inhabit the river systems: Gulf sturgeon (A*. oxyrhynchus desotoi*), Alabama shad (*Alosa alabamae*), skipjack herring (*Alosa chrysochloris*), and striped bass (*Morone saxatilis*). Largemouth bass (*Micropterus salmoides*) and redear sunfish (*Lepomis microlophus*), which are tolerant of low salinity levels, often invade the streams and embayments in the river delta marshes. Other species native to the area include spot (*Leiostomus xanthurus*), bay anchovy (*Anchoa mitchilli*), Atlantic croaker (*Micropogonias undulatus*), spotted seatrout (*Cynoscion nebulosus*), longnose gar (*Lepisosteus osseus*), Gulf menhaden (*Brevoortia patronus*), channel catfish (*Ichthyomyzon punctatus*), striped mullet (*Mugil cephalus*), American eel (*Anguilla rostrata*), chain pickerel (*Esox niger*), golden shiner (*Notemigonus crysoleucas*), coastal shiner (*N. petersoni*), silver perch (*Bairdiella chrysura*), clown goby (*Microgobius gulosus*), darter goby (*Gobionellus boleosoma*), blue crab (*Callinectes sapidus*), ghost crab (*Ocypode quadrata*), American oyster (*Crassotrea virginica*), and Penaeid shrimp (*Penaeus spp*.). The dominant epibenthic macroinvertebrates include brown shrimp (*Penaeus aztecus*) and blue crabs (*Callinnectus sapidus*) (Livingston 1999).

Stevenson, 2007 research on Pensacola Bay sampled two study sites at the Project Greenshores Sites I and II. The study sites included an open water site and a non-vegetated marsh edge. An open water site has a sand bottom and no vegetation. A non-vegetated marsh edge has an open sand bottom within 10m of marsh vegetation. Four fish were continually the most abundant: striped mullet (*Mugil cephalus*), tidewater silverside (*Menidia peninsulae*), spot, and pinfish (*Lagodon rhomboids*). Out of 34 species caught, the remaining species made up 5% of the overall catch (Stevenson 2007). Fish abundances were low between May to December, but increased in January, when young of the year started to appear (Stevenson 2007). Spot varied in abundance related to spawning (Stevenson 2007). The spot young of year appeared throughout the spring, until the population decreased in April and June (Stevenson 2007).

Pensacola Bay has been affected by anthropogenic effects that have exposed fish communities to a variety of contaminants from multiple sources. During the demolition of the I-10 Bridge, fish were collected and samples tested for trace metals, dioxins/ furans and poly-carbonated biphenyls (PCB's) (Mohrherr et al. 2009). Eight of the samples exceeded U.S. EPA standards, with the highest being in mullet (Mohrherr et al. 2009).

Environmental Consequences

Potential impacts to benthic organisms, oysters, and fish may occur during construction activities; however these effects would be short term and localized. Disturbance of individual species would occur; however, there would be no change in the diversity or local populations of marine and estuarine species. Any disturbance would not interfere with key behaviors such feeding and spawning. There would be no restriction of movements daily or seasonally.

Wildlife and Wildlife Habitat

Impacts to native species, their habitats (including Essential Fish Habitat), or the natural processes sustaining them may be detectable, but localized and would not measurably alter natural conditions. Infrequent responses to disturbance by some individuals could be expected, but without interference to feeding, reproduction, resting, migrating, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors are not likely to occur. Sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species. Overall, the net benefits of this habitat protection and restoration project outweigh any minor and temporary impact by increasing benthic habitat diversity, creating structural complexity for benthic habitat, and restoring salt marsh which would support a greater diversity and abundance of marine species.

Introduce or Promote Non-native Species

Affected Resources
Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention.

Environmental Consequences
No impacts related to introduced or non-native species are expected due to the proposed project. The project would construct breakwater structures to support oyster settlement and restoration to Pensacola Bay where oysters were historically present. Creation of marsh habitat would also involve the use of native marsh species and follow strict protocol established by the state of Florida to ensure local sources of native species are used to create marsh habitat. Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A.

12.8.5.13 Human Uses and Socioeconomics

12.8.5.13.1 Socioeconomics and Environmental Justice

Affected Resources
The population of Escambia County is 297,688 (U.S. Census 2010). The project is contained within Census Tracts 3 and 8 in Escambia County. Table 12-9 population/minority data for Census Tract3, Census Tract 8, Escambia County, and Florida.

Environmental Justice
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, was signed in 1994. The Executive Order and accompanying Presidential Memorandum focus Federal attention on the environmental and human health conditions in minority and low-income communities, enhances efforts to assure nondiscrimination in Federal programs affecting human health and the environment, and promotes meaningful opportunities for access to public information and for public participation in matters relating to minority and low-income communities and their environment.

Based on 2010 Census blockgroup data, the PGS II site is located near communities with a minority population between 10-20% and 16.5% of the population living below poverty. The Sanders Beach site is located near communities with a minority population between 40-100% and 23.6% of the population living below poverty (U.S. EPA 2013). In direct vicinity of the project site, the submerged lands are owned by the City of Pensacola. Proposed activities will take place within nearshore waters at both PGS II and Sanders Beach sites. Consequently, the proposed action will not directly influence any communities in close proximity to the shoreline.

Table 12-9. Populations of Florida Escambia County, Census Tract 3, and Census Tract 8.

TOPIC	FLORIDA		ESCAMBIA COUNTY		CENSUS TRACT 3		CENSUS TRACT 8	
2010 Total Population	18,688,787		297,668		2,466		4,219	
White alone	14,270,053	76.4%	207,330	69.7%	1,340	54.3%	2,927	69.4%
Black or African American alone	2,946,899	15.8%	66,760	22.4%	909	36.9%	1,172	27.8%
American Indian and Alaska Native alone	58,192	0.3%	1,731	0.6%	0	0.0%	14	0.3%
Asian alone	455,403	2.4%	8,198	2.8%	0	0.0%	9	0.2%
Native Hawaiian and Other Pacific Islander alone	11,005	0.1%	547	0.2%	0	0.0%	0	0.0%
Some Other Race alone	564,351	3.0%	2,125	0.7%	0	0.0%	0	0.0%
Two or More Races:	382,884	2.0%	10,977	3.7%	217	8.8%	97	2.3%

Environmental Consequences

This project is not designed to create a benefit for any group or individual, but rather benefits on a local and regional basis. There are no indications that the proposed living shoreline project would be contrary to the goals of E.O. 12898, or would create disproportionate, adverse human health or environmental impacts on minority or low income populations of the surrounding community.

Findings: It is expected that this project would have a short-term, minor, direct adverse impact through disruption of localized fishing during construction. However, direct, short-term, moderate benefits are expected through the creation of a small number of local construction jobs. Long-term, indirect, moderate benefits would result from increasing fisheries habitat, and recreational and fishing value of the area.

12.8.5.13.2 Cultural Resources

Affected Resources

Project information has been submitted to the Department of Interior for coordination. At this time, no information on cultural resources has yet been provided.

Environmental Consequences

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.

12.8.5.13.3 Infrastructure

Affected Resources

The landward sides of the proposed project areas are developed with a variety of infrastructure that includes shoreline protection, roads, parks, and residential development. The existing infrastructure within the project area is shown below (Figure 12-11, Pensacola Bay Living Shoreline Infrastructure Map from FDOT's Efficient Transportation Decision Making Environmental Screening Tool).

Environmental Consequences

All the construction activities are anticipated to be performed from water with no or limited activities on the shoreline adjacent to the site.

Findings: The project is anticipated to have no impact on infrastructure in the area.

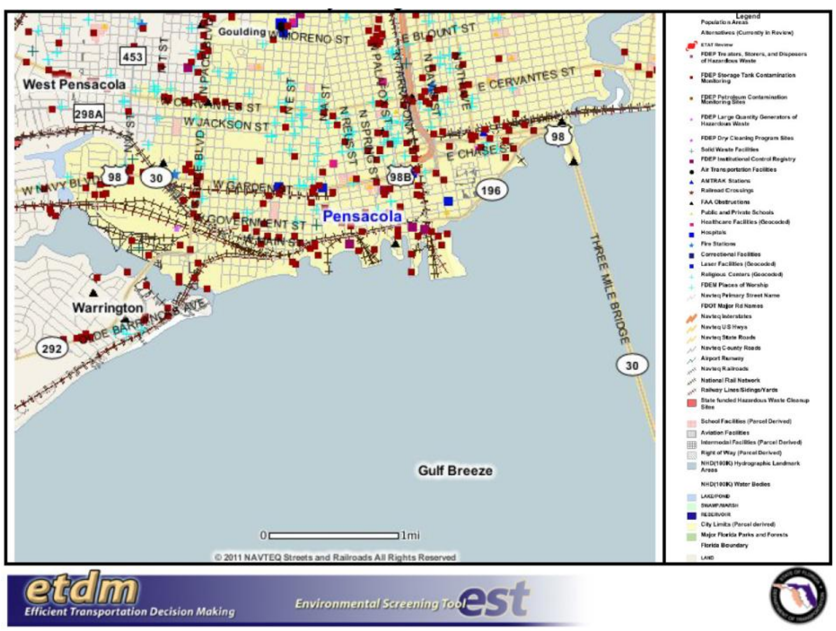

Figure 12-11. Pensacola Bay Living Shoreline Infrastructure.

12.8.5.13.4 Land and Marine Management

Affected Resources

Land and Marine Uses

The landward side of the proposed project have a variety of land uses that include recreational, commercial, residential land uses as well as publicly owned lands. The existing land uses within the project area are shown below (Figure 12-12, Pensacola Bay Living Shoreline Land Use Map from FDOT's Efficient Transportation Decision Making Environmental Screening Tool). Marine uses include recreation boating and fishing.

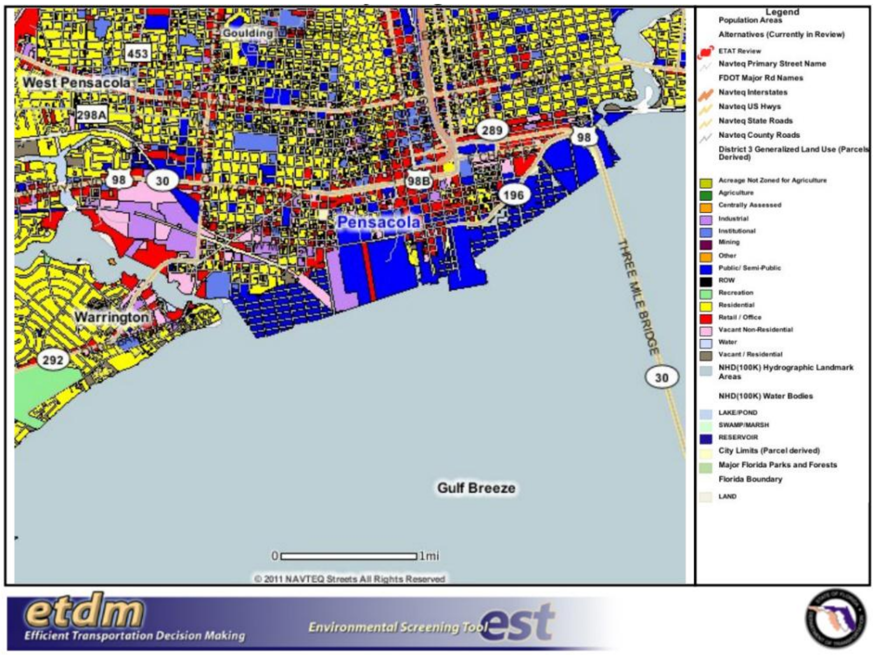

Figure 12-12. Pensacola Bay Living Shoreline Land Use Map.

Coastal Zone

The project is located in a coastal area regulated by the federal Coastal Zone Management Act (CZMA) of 1972 and the Florida Coastal Management Act of 1978. 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.

Environmental Consequences

Because the proposed activities focus on the marine environment, the management of adjacent land uses would not be affected. In addition, the project design will incorporate and accommodate existing marine uses within the area to prevent or minimize any potential effects. Additionally, boating safety signs would be installed in the marine environment at the project site that would benefit marine management within the project site. Although no direct impacts are anticipated, indirect impacts may occur within Florida's designated coastal zone. Therefore, the project would require a determination of whether the project is consistent with the CZMA.

Finding: The project is anticipated to have no impact on land use or marine management in the area.

12.8.5.13.5 Aesthetics and Visual Resources

Affected Resources
The landward side of the proposed project has a variety of land uses that provide access for residents, visitors, and commuters.

Environmental Consequences
Aesthetics would be reduced in the project area during the construction operations, due to the physical presence of the equipment used to transport the material as well as the presence of other land- based support equipment. However, these impacts would be minor, direct, temporary impacts. Following construction, the increased habitat would provide for minor, direct improved aesthetics impacts.

Findings: The proposed action would result in minor, short term visual impacts while construction equipment is used at the project site. The placement of these navigational signs would result in a direct, long term, minor adverse impact on the aesthetics and visual resources of the area.

12.8.5.13.6 Tourism and Recreational Use

Affected Resources
The affected recreational resources include the waters along the Pensacola Bay shoreline. These resources are used primarily by local communities for recreational boating, fishing, and bird watching. Veterans Memorial Park and William Bartram Memorial Park, passive recreational use parks, are located adjacent to the shoreline near PGS II. The Sanders Beach-Corinne Jones Community Center and park with a small boat launch, are located adjacent to the Sanders Beach site. In addition, the Pensacola Yacht Club, a privately owned marina, is located near the mouth of Bayou Chico adjacent to the Sanders Beach site.

Environmental Consequences
For a short time, the construction process may limit the recreational activities at the Sanders Beach site, especially near the construction areas. However, boating safety signage would be installed during and after the construction process. Once completed, the project would result in positive impacts at both Sanders Beach and PGS II by providing greater recreational uses for the project areas, due to improved fish and wildlife habitat.

Findings: The proposed project would have a short term, adverse impact to recreational use of the area during construction since the area would be avoided by recreational boaters. The action would result in a minor beneficial effect on recreational use due to an anticipated increase fishing use of created reefs. The project would not result in adverse or beneficial long term indirect impacts to recreational use.

12.8.5.13.7 Public Health and Safety and Shoreline Protection

Affected Resources
Several areas within Pensacola Bay have experienced past shoreline erosion resulting in protection efforts using hardened structures, especially along urban and suburban areas. The shoreline adjacent to the proposed project sites is predominately hardened with concrete seawalls and granite riprap.

The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Emergency Planning and Community Right-to-Know Act; and the Hazardous Materials Transportation Act. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites that have already been contaminated by releases of hazardous materials, wastes, or substances.

A review of the EPA's EnviroMapper identifies several facilities adjacent to Pensacola Bay that report discharges or hazardous waste generation or disposal to the USEPA and one CERCLA site near the proposed project area, American Creosote Works (USEPA 2013b). The American Creosote Works, Inc. (ACW) Site is an 18 acre site located on 1800 West Gimble Street in a commercial and residential district of Pensacola, Florida. Operators sent process wastewaters to four holding ponds located in the western portion of the site. The ponds overflowed after heavy rains. Prior to 1970, wastewater in these ponds overflowed through a spillway into local streets and storm drains and Bayou Chico and Pensacola Bay. In later years, the company collected and spread liquid wastes on the ground in designated "Spillage Areas" on site. In 1983, EPA listed the site on the NPL. Site investigations found contamination in soil, sediment and ground water that could potentially harm people in the area. Contaminants of concern include volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), PCP and dioxin. EPA leads site investigation and cleanup activities in cooperation with FDEP.

Site investigations and cleanup activities have focused on three areas, which EPA refers to as operable units, or OUs. These areas include OU-1: surface and below-ground soil and sediment; OU-2: ground water; and OU-3: off-site dioxin-impacted soil. EPA has conducted several actions on and off the ACW property since 1983. The OU-1 cleanup is not yet complete. In 2003, EPA moved contaminated soils from surrounding residential areas onto the site and covered the soil with a temporary cap. However, EPA has not installed a final, permanent site-wide cap. A system of ground water monitoring and recovery wells were installed for OU-2. A Focused Feasibility Study report by EPA and FDEP addresses proposed plans for OU-3 to address off-site impacted soil (USEPA 2013c). EPA completed the last Five-Year Review in 2011 and plans to complete the next Five-Year Review in 2016.

EPA has worked with the community and its state partner to develop a long-term cleanup plan for the site, reflecting the Agency's commitment to safe, healthy communities and environmental protection. Community engagement and public outreach are core components of EPA program activities. EPA has conducted a range of community involvement activities to solicit community input and to make sure the public remains informed about site activities throughout the cleanup process. Outreach efforts have included fact sheets, public notices and information meetings. The site also has a Community Advisory Group. The Community Advisory Group has been meeting since the early 2000s. While the site is currently vacant, the community has developed reuse plans. These plans, updated over time in coordination with the site's cleanup, call for recreational and other land uses at the site in the future. The community last updated the site's reuse plan in 2010 (USEPA 2013c).

Environmental Consequences

The project is anticipated to have no environmental effects on public health and safety in the area. Proposed construction activities would not disturb existing contaminated or remediated areas. In addition, sediment testing would be conducted to ensure that suitable, non-contaminated sources for dredge sediments are used during salt marsh creation. The placement of breakwaters and creation of salt marsh habitat at the proposed sites would improve shoreline protection for the area by reducing the energy of waves before they reach the shoreline.

Findings: This proposed project would not impact existing hazardous or contaminated sites adjacent to the project area or public health. There would be long term, moderate beneficial impacts to shoreline protection.

12.8.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Living Shorelines for Reef Development and Salt Marsh Restoration and Protection in Pensacola, FL (Project Greenshores and Sanders Beach) project implements restoration techniques within Alternatives 2 and 4.

The proposed Florida Pensacola Bay Living Shoreline Project is intended to employ living shoreline techniques that utilize natural and/or artificial breakwater material to reduce shoreline erosion and provide habitat at sites within Pensacola Bay, Florida. Combining these objectives, this project would create reefs to reduce wave energy, increase benthic secondary productivity, and create salt marsh habitat. Proposed activities include completing and expanding an existing breakwater at the Project GreenShores Site II, constructing approximately 2,400 feet of breakwater at the Sanders Beach site, and creating salt marsh habitat at both sites. In total, approximately 18.8 acres of salt marsh habitat and 4 acres of reefs would be constructed. The project is consistent with Alternative 2 (Contribute to Restoring Habitats and Living Coastal and Marine Resources) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would provide long-term benefits by creation of approximately 18.8 acre of salt marsh, and approximately 4 acres of reefs. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

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12.9 Florida Seagrass Recovery Project: Project Description

12.9.1 Project Summary

The proposed Florida Seagrass Recovery project will address boat damage to shallow seagrass beds in the Florida panhandle by restoring scars located primarily in turtle grass (Thalassia testudinum) habitats located in St. Joseph Bay Aquatic Preserve in Gulf County, with additional potential sites in Alligator Harbor Aquatic Preserve in Franklin County, and St. Andrews Aquatic Preserve, in Bay County. A boater outreach and education component of the project will install non-regulatory Shallow Seagrass Area signage, update existing signage and buoys where applicable, and install educational signage and provide educational brochures about best practices for protecting seagrass habitats at popular boat ramps in St. Joseph Bay, Alligator Harbor, and St. Andrews Bay. The total estimated cost for this project is $2,691,867.

12.9.2 Background and Project Description

The Trustees propose to address boat damage to shallow seagrass beds in the Florida panhandle by restoring scars located primarily in turtle grass (*Thalassia testudinum)* habitats. Scars are made when boat propellers cut up roots, stems, and leaves of seagrasses, producing long, narrow furrows devoid of vegetation. Turtle grass is a commonly-found species of submerged aquatic vegetation (SAV) in the panhandle that is particularly slow to rejuvenate naturally when injured. Turtle grass with propeller damage can take many years to rejuvenate, or in severely scarred areas may never completely recover.

The project will primarily be located in St. Joseph Bay Aquatic Preserve in Gulf County, with additional potential sites in Alligator Harbor Aquatic Preserve in Franklin County, and St. Andrews Aquatic Preserve, in Bay County (see Figure 12-13 for project location). These three Aquatic Preserves contain critical turtle grass habitat that, if not restored, will continue to erode and destroy more of the healthy habitat surrounding the injured areas

The objective of the proposed Florida Seagrass Recovery project is to restore submerged aquatic vegetation by addressing boat scars in aquatic preserves. The restoration work proposed includes surveying and mapping scarring within the seagrass habitats in the three Aquatic Preserves. Additionally, sediment tubes will then be manufactured, filled with local fine grain sediment, and deployed in approximately 2 acres of seagrass propeller scars. The tubes, which are made of biodegradable cotton fabric filled with sediment, would then be placed into propeller scars to enhance seagrass recovery by raising the propeller scar elevation to ambient grade with clean sediment of appropriate grain size, thereby offering suitable habitat for seagrass recruitment. Seagrass planting units would be installed in the sediment tubes after a 90-day curing period if necessary. This restoration would be facilitated by placing bird stakes in the restoration project area. The stakes would attract birds who then would supply natural fertilizer to the restoration area in the form of feces, which are rich in phosphorus and nitrogen.

Finally, a boater outreach and education component of the project would install non-regulatory *Shallow Seagrass Area* signage, update existing signage and buoys where applicable, and install educational signage and provide educational brochures about best practices for protecting seagrass habitats at popular boat ramps in St. Joseph Bay, Alligator Harbor, and St. Andrews Bay.

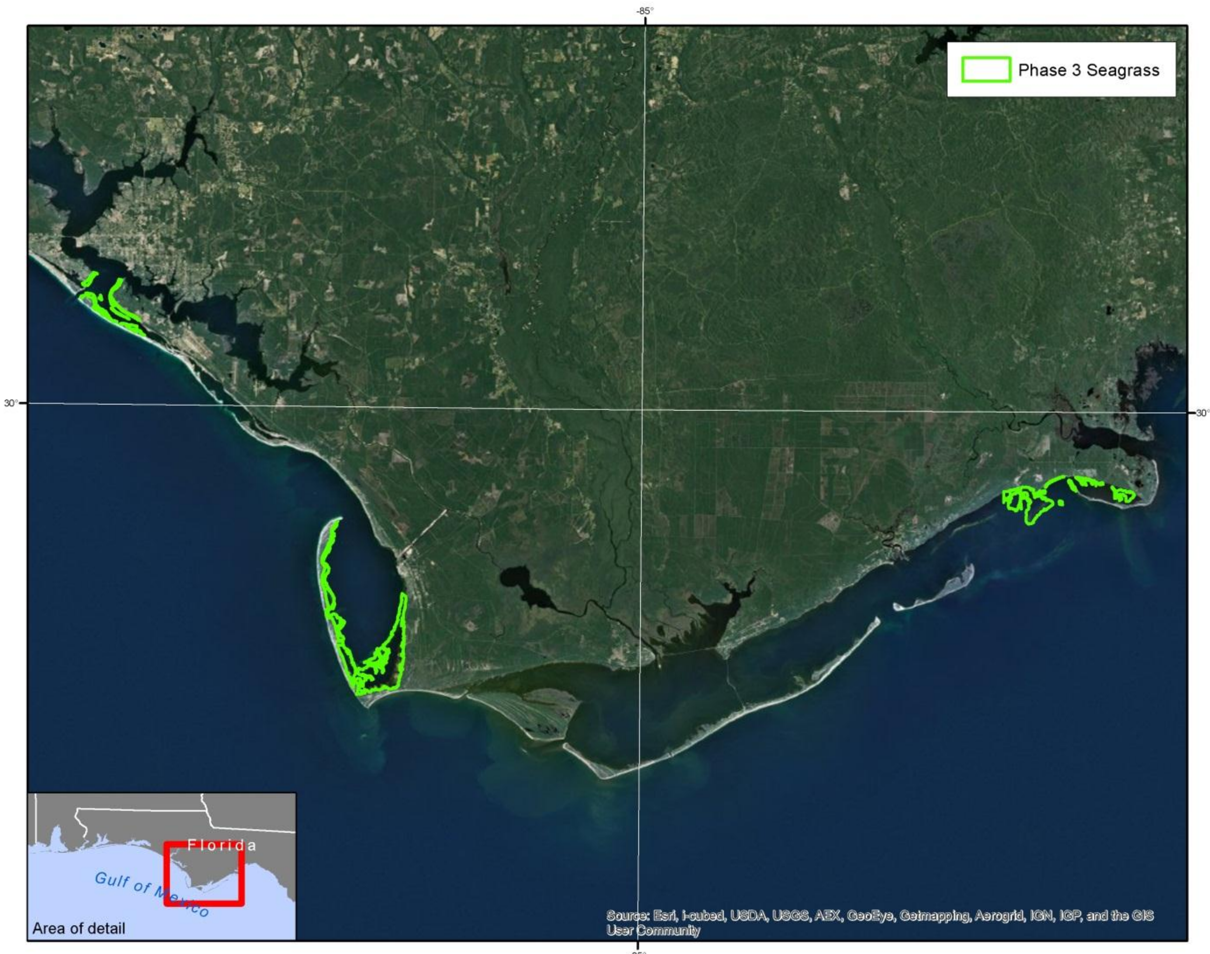

Figure 12-13. Location of envisioned Florida Seagrass Recovery Project.

12.9.3 Evaluation Criteria

This proposed project satisfies the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and response activities, submerged aquatic vegetation in the Florida Panhandle suffered adverse impacts. The project seeks to restore injured submerged aquatic vegetation. The ecological benefits that would be gained by this restoration project are anticipated to help compensate the public for Spill-related injuries and losses to submerged aquatic vegetation. Thus, nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results. Florida agencies have successfully completed projects of similar scope throughout Florida over many years. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Furthermore, the cost estimates are based on similar past projects, therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. This project is consistent with all three Aquatic Preserve management plans which are approved by the State of Florida. Therefore, this project is consistent with the long-term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

Many ecological projects, including ones similar to this project, were submitted as a restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Florida Seagrass Recovery Project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.9.4 Performance Criteria, Monitoring and Maintenance

As part of the project costs, monitoring would be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria would be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objective, which is to restore injured submerged aquatic vegetation. Specific success criteria includes: the creation of new submerged aquatic vegetation in previously scarred areas that meets project design criteria and is sustained for the expected life of the project.

Post construction performance monitoring would initially focus on plant survival and revegetation of the existing scars. This monitoring may include collection of habitat information such as the depth of the scar at different points in time, and percent vegetative cover of the scar. Additional information collected may include utilization and integrity of the bird stakes over time and nature and extent of any subsequent seagrass habitat scaring in areas where the new non-regulatory buoys are placed.

Pre- and post-project monitoring could compare restoration progress in both control and study areas. Changes in the number, length, and cover of propeller scars would be determined in large replicate photograph plots within each study area. Aerial photography may be performed annually, in late summer. Data layers would be created using ArcMap to determine the increase or decrease in scar number, length, and area over time.

Field surveys would be performed biannually in the early spring and late summer to monitor the progress of the restoration activities. Methods designed to measure percent-cover and shoot counts would be used to compare recovery rates of prop scars located within treated and untreated locations of the project area. Permanent (fixed) transects would be incorporated into the study in order to monitor changes in the number of untreated prop scars. Underwater photographs and video may also be taken to document site characteristics prior to and following restoration efforts.

The Aquatic Preserve staff at each potential location would be responsible for maintenance of the project after the initial 3 year monitoring of the project

12.9.5 Offsets

For the purposes of negotiations of Offsets with BP in accordance with the Framework Agreement, the Trustees used Habitat Equivalency Analysis to estimate appropriate Offsets for the Florida Seagrass Recovery Project. Habitat Offsets (expressed in DSAYs) were estimated for seagrass/submerged aquatic vegetationhabitat enhanced by this restoration, based on the expected spatial extent, duration and degree of improvements attributable to the project. In estimating DSAYs, the Trustees considered a number of factors, including, but not limited to, benefits of restoring seagrass habitat, the time period that it would take for restored habitat to provide different levels of ecological benefits, and estimated project life. The Trustees and BP agreed that if this restoration is selected for implementation, BP would receive Offsets of 17 DSAYs of submerged aquatic vegetation habitat in Florida, applicable to injuries to submerged aquatic vegetation habitat in Florida, as determined by the Trustees' total assessment of injury for the Spill.

In the event that the injury determination for submerged aquatic vegetation habitat in Florida is quantified in the Natural Resource Damages Assessment using a metric other than DSAYs of submerged aquatic vegetation habitat in Florida, the Trustees agree to translate the agreed upon NRD Offsets into a currency consistent with the metric used to characterize the injury to submerged aquatic vegetation habitat in Florida. Any necessary translation of the Offsets will rely on the data and methods developed for the assessment and authorized in 15 C.F.R. Sections 990, *et seq.*

These Offsets are reasonable for this resource and project.

12.9.6 Cost

The total estimated cost to implement this project is $2,691,867. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

12.10 Florida Seagrass Recovery Project: Environmental Review

The purpose of this project is to address boat damage to shallow seagrass beds in the Gulf of Mexico on the Florida panhandle by restoring propeller scars located primarily in turtlegrass (*Thalassia testudinum*) habitats. The goal of this project is to provide Early Restoration for seagrass habitat that was injured as a result of the *Deepwater Horizon* accident and oil spill response, as well as other activities. The recovery program and boater outreach would restore approximately 2 acres of propeller-scarred seagrass habitat in three designated Florida Aquatic Preserves.

12.10.1 Introduction and Background

The proposed project would address boat damage to shallow seagrass beds in the coastal Florida panhandle region by restoring propeller scars located in turtlegrass habitats. Scars are made when boat propellers cut up roots, stems, and leaves of seagrasses, producing long, narrow furrows devoid of vegetation. Turtlegrass is a commonly found species of submerged aquatic vegetation (SAV) in the panhandle that is particularly slow to rejuvenate naturally when injured. Turtlegrass with propeller damage can take many years to rejuvenate naturally when injured, or in severely scarred areas may never completely recover. The proposed project would primarily be located in St. Joseph Bay Aquatic Preserve, Gulf County. Two additional potential seagrass restoration sites have been identified in St. Andrews Bay Aquatic Preserve, Bay County, and Alligator Harbor Aquatic Preserve in Franklin County, Florida. These three Aquatic Preserves contain critical turtlegrass habitat that, if not restored, will continue to erode and potentially destroy surrounding healthy SAV habitat. Restoring damage to SAV habitat would enhance vital coastal ecosystems and the commercial and recreational industries dependent on them.

12.10.2 Project Location

The proposed project is located in the Gulf of Mexico coastal bays of the Florida panhandle region. Three specific areas are targeted for seagrass restoration: Primarily, St. Joseph Bay Aquatic Preserve, near Port St. Joe, Gulf County; and two additional sites as necessary: Alligator Harbor Aquatic Preserve, near Alligator Point, Franklin County; and St. Andrews Bay Aquatic Preserve, near Panama City, Bay County. Figure 12-14 and Figure 12-15 depict the proposed project areas.

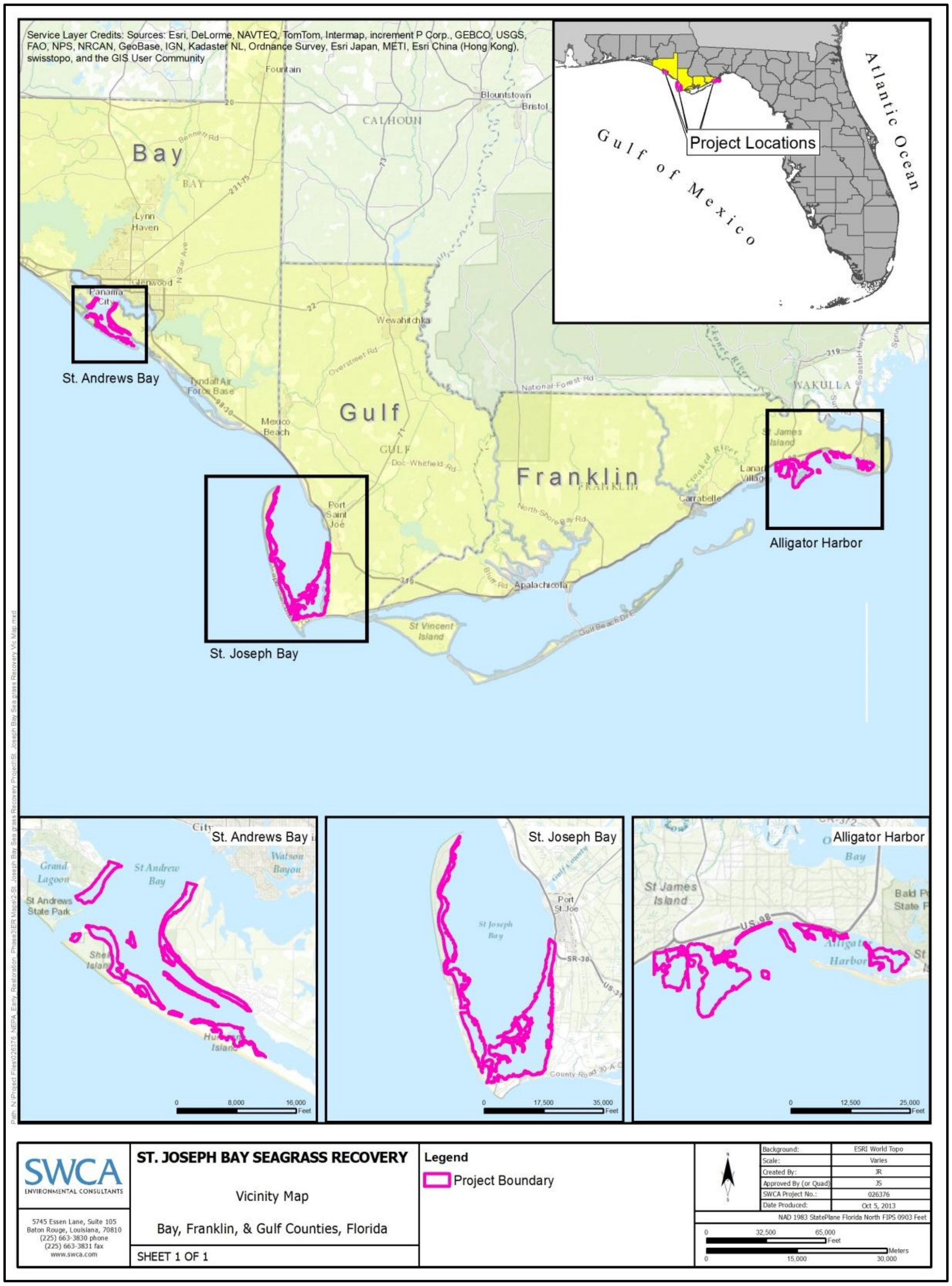

Figure 12-14. A vicinity map of the proposed project areas in Florida Aquatic Preserves in St. Joseph Bay, St. Andrews Bay, and Alligator Harbor.

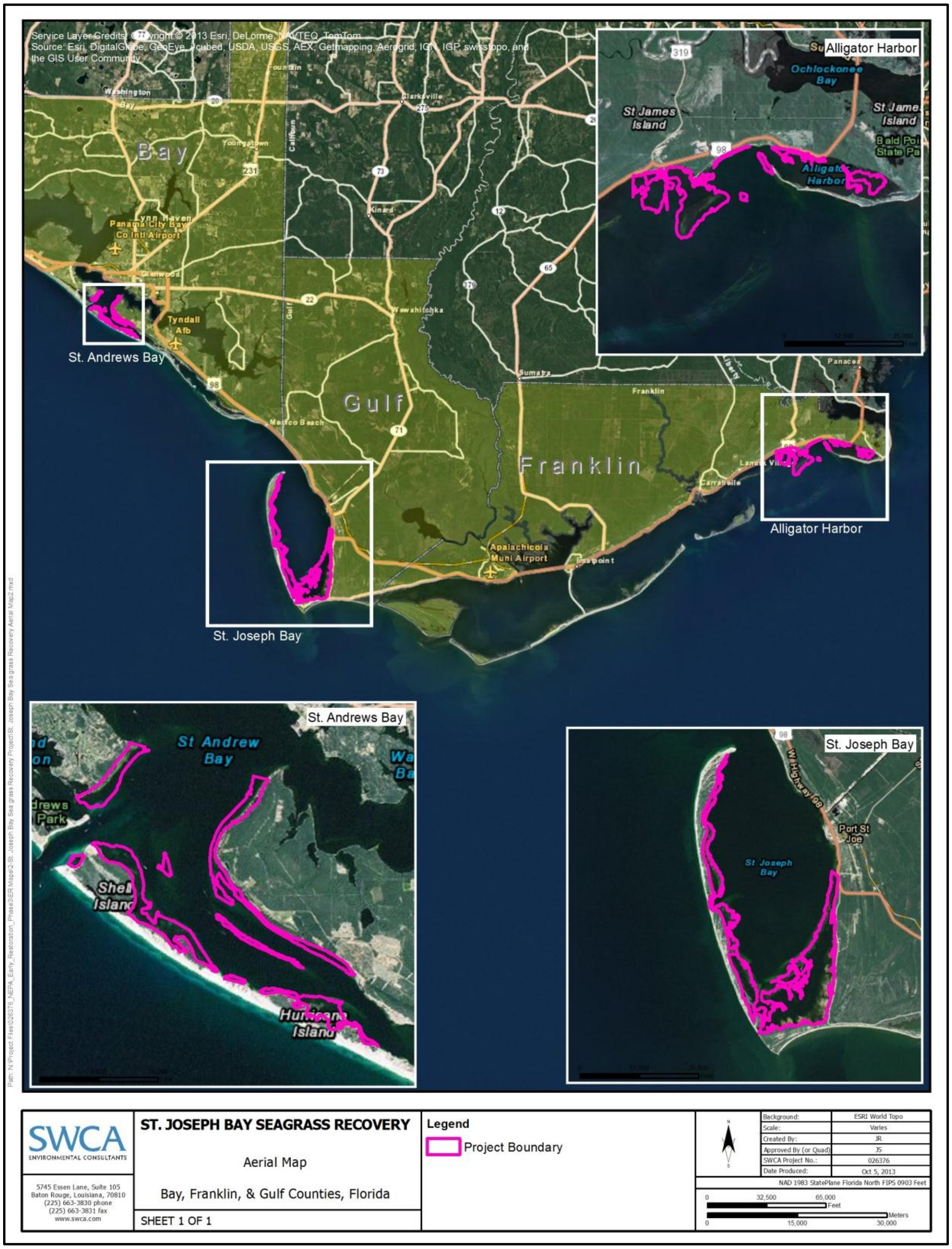

Figure 12-15. Aerial map of the proposed project area in Florida Aquatic Preserves in St. Joseph Bay, St. Andrews Bay, and Alligator Harbor.

12.10.3 Construction and Installation

Proposed project construction and installation would involve three specific tasks: seagrass scar restoration, installation of bird stakes, and boater outreach and education programs. Detailed descriptions of each task are provided below.

12.10.3.1 Task 1: Seagrass Scar Restoration

Seagrass scarring in the three aquatic preserves would be surveyed and mapped. Sediment tubes would be acquired; filled with clean, local, appropriate sediment; and deployed in approximately 2 acres of seagrass propeller scars. The tubes are made of biodegradable cotton fabric filled with sediment, and would be placed into propeller scars to enhance seagrass recovery. The sediment tubes would raise the propeller scar elevation to ambient grade with clean, compatible sediment of appropriate grain size, thereby offering suitable habitat for natural seagrass recruitment into the damaged area. Sediment samples would be taken from the project area and analyzed prior to filling of the sediment tubes. Sediment that matches the profile of existing sediment would be acquired to fill the tubes. The sediment tubes would be filled on land with both hand-held and mechanical equipment, loaded onto vessels by mechanical equipment, and transported by vessel (such as pontoon boats) to the propeller scar locations in a manner that would avoid and minimize damage to existing seagrass habitat. Planting units would be installed in the sediment tubes if required after a 90-day curing period. Non-regulatory seagrass signs would be placed around the restoration area to prevent re-injury.

12.10.3.2 Task 2: Installation of Bird Stakes

Seagrass restoration would be facilitated by placing bird stakes in the restoration project area. The stakes would attract perching birds, which then supply natural fertilizer to the restoration area in the form of seabird feces. Bird feces are rich in phosphorus and nitrogen, which enhance seagrass growth.

The proposed bird stakes would be constructed of 1.5-inch-diameter polyvinyl chloride (PVC) pipe or similar material with wooden perches driven 2 to 3 feet into the sediment via hand-held sledgehammers or fencepost drivers from small, shallow draft vessels in such a way as to minimize bottom disturbance. The perches would remain 20 inches above mean high water elevation in water depths of less than or equal to 60 inches. The bird stakes would be installed as needed parallel to each scar. The stakes would be installed within 30 days of placement of sediment tubes, and would be removed upon successful establishment of the restored propeller scar.

12.10.3.3 Task 3: Boater Outreach and Education

The proposed boater outreach and education component of the project includes “shallow water seagrass area” signage (Figure 12-16), updating existing signage and buoys where applicable, and installing educational signage and providing educational brochures (Figure 12-17) about best practices for protecting seagrass habitats at popular boat ramps in St. Joseph Bay, Alligator Harbor, and St. Andrews Bay (Figure 12-15 as an example).

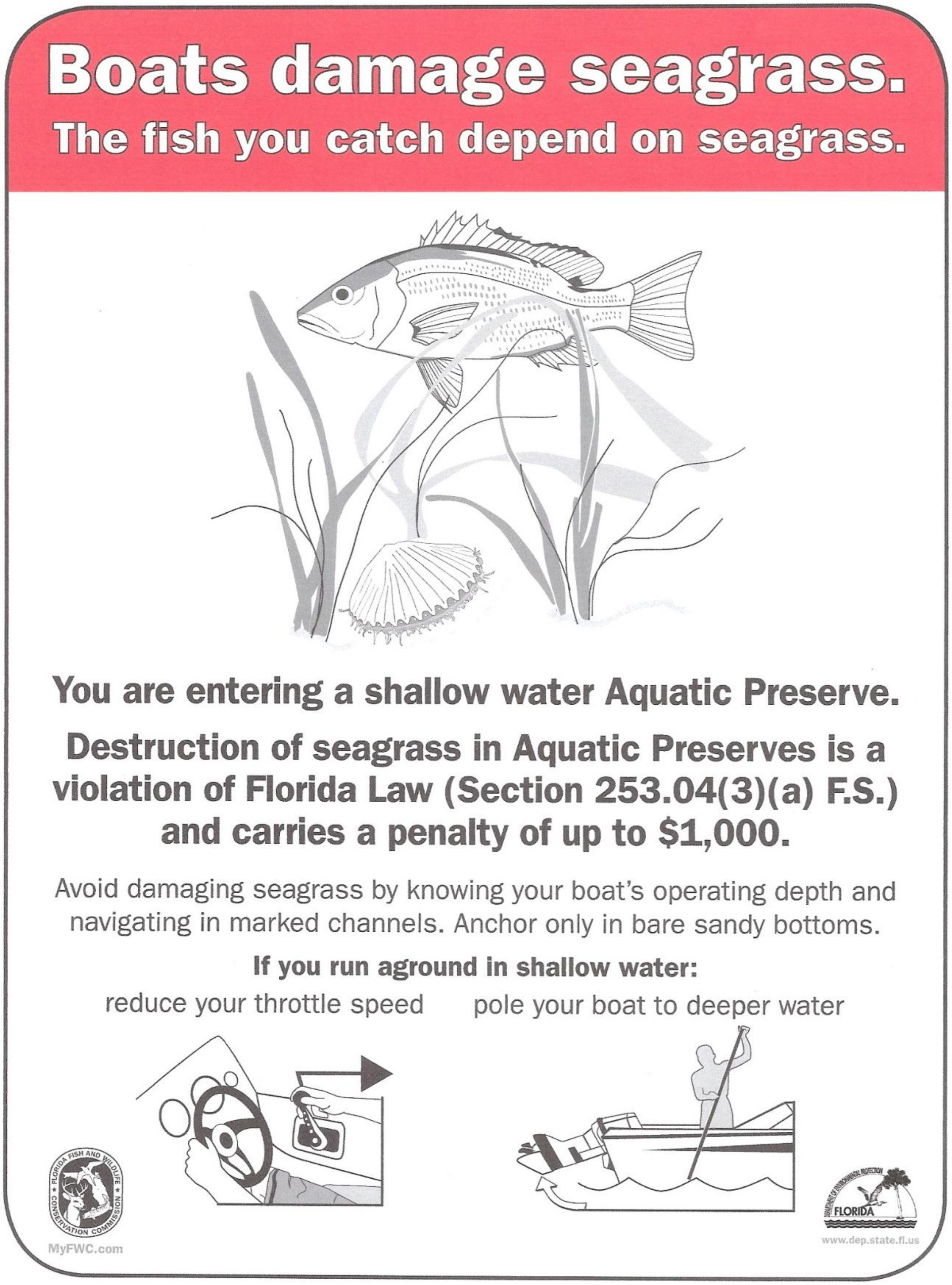

Figure 12-16. Florida Fish and Wildlife Conservation Commission signage 2009–2013.

Figure 12-17. Example Seagrass buoy brochure.

The restoration technique using sediment tubes has been scientifically reviewed and supported by the National Oceanic and Atmospheric Administration (NOAA), Florida Fish and Wildlife Conservation Commission (FWC), and the U.S. Fish and Wildlife Service (USFWS). Proper marking of the restoration areas would warn boaters of the shallow waters to promote recovery of the areas.

12.10.4 Operations and Maintenance

From the point of initiation, the project would be expected to take six months to a year to complete, with the exact start and stop dates being uncertain. This project would incorporate a mix of monitoring efforts to ensure project designs were correctly implemented during construction, and, in a subsequent period defined by contract, where corrective actions could be taken.

Postconstruction performance monitoring would initially focus on plant survival and revegetation of the existing scars. This monitoring may include collection of habitat information such as the depth of the scar at different points in time, and percent vegetative cover of the scar. Additional information collected may include utilization and integrity of the bird stakes over time, and nature and extent of any subsequent seagrass habitat scarring in areas where the new non-regulatory buoys are placed.

Pre- and post-project monitoring could compare restoration progress in both control and study areas. Changes in the number, length, and cover of propeller scars would be determined in large replicate photograph plots in each study area. Aerial photography could be performed annually, in late summer. Data layers would be created using ArcMap to determine the increase or decrease in scar number, length, and area over time.

Field surveys would be performed biannually in the early spring and late summer to monitor the progress of the restoration activities. The criteria for choosing both treated and untreated propeller scars for comparison would require that they do not have statistically significant differences in dimension (length and width), and that they are located in areas that contain similar seagrass densities. Methods designed to measure percent-cover and shoot counts would be used to compare recovery rates of propeller scars located within treated and untreated locations of the project area. Permanent (fixed) transects would be incorporated into the study to monitor changes in the number of untreated propeller scars. Underwater photographs and video would also be taken to document site characteristics prior to and following restoration efforts.

The Florida Department of Environmental Protection (FDEP) Aquatic Preserve staff would be responsible for monitoring and maintenance of the proposed project after the initial 3-year monitoring of the project. Pre- and post-project monitoring would compare restoration progress in both control and study areas. In addition, routine maintenance of signs and buoys would be conducted by FDEP throughout the monitoring period.

12.10.5 Affected Environment and Environmental Consequences

12.10.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.10.5.2 Physical Environment

12.10.5.2.1 Geology and Substrates

Affected Resources

The existing geology and bottom sediments of St. Joseph Bay, St. Andrews Bay, and Alligator Harbor are predominantly sand, sand-silt-clay, sandy clay, and silty clay (Scott 2001). Based on surveys of the St. Andrews Bay Aquatic Preserve seagrass damage assessment conducted by the National Oceanic and Atmospheric Administration (NOAA) in 2012, average propeller scar depths (top of substrate to bottom of scar) range between 2.1 to 16.4 inches. Average area of damage (length × width) ranges between 43 and 5,382 square feet (reference FDEP Permit No. 17-0312090-001-EI). Data to support existing submerged substrate conditions of damaged seagrass habitat for St. Joseph Bay and Alligator Harbor Aquatic Preserves are not presently available. However, the extent of propeller scar damage and sediment characterization can be expected to be similar or greater than those of St. Andrews Bay Aquatic Preserve.

Environmental Consequences

The intent of the restoration project is to restore existing propeller scars by deploying sediment tubes and installing them in a manner that would mimic surrounding elevations and substrate contours in order to provide suitable habitat for seagrass recruitment. This project is expected to cause short-term impacts to existing submerged substrate and seagrass habitat surrounding the propeller scars, due to disturbance during placement of the sediment tubes and installation of the bird stakes. However, tidal circulation within the water column is expected to dilute suspended sediments generated from structure installation. In addition, the overall long-term benefit of reestablishing seagrass habitat in the damaged sites would be improved sediment stabilization once seagrass is established in the restoration areas. The proposed project would encourage proliferation of seagrass rhizomes (root structure) generation from adjacent habitat, thereby stabilizing sediment. Therefore, short-term impacts to existing substrates of the restoration sites and adjacent areas as a result of the proposed construction would be expected to be minor. Long-term adverse effects to existing substrates are not expected as a result of the proposed project.

12.10.5.2.2 Hydrology and Water Quality

Affected Resources

Northwest Florida has seven major watersheds, all of which have been identified as priorities under the Surface Water Management and Improvement (SWIM) program. Water quality protection is the underlying goal of SWIM, along with the preservation and restoration of natural systems and associated public uses and benefits (Northwest Florida Water Management District [NWFWMD] 2011).

St. Joseph Bay is separated from the Gulf of Mexico by St. Joseph Peninsula and is considered the only body of water in the eastern Gulf that is not influenced by freshwater inflows (FDEP 2008). The bay has a surface area of 42,826 acres and connects to the Intracoastal Waterway by the Gulf County Canal (Thorpe 2000).

St. Joseph Bay is part of the St. Andrews Bay watershed system, which includes St. Andrews, West, East, and North Bays; St. Joseph Bay; and Deer Point Reservoir, as well as the respective surface water basins of each of these waterbodies. The waterways are primarily used for transportation, seafood harvesting, recreation, and waste disposal. Broad issues for the St. Andrews Bay system include degradation through point and nonpoint pollution sources, habitat quality that is threatened by and degraded through sedimentation and deposition, and public education and awareness (Thorpe 2000).

These aquatic preserves have good water quality conditions that promote seagrass growth. St. Andrews Bay is an estuary with relatively high salinity due to the low freshwater inflow provided by only a few spring-fed creeks. Alligator Harbor is a shallow estuary and a barrier sand spit lagoon. Because there is little fresh water flowing into the harbor, salinity levels are almost the same as the Gulf of Mexico.

Environmental Consequences

Project installation activities would use best management practices (BMPs) including impact avoidance of existing seagrass habitat through the use of small vessels. The timing of installation would depend on the timing of funding availability and the contract award along with any permit constraints required as a result of listed species considerations. Adverse impacts to hydrology and water quality would be minor, with moderate beneficial impacts expected as a result of restoring seagrass. The intent of the restoration project would be to restore existing propeller scars by deploying sediment tubes and installing them in a manner that would mimic surrounding elevations and substrate contours to provide suitable habitat for seagrass recruitment. Short-term turbidity levels above background could result from sediment tube placement. However, tidal current is expected to dilute suspended sediments. Once planting units are installed and seagrass colonization occurs in the restoration areas, ambient water-quality parameters would be expected to improve by providing enhanced water column filtration and nutrient uptake. Long-term adverse effects to water quality would not be expected as a result of the proposed project. Short- and long-term adverse effects to the hydrology of the proposed project areas as a result of sediment tube placement and installation of the bird stakes would be expected to be minor.

In-water work would require authorization from the USACE. The NOAA Restoration Center applied for and secured USACE Permit No. SAJ-2012-01546 (SP-SWA) on January 9, 2013, to construct the project in St.

Andrews Bay, as well as other authorized waterbodies. However, USACE Permit No. SAJ-2012-01546 (SP-SWA) does not specifically include St. Joseph Bay and Alligator Harbor as authorized waterbodies for which construction is proposed. Therefore, a permit modification to Permit No. SAJ-2012-01546 or procurement of a separate USACE permit may be necessary prior to construction to allow the proposed activity in St. Joseph Bay and Alligator Harbor. The existing USACE will expire December 20, 2017. No in-water work would be conducted until all permits, authorizations, or amendments were issued by USACE for the work.

12.10.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

The Clean Air Act (CAA) requires that the Environmental Protection Agency (EPA) set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS have been set for six common air pollutants (also known as criteria pollutants), consisting of particle pollution or particulate matter, ozone, carbon monoxide, sulfur dioxide (SO_2), nitrogen dioxide, and lead. Particulate matter is defined as fine particulates with a diameter of 10 micrometers or less (PM_{10}), and fine particulates with a diameter of 2.5 or less ($PM_{2.5}$). When a designated air quality area or airshed in a state exceeds the NAAQS, that area may be designated as a “nonattainment” area. Areas with levels of pollutants below the health-based standard are designated as “attainment” areas. To determine whether an area meets the NAAQS, air monitoring networks have been established and are used to measure ambient air quality. The EPA also regulates 187 hazardous air pollutants (HAPs) that are known or suspected to cause cancer or other serious health effects. Air quality in the Florida panhandle is in attainment with the NAAQs (EPA 2013).

Greenhouse Gasses

Gases that trap heat in the air are called greenhouse gases (GHGs). The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_x), and fluorinated gases. Over the past century, human activities have released large amounts of GHGs into the atmosphere, which are contributing to global warming. Global warming is defined as the ongoing rise in global average temperature near the Earth’s surface and is known to cause changes in climate patterns.

According to the EPA, the average annual temperature in the southeast portion of the United States has increased by approximately 2.0 degree Fahrenheit (°F) since 1970. Winters, in particular, are getting warmer, and the average number of freezing days has decreased by 4 to 7 days per year since the mid-1970s. Most areas are getting wetter; autumn precipitation has increased by 30% since 1901 (EPA 2013b). In many parts of the region, the number of heavy downpours has increased. Despite the increases in fall precipitation, the area affected by moderate and severe drought has increased since the mid-1970s (EPA 2013b).

Average annual temperatures in the region are projected to increase from 4°F to 9°F by 2080. Hurricane-related rainfall is projected to continue to increase. Models suggest that rainfall will arrive in heavier downpours, with increased dry periods between storms. These changes would increase the risk of both flooding and drought. The coasts will likely experience stronger hurricanes and sea level rise. Storm surge could present problems for coastal communities and ecosystems (EPA 2013b).

Total GHG emissions in Florida from 1990 to 2007 have increased at an average rate of 2.1% per year. Total GHG emissions in 2007 were 290 million metric tons of CO_2 equivalent ($MMTCO_2E$). In 2007, 91% of GHG emissions in Florida were CO_2 emissions (FDEP 2010).

Environmental Consequences

Project implementation would require little use of heavy mechanized equipment, which would lead to temporary air pollution (e.g., criteria pollutants, HAPs, GHGs) due to emissions from the operation of construction vehicles and equipment. Therefore, any air quality impacts that occurred would be minor due to their localized nature and short-term duration as well as the small size of the project. Available BMPs would be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality-related permits would be required.

A boat, truck, and hand tools would be the only construction equipment necessary for the proposed project. The boat and pickup truck would be the only equipment likely to emit GHG emissions; GHG emissions from the remaining equipment would be negligible. Using the operating assumption of 8 hours per day and 5 days per week for 6–7 months, GHG emissions from the boat and pickup truck have been estimated (Table 12-10).

Table 12-10. GHG emissions.

EQUIPMENT[1]	NUMBER OF 8-HOUR DAYS	CO_2 (METRIC TONS)[2]	CH_4 (CO_2E) (METRIC TONS)[3]	NO_X (CO_2E) (METRIC TONS)	TOTAL CO_2E (METRIC TONS)
Boat	210	1.365	0.042	0.546	1.953
Pickup Truck	180	1.98	0.63	7.92	10.53
TOTAL		**3.345**	**0.672**	**8.466**	**12.483**

[1] Emissions assumptions for all equipment are based on 8 hours of operation.
[2] CO_2 emissions assumptions for diesel and gasoline engines are based on EPA 2009.
[3] CH_4 and NO_x emissions assumptions and CO_2e calculations are based on EPA 2011.
[4] Emissions assumptions 0for an 8-cylinder, 6.2-liter gasoline engine Ford F150 pickup based on DOE 2013 and 18-gallon (half-tank) daily fuel consumption.

At the completion of the project, there may be an increase in recreational activity in the project area waters that would be enhanced as a result of improved fishing and bird-watching opportunities from improved seagrass habitat conditions. Increased exhaust emissions could affect air quality over the long term. However, adverse impacts to air quality are expected to be minor because management actions could be taken to limit boat use.

12.10.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted sound and noise levels, and its effects are interpreted in relation to effects on nearby visitors to the recreational areas and wildlife in the project vicinity. The Noise Control Act of 1972 (42 USC 4901–4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale that approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 12-11 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Table 12-11. Common noise levels.

NOISE SOURCE OR EFFECT	SOUND LEVEL (DBA)
Rock-and-roll band	110
Truck at 50 feet	80
Gas lawnmower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Source: Adapted from U.S. Department of Energy and Bonneville Power Administration (1986).

Noise levels in the project areas vary depending on the season, time of day, number and types of noise sources, and distance from noise sources. Existing sources of noise in the project areas are mainly from recreational boating, with occasional overhead aircraft or commercial traffic. Ambient natural sounds such as wind, waves, and wildlife also contribute to existing noise levels. Existing ambient noise levels in the three Aquatic Preserves are generally low and predominantly result from daily boating activities.

Noise-sensitive receptors include sensitive land uses as well as individuals and/or wildlife that could be affected by changes in noise sources or levels due to the proposed project. Noise-sensitive receptors in the project vicinities include beach and park recreational use and wildlife. The project areas are, for the most part, remotely located.

Environmental Consequences

Instances of increased noise would be expected during the material delivery and construction phases associated with the restoration project. The proposed project would generate construction noise associated with equipment used to fill the sediment tubes, loading the tubes onto watercraft used for transport to restoration sites, navigational transport of sediment tubes to each restoration site, and installation of bird stakes and buoy placement. In the short term, machinery and equipment used during construction to deliver material and construct the sediment tubes would generate noise, which may disturb wildlife and humans using the area. These noise levels would be kept to a minimum via BMPs such as turning boats off during idling, and working only during daylight hours. Noise generated from outboard motors and vessel maneuvering to transport and install the sediment tubes and bird stakes at the restoration sites would be no more than that generated by existing recreational watercraft in the project area. Noise from project installation would be comparable to ambient noise levels at the restoration sites. However, installation of bird stakes using hand-held devices would create noise and/or vibration that may expand the extent of effects on wildlife. Adverse impacts from noise during the construction phase would be temporary, located in relatively remote areas, and minor relative to anticipated levels and exposure. Once built, the proposed project would not cause long-term noise impacts.

12.10.5.3 Biological Environment

12.10.5.3.1 Living Coastal and Marine Resources

Vegetation

Affected Resources

The three project areas are designated by the State of Florida as Aquatic Preserves for their known natural resources occurrences and regional ecological significance. Seagrass communities characterize the SAV of the three project areas. In addition, the adjacent shorelines in proposed project locations include a mix of saltmarsh and sandy beach habitat.

The seagrass communities of St. Joseph Bay, St. Andrews Bay, and Alligator Harbor are dominated by turtlegrass, which is the target restoration species for the project. Shoal grass (*Halodule wrightii*) and manatee grass (*Syringodium filiforme*) are interspersed in the seagrass communities, depending on the project area.

Seagrass communities are essential breeding, rearing, and feeding grounds for many important recreational and commercial fisheries as well as wildlife, including the endangered West Indian manatee (*Trichechus manatus latirostris*) as well as various species of sea turtles. Shallow seagrass habitat in the three Aquatic Preserves was damaged by watercraft propeller scars during the *Deepwater Horizon* oil spill response period. Based on previous surveys of the seagrass communities of the project area, approximately 2 acres of propeller scars were reported. The scar areas are located in generally shallow, estuarine/marine waters, approximately 2–6 feet deep, which is a factor in the original scarring and would contribute to the heavy reliance on shallow draft boats and manual placement of the sediment tubes, bird stakes, signage, and buoys for the proposed project.

Environmental Consequences

If not restored, the damaged seagrass habitat would continue to erode and destroy more of the healthy habitat surrounding the injured areas. During installation of the sediment tubes, short-term potential impacts would be expected and would include temporary damage to seagrass surrounding the propeller scars as a result of watercraft access to the restoration sites, placement of the sediment tubes, and trampling during restoration. Every effort would be made to access the restoration sites during periods of high tide using shallow draft vessels to minimize potential adverse impacts to seagrass habitat as a result of navigation. Therefore, impacts to seagrass would be short term and minor. The long-term benefits of the seagrass recovery effort would outweigh potential short-term adverse effects, and include restoration of this community type, water quality enhancement, protection of the resource using buoy markers to discourage vessel entry, or encourage idle speed, and increased habitat for commercial and recreational fisheries.

The FDEP would require permits and impose reasonable conditions as are necessary to ensure that construction would comply with the provisions of Chapter 62-346.050 (3) of the Florida Administrative Code (FAC), which states in part that dredging and filling in, on, or over surface waters of the state remains subject to the requirements of FAC Chapter 62–312, including the need to obtain a separate permit under that chapter until the effective date of the rules adopted under Section 373.4145(1)(b), Florida Statutes (FS). The FDEP permit also grants state-owned Submerged Lands Authorization from the Board of Trustees of the Internal Improvement Trust Fund, pursuant to Article X, Section 11 of the Florida Constitution, and Section 253.77, F.S., and Chapter 258, F.S.

On August 17, 2012, the NOAA Restoration Center secured FDEP Environmental Resource Permit No. 17-0312090-001-EI to construct the project in St. Andrews Bay as well as at other authorized waterbodies. However, FDEP Permit No. 17-0312090-001-EI authorizes the proposed activity in St. Andrews Bay and does not specifically include St. Joseph Bay and Alligator Harbor as authorized waterbodies for which construction is proposed and the permit was issued to NOAA. Therefore, a permit modification to FDEP Permit No. 17-0312090-001-EI or a procurement of separate FDEP permit may be necessary to allow the proposed activity in St. Joseph Bay and Alligator Harbor. The existing FDEP permit will expire August 17, 2017.

12.10.5.4 Wildlife Habitat

Affected Resources

The three Aquatic Preserves provide crucial nursery and forage habitat for many commercial and recreational fisheries and wildlife, including marine and estuarine invertebrates, wading birds (herons and egrets), and birds of prey that feed on juvenile and adult fish (FDEP 2008). The most common resident marsh and wading birds are great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), tricolored egret (*Egretta tricolor)* yellow-crowned night heron (*Nyctanassa violacea*), and black-crowned night heron (*Nycticorax nycticorax*). Urban and open vacant land adjacent to the project area may serve as a refuge and staging area for many passerine birds during migration, and large concentrations of shorebirds are sometimes observed feeding in the mudflats. Protected wildlife (such as sea turtles, porpoises, and manatee, discussed in detail below) also forage on or within seagrass communities at the project sites.

St. Joseph Bay is a designated Important Bird Area of more than 8,500 acres made up of several parcels: Black's Island, Eglin Air Force Base Test Site, Palm Point, St. Joseph Bay Buffer, T.H. Stone Memorial, and St. Joseph Peninsula State Park and all provide important habitats for breeding and wintering migratory birds. No terrestrial wildlife (non-bird) surveys have been conducted in the project area; however, based on the types of habitat present, and because of its size, elevation, and location, it would be expected that ruderal species such as raccoon (*Procyon lotor*), opossum (*Didelphimorphia*), gray squirrel (*Sciurus carolinensis*), and other non-game mammals may be present in upland areas in the project area.

12.10.5.5 Marine and Estuarine Fauna (Fish, Shell Beds, and Benthic Organisms)

Affected Resources

A number of aquatic species are found in the project area. Fish species are abundant and include sea trout (*Salmo trutta*), redfish (*Sciaenops ocellatus*), searobins (*Triglidae*), flounders (*Paralichthys*), porgys (*Sparidae*), and a host of other estuarine and juvenile marine fish (FDEP 2008). Benthic organisms such as bivalves, gastropods and other mollusks, anemones, amphipods, annelids, crustaceans, and echinoderms are also abundant in these waters.

Environmental Consequences

The proposed project would likely result in short-term minor impacts due to placement of the sediment tubes into propeller scars where invertebrates or sessile organisms may have established themselves and be present. Small fish that may seek protection in the scars are highly mobile and would be displaced to more suitable habitat in the project area. In addition, sessile invertebrates occupying the submerged substrate and fish may be disturbed or displaced in the short term from areas where bird stakes and identification buoys would be placed. However, these species are typically numerous in Gulf of Mexico waters and typically recolonize quickly.

The proposed project would result in long-term benefits to marine and estuarine fauna by providing additional fish habitat, increased benthic productivity, and enhanced recruitment and production of fish and crustaceans. Restoration of the seagrass habitat would benefit numerous aquatic species, including but not limited to blue crab (*Callinectes sapidus*), bay scallop (*Aquipecten irradians*), red drum (*Sciaenops ocellatus*), and speckled sea trout (*Cynoscion nebulosus*). Over the life of the project, the quality of the aquatic habitat would increase. The overall benefits to marine habitats that would result from seagrass restoration would outweigh potential short-term impacts to these species and their habitats.

12.10.5.6 Protected Species

Affected Resources

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act (Table 12-12), migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA). The federally listed threatened and endangered species reported for the three Aquatic Preserve project areas in Bay, Franklin, and Gulf Counties include five species of sea turtles, the West Indian manatee, the piping plover, the proposed red knot, and the Gulf sturgeon (USFWS 2013a) (Table 12-12). State-listed species reported to occur in the St. Joseph Bay, St. Andrews Bay, and Alligator Harbor Aquatic Preserves are addressed below.

Table 12-12. Federal and State protected threatened, endangered, and candidate wildlife species that may occur within the project area.

RESOURCE CATEGORY	COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Reptile	Green turtle	*Chelonia mydas*	E	E	• Terrestrial: sandy beaches; nesting **habitat present**
Reptile	Hawksbill turtle	*Eretmochelys imbricata imbricata*	E	E	• Marine: open water; nesting **habitat present**
Reptile	Kemp's ridley turtle	*Lepidochelys kempii*	E	E	• Terrestrial: sandy beaches; nesting **habitat present**
Reptile	Leatherback turtle	*Dermochelys coriacea*	E	E	• Terrestrial: sandy beaches; nesting **habitat present**
Reptile	Loggerhead turtle	*Caretta caretta*	T (PCH)	T	• Terrestrial: sandy beaches; nesting **habitat present**
Mammal	West Indian manatee	*Trichechus manatus latirostris*	E	E	• Estuarine: submerged vegetation, open water • Marine: open water, submerged vegetation • Riverine: alluvial stream, blackwater stream, spring-run stream **habitat present**
Fish	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T (CH)	T	• Estuarine: various • Marine: various habitats • Riverine: alluvial and blackwater streams **habitat present**
Bird	Southeastern kestrel	*Falco sparverius paulus*	MBTA	T	• Estuarine: various habitats • Palustrine: various habitats • Terrestrial: open pine forests, clearings, ruderal, various **Potential habitat present**
Bird	Southeastern snowy plover	*Charadrius alexandrinus tenuirostris*	MBTA	T	• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas **Potential habitat present**
Bird	Red knot	*Calidris canutus*	P		• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants **Potential habitat present**
Bird	Wood stork	*Mycteria americana*	E	E	• Estuarine: marshes • Lacustrine: floodplain lakes, marshes (feeding), various • Palustrine: marshes, swamps, various **Potential habitat present**

Sea Turtles and Marine Mammals

Five species of endangered or threatened sea turtles may occur or have potential to occur in the project areas. These are the green turtle, hawksbill turtle, Kemp's ridley turtle, leatherback turtle, and loggerhead turtle. Sea turtles forage in the waters of the coastal Florida panhandle region and are likely to occur in the project areas.

The endangered West Indian manatee has the potential to occur in project area waters and seek out shallow seagrass areas as preferred feeding habitat, and it is known to occur in the St. Andrews and St. Joseph Bay aquatic preserves (FDEP 2008, 2012)..

Gulf Sturgeon and Gulf Sturgeon Critical Habitat

Gulf sturgeon are restricted to the Gulf of Mexico and its drainages, occurring primarily from the Pearl River in Louisiana to the Suwannee River, in Florida (NMFS 2009). Adult fish reside in rivers for 8 to 9 months each year and in estuarine or Gulf of Mexico waters during the 3 to 4 cooler months of each year (NMFS 2009). Important marine habitats include seagrass beds with sand and mud substrates (Mason and Clugston 1993).

Gulf sturgeon critical habitat was jointly designated by the NMFS and USFWS on April 18, 2003 (50 Code of Federal Regulations [C.F.R.] 226.214). The proposed project area is located within the Florida Nearshore Gulf of Mexico Critical Habitat Unit 11, which contains winter feeding and migration habitat for Gulf sturgeon. Critical habitat was designated based on seven primary constituent elements essential for its conservation, as defined in the 2003 *Federal Register*.

These seven elements are listed below. Within the project area PCEs 1, 5, 6, and 7 are present in the project area.

1. Abundant food items such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages; and abundant prey items such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks and/or crustaceans, within estuarine and marine habitats and substrates for subadult and adult life stages.
2. Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay.
3. Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, and generally but not always located in holes below normal riverbed depths, believed necessary for minimizing energy expenditures during fresh water residency and possibly for osmoregulatory functions.
4. A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of fresh water discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging.
5. Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages.
6. Sediment quality, including texture and chemical characteristics necessary for normal behavior, growth, and viability of all life stages.
7. Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage).

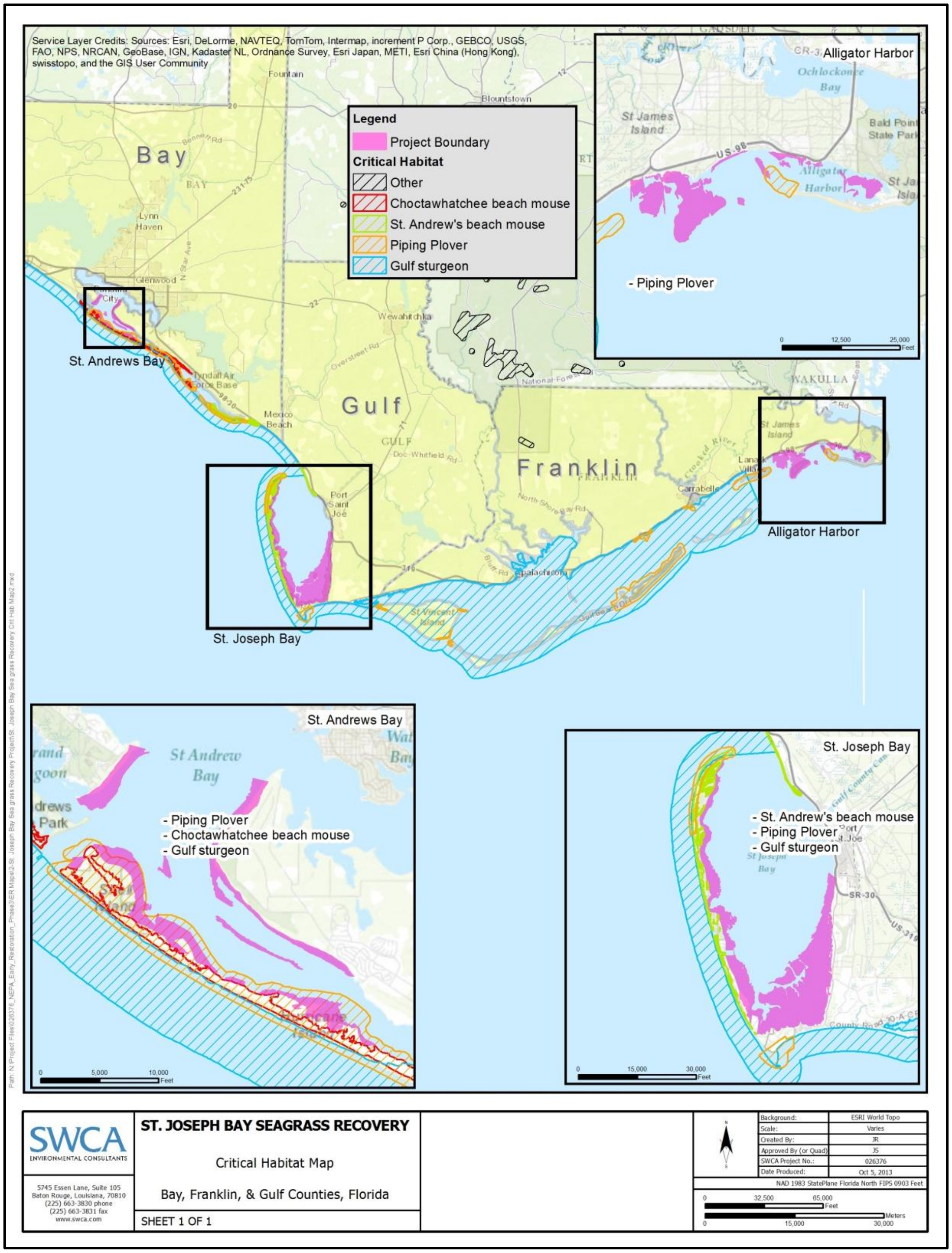

Figure 12-18. Critical habitat.

Essential Fish Habitat (EFH)

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum, brown shrimp, pink shrimp, and white shrimp. There are no marine components of EFH in the vicinity of the project site.

The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. Table 12-13 provides a list of the species that NMFS manages under the federally Implemented Fishery Management Plan in the vicinity of the in St. Joseph Bay Aquatic Preserve in Gulf County, and additional potential sites in Alligator Harbor Aquatic Preserve in Franklin County, and St. Andrews Aquatic Preserve, in Bay County.

Table 12-13. List of species managed by NMFS in vicinity of the project study area (NMFS EFH mapper, 2013).

MANAGEMENT UNIT / SPECIES	LIFESTAGE(S) FOUND AT LOCATION	FMP
Red Drum (*Sciaenops ocellatus*)	ALL	Red Drum
Highly Migratory Species		
Atlantic Sharpnose Shark	All	
Blacknose Shark	All	Highly Migratory Species
Blacktip Shark	All	
Bonnethead Shark	All	
Bull Shark	Juvenile	
Finetooth Shark	Juvenile, Adult	
Great Hammerhead Shark	All	
Nurse Shark	Juvenile	
Finetooth Shark (St. Joe and St. Andrew ONLY)	Neonate	
Nurse Shark (St. Joe and St. Andrew ONLY)	Adult	
Sandbar Shark (St. Joe and St. Andrew ONLY)	Adult	
Scalloped Hammerhead Shark (St. Joe and St. Andrew ONLY)	Adult	
Spinner Shark (St. Joe and St. Andrew ONLY)	Neonate, Juvenile	
Lemon Shark (St. Joe and Alligator Harbor ONLY)	Adult	
Lemon Shark (St. Joe ONLY)	Neonate, Juvenile	
Spinner Shark (St. Joe ONLY)	Adult	
Sail Fish (St. Andrews ONLY)	Juvenile	
Tiger Shark (St. Andrews ONLY)	Neonate	
Bull Shark (Alligator Harbor ONLY)	Adult	
Shrimp		
Brown shrimp (*Penaeus aztecus*)		
White shrimp (*Penaeus setiferus*)	ALL	Shrimp
Pink shrimp (*Penaeus duararum*)		
Royal red shrimp (*Pleoticus robustus*)		
Coastal Migratory Pelagics		
King mackerel (*Scomberomorus cavalla*)		
Spanish mackerel (*Scomberomorus maculatus*)		

MANAGEMENT UNIT / SPECIES	LIFESTAGE(S) FOUND AT LOCATION	FMP
Cobia (*Rachycentron canadum*) Dolphin (*Coryphaena hippurus*)	ALL	Coastal Migratory Pelagics
<u>Reef Fish</u> **Balistidae - Triggerfishes** Gray triggerfish (Balistes capriscus) **Carangidae - Jacks** Greater amberjack (Seriola dumerili) Lesser amberjack (Seriola fasciata) Almaco jack (Seriola rivoliana) Banded rudderfish (Seriola zonata) **Labridae - Wrasses** Hogfish (Lachnolaimus maximus) **Lutjanidae - Snappers** Queen snapper (Etelis oculatus) Mutton snapper (Lutjanus analis) Schoolmaster (Lutjanus apodus) Blackfin snapper (Lutjanus buccanella) Red snapper (Lutjanus campechanus) Cubera snapper (Lutjanus cyanopterus) Gray (mangrove) snapper (Lutjanus griseus) Lane snapper (Lutjanus synagris) Wenchman (Pristipomoides aquilonaris) Vermilion snapper (Rhomboplites aurorubens) **Malacanthidae – Tilefishes** Goldface tilefish (Caulolatilus chrysops) Blackline tilefish (Caulolatilus cyanops) Blueline tilefish (Caulolatilus microps) **Serranidae – Groupers** Speckled hind (Epinephelus drummondhayi) Yellowedge grouper (Epinephelus flavolimbatus) Red grouper (Epinephelus morio) Warsaw grouper (Epinephelus nigritus) Snowy grouper (Epinephelus niveatus) Nassau grouper (Epinephelus striatus) Marbled grouper (Epinephelus inermis) Black grouper (Mycteroperca bonaci) Yellowmouth grouper (Mycteroperca interstitialis) Gag (Mycteroperca microlepis) Scamp (Mycteroperca phenax) Yellowfin grouper (Mycteroperca venenosa)	ALL	Reef Fish

Piping Plover
The sandy beaches and shorelines adjacent to the project areas offer suitable foraging and resting habitat for the piping plover during the winter migratory season, and piping plover may forage in the shallow waters of the project area. Natural shorelines in the proposed project vicinity provide suitable winter migration resting habitat for the piping plover. Piping plover wintering habitat includes beaches, mudflats, and sandflats, as well as barrier island beaches and spoil islands (Haig 1992, as cited by USFWS, accessed September 30, 2013). On the Gulf Coast, preferred foraging areas were associated with wider beaches, mudflats, and small inlets (USFWS 2013a). Although no piping plover critical habitat is located in the project areas, critical habitat is located less 2 two miles away from them.

Red Knot
The red knot, a federal proposed species, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate down to specific wintering locations in South America (Niles et al. 2008). Wintering and migrating red knots forage along sandy beaches, tidal mudflats, saltmarshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sand flats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

State-Listed Birds, MBTA and BGEPA
There are numerous birds protected by the MBTA and the State of Florida with potential to occur in and around the seagrass restoration sites. These include the Arctic peregrine falcon (*Falco peregrinus tundrius*), southeastern American kestrel (*Falco sparverius paulus*), Southeastern/Cuban snowy plover (*Charadrius alexandrinus tenuirostris*), piping plover (discussed above), and red knot (discussed above. Both the St. Andrews and the St. Joseph Aquatic Preserves species lists indicate numerous state-listed birds as well as bird species of special concern that are known to occur in the project area.

Bald eagles are known to nest in the vicinity of all three preserves. There are seven known bald eagle nests within 1 mile of project activities in the St. Joseph Aquatic Preserve; there are three within 5 miles of project activities at the Alligator Harbor Aquatic Preserve; and there are 8 bald eagle nests within 1 mile of St. Andrews Aquatic Preserve restoration activities (FWC 2012). The bald eagle feeds on fish and other readily available mammalian and avian species, and is dependent on large, open expanses of water for foraging habitat.

Environmental Consequences
The proposed project restoration activities would restore seagrass habitat that many protected species rely on for forage, refuge, and nursery areas essential for the marine and estuarine ecosystems of the three Aquatic Preserves and nearby Gulf of Mexico waters. The proposed project has been evaluated for potential short- and long-term impacts to state-listed and federally listed threatened and endangered species that may occur in and adjacent to the project areas, based on available suitable habitat and restoration goals. Descriptions of the evaluation for these species are provided below.

Sea Turtles and Marine Mammals
No work would occur in the terrestrial environment where sea turtle nesting may occur; therefore no impacts to sea turtle species in the terrestrial environment would be expected. Short-term disturbances to sea turtles in the aquatic environment would occur as a result of acoustical vibration and noise impacts during sediment tube transport by small draft vessels, outboard engine operation, and hammering effects during installation of the bird stakes (if sea turtles are present). Sea turtles are a highly mobile species and would be expected to move away during in-water activities such as seagrass planting or placement of signs or bird stakes related to seagrass restoration. Additionally, should a sea turtle be encountered during project installation, construction and monitoring crews would allow these species to exit the project vicinity before commencing with construction activities. Therefore, potential impacts or disturbances to listed sea turtles would be short term and minor.

Consultation with the USFWS resulted in the concurrence that the proposed project would have no effect on the five sea turtles or their terrestrial habitats (USFWS 2013). Consultation with NMFS will occur to address the main risk to sea turtles during the implementation of the project would come from boat collisions that could result in harm or mortality. Conservation measures to minimize the risk of collisions would include implementation and adherence to all construction conditions identified in *Sea Turtle and Smalltooth Construction Conditions* (NMFS 2006). The permittee must comply with these conditions, and the Trustees (FDEP and FWC) anticipate that these conservation measures would avoid or minimize impacts to sea turtles from the proposed project. The project would adhere to all applicable federal, state, and local permit conditions for the protection of the five sea turtles and would not be expected to affect the sea turtles during construction.

The proposed project would likely improve or enhance the shallow estuarine habitat and encourage boaters to avoid sensitive areas where sea turtles are present (see Table 12-13, above). Therefore, potential long-term project effects would be considered beneficial and would not be expected to impact sea turtles.

Manatees could be present in project area waters and would potentially seek out the shallow seagrass areas that are their preferred feeding habitat (U.S. Department of the Interior 2011). The main risk to manatees during the execution of the proposed project would be from boat collisions that could result in harm or mortality. Consultation with the USFWS resulted in the concurrence that the proposed project would not likely adversely affect the West Indian manatee (USFWS 2013). Conservation measures used to avoid any risk of impacts to the manatee include the implementation and adherence of the Standard Manatee Conditions for In-Water Work (USFWS 2011). The permittee must comply with these conditions, and the Trustees (FDEP and FWC) anticipate that these conservation measures would avoid or minimize impacts to manatees from the proposed project such that they are short term and minor. The project would adhere to all applicable federal, state, and local permit conditions for the protection of manatees as well.

However, manatee foraging habitat would be expected to improve after seagrass restoration activities are complete, and placement of signage would discourage boaters from entering areas where manatee may be foraging and vulnerable to harm or disturbance. Therefore, there would be long-term, minor benefit to manatee.

Gulf Sturgeon and its Critical Habitat

Gulf sturgeon may be present in the waters in winter and during migratory periods especially. Short-term disturbances may occur as a result of acoustical vibration and noise impacts during sediment tube transport by small draft vessels, outboard engine operation, and hammering effects during installation of the bird stakes. Nonetheless, these disturbances would be short term and minimal.

Section 7 ESA consultation and EFH concurrence would be initiated with NMFS to evaluate potential impacts. The proposed project would likely improve or enhance the shallow estuarine habitat and, therefore, potential long-term project effects are considered beneficial. Therefore, the proposed restoration activities in the project areas are expected to be short term and minor for the Gulf sturgeon and its critical habitat.

Essential Fish Habitat

An EFH assessment will be coordinated through the National Marine Fisheries Service Habitat Conservation Division. If necessary, species specific measures would be recommended by NMFS and would be incorporated into the project construction plan. The project would not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of potential effect during the construction process. The project may result in minor, adverse short term impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans.

Potential impacts to EFH in the proposed locations for the Seagrass restoration project have been assessed. Implementing the project would not result in the creation or conversion of one EFH habitat type to another type, as Seagrass planting is proposed to occur in areas that supported Seagrass prior to propeller scarring. Disturbance to any EFH and species using the Seagrass habitat in areas adjacent to locations where scars would be restored would be minor and short in duration, with risks further mitigated by following identified best management practices during construction. No adverse impacts to other EFH types will result from the proposed restoration techniques. Therefore, the project is not likely to adversely affect EFH.

Piping Plover and Red Knot

The main risk to piping plover and red knot would be from human disturbance during resting and foraging in habitats adjacent to work areas. The proposed projects would result in short-term increases in noise, which could startle individuals, though normal activity is expected to resume within minutes; alternatively, the noise is expected to cause the plover or red knot to move to nearby areas, and alternate available habitat is abundant. Piping plovers and the red knot are highly mobile and if disturbed by construction activities may be temporarily displaced from foraging and resting areas in normal movement patterns. These effects would be considered short term and minor. Consultation (and conference) with the USWFS resulted in concurrence that the proposed project would not be likely to adversely affect the piping plover or the red knot (if listed) (USFWS 2013).

State-Listed Birds, MBTA and BGEPA

Migratory birds may nest, forage, and/or rest on beaches or mudflats in the vicinity of seagrass restoration activities. If seagrass restoration occurs during the nesting season (March 1 to August 1), these birds could be disturbed by noise generated from in-water construction activities. This would be a short-term minor impact. To avoid this impact, construction within 300 feet of suitable nesting habitat would be avoided during the nesting season. If construction could not avoid the nesting season, a preconstruction survey would be conducted by a qualified biologist, and if nesting birds were identified within 300 feet of project activities, the FWC and USFWS would be contacted regarding the placement of appropriate buffers to ensure no effects to nesting birds would occur. Contractors would be required to be aware of and comply with applicable laws prohibiting harm to migratory birds and endangered species.

The project is proposed to occur in open water near the shoreline and at popular boat ramps (for outreach signage). Open-water seagrass restoration activities would include in-water work that would disturb seabirds or other wildlife due to turbidity, acoustical vibration, and noise impacts during sediment tube transport by small draft vessels, outboard engine operation, and hammering effects during installation of the bird stakes or signs. Avoidance and minimization measures to prevent impacts to these migratory birds include minimizing noise and vibration near areas where foraging or resting birds were encountered (USFWS 2013a). All disturbances would be localized and temporary. The general behavior of these birds is to mediate their own exposure to human activity, when given the opportunity. Additionally, foraging habitat is abundant in all three of the restoration sites, and the seagrass restoration activities would take place in only a small portion of these areas. Therefore, foraging birds or other wildlife would not be impacted as a result of seagrass restoration activities. Roosting should not be impacted because the project would occur during daylight hours only. Nesting would not be impacted because the project would not occur during nesting season and activity would be limited to open water areas.

Bald eagles are known to nest near the St. Joseph Bay, St. Andrews Bay, and Alligator Harbor project areas. If bald eagle breeding or nesting behaviors are observed, or an active nest is determined to be within the project vicinity, conservation measures from USFWS and FWC will be implemented avoid impacts to breeding and nesting bald eagles (see Chapter 6 for specific measures).

Consultation with the FWC concerning the proposed project and anticipated construction schedule relative to known bald eagle nest sites in the project area and the nesting season in Florida (October 1 to May 15) would be required prior to commencement of restoration activities. To minimize potential for impcats to nesting bald eagle, consultation protection measures may include 1) addressing prescribed nest tree protection zones, and 2) preparation of a bald eagle nest protection plan (including nesting behavior disturbance monitoring). Bald eagles have been known to be tolerable to certain potential disturbances within their breeding territories. Should these conservation measures be implemented for active nest sites adjacent to restoration activities in the St. Joseph Bay and Alligator Harbor project areas, potential impacts to the bald eagle would be short term and minor.

Invasive Species

Affected Resources

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences

Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.10.5.7 Human Uses and Socioeconomics

12.10.5.7.1 Socioeconomics and Environmental Justice

Affected Resources

According to the 2010 census, the combined population of Bay, Gulf, and Franklin Counties was 196,264 (U.S. Census Bureau 2013) (Table 12-14). Bay County was the most populous of the three counties with 168,852 people, resulting in an average density of 222.6 individuals per square mile. Gulf and Franklin Counties together had a population of 27,412, resulting in an average density of 25 individuals per square mile. Whites represented the largest group, comprising approximately 80% of the population of all three counties. The second largest group was African American, representing 11% to 19%. Five percent of the population was Hispanic or Latino (U.S. Census Bureau 2013). According to the economic development organization, Enterprise Florida (2013), more individuals worked in industries such as leisure and hospitality; trade, transportation, and utilities; public administration; and education and health services than other industries. Tyndall Air Force Base is located in Bay County.

Table 12-14. Population of Florida, Bay, Gulf, and Franklin Counties.

POPULATION	FLORIDA COUNTY		BAY COUNTY		GULF COUNTY		FRANKLIN COUNTY	
Population, 2010	18,801,310		168,852		15,863		11,549	
White alone	14,721,426	78.3%	139,978	82.9%	12,405	78.2%	9,597	83.1%
Black or African American	3,121,017	16.6%	18,743	11.1%	3,030	19.1%	1,628	14.1%
American Indian and Alaska Native alone	94,007	0.5%	1,182	0.7%	79	0.5%	81	0.7%
Asian alone	507,635	2.7%	3,715	2.2%	63	0.4%	46	0.4%
Native Hawaiian and other Pacific Islander alone	18,801	0.1%	169	0.1%	0	0%	12	0.1%
Two or more races	357,225	1.9%	4,897	2.9%	286	1.8%	185	1.6%
Hispanic or Latino	4,361,904	23.2%	8,780	5.2%	730	4.6%	577	5.0%
White alone, not Hispanic or Latino	10,716,747	57.0%	132,718	78.6%	11,723	73.9%	9,078	78.6%

Environmental Consequences

There are no indications that the proposed seagrass enhancement project would be contrary to the goals of Executive Order 12898, or would create disproportionate, adverse human health or environmental impacts on minority or low-income populations of the surrounding community. Therefore, no adverse impacts to the socioeconomics of the regional population in Bay, Gulf, or Franklin Counties would be anticipated as a result of the proposed project.

The proposed restoration of seagrass habitat in the project areas would potentially provide indirect minor beneficial effects to the local economy due to increased recreational activity in response to fishing and bird-watching opportunities provided by the restoration effort. Restoration of seagrass habitat would benefit numerous aquatic species popular with recreational fisherman, such as blue crab, bay scallop, red drum, and speckled trout.

12.10.5.7.2 Cultural Resources

Affected Resources

Most project work would take place in the water and would not have an upland component. However, cultural resources, notably shipwrecks, are present in the Gulf of Mexico.

Environmental Consequences

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.

12.10.5.7.3 Land and Marine Management

Affected Resources

Seagrass beds constitute sovereign submerged lands owned and governed by the State of Florida; therefore, any projects undertaken on those lands must receive authorization from the Board of Trustees of the Internal Improvement Trust Fund, pursuant to Article X, Section 11 of the Florida Constitution, Section 253.77, F.S., and Chapter 258, F.S. An Environmental Resource Permit must be attained from FDEP.

Additionally, the *St. Joseph Aquatic Preserve Management Plan* indicates the importance of seagrass to the overall health and well being of the preserve ecosystems (FDEP 2008). The FDEP also indicates the important of seagrass to the Alligator Harbor Aquatic Preserve (FDEP 2012).

Environmental Consequences

Under the proposed project, no changes would occur to the current land use at the St. Joseph Bay, St. Andrews Bay, and Alligator Harbor Aquatic Preserves. Land use and management authority of the three Aquatic Preserves would remain under the purview of FDEP, and no development at the project sites would occur. The proposed project would be consistent with existing management and plans at the preserves. Ultimately, the proposed project would continue to provide and enhance essential fisheries habitat and sanctuary for wildlife, including threatened and endangered species dependent on seagrass communities for much of their life cycle. The proposed restoration would be conducted and maintained in accordance with state and federal permits previously secured for the project area in Bay County (St. Andrews Bay), or those permits (or amended permits) that may be required for the proposed project in Gulf and Franklin Counties (St. Joseph Bay and Alligator Harbor, respectively). The FDEP Environmental Resource Permit process is being initiated through the *Deepwater Horizon* Phase III federal liaison process. Therefore, potential adverse impacts to land and marine management resources would not be expected.

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.

12.10.5.7.4 Aesthetics and Visual Resources

Affected Resources

The land uses around all three of the proposed project sites are either for state park land, sparsely populated residential areas, or Tyndall Air Force Base. The general visual character of three Aquatic Preserves can be described as undeveloped or open space consisting of native estuarine habitat separated from the Gulf of Mexico by barrier islands. Unobstructed views of open water characterizing the project area exist from these barrier islands at higher elevations on the land.

Environmental Consequences
Temporary impacts to visual resources would result from implementation of the proposed restoration activities. Construction equipment would be temporarily visible to visitors and recreational users at the project access points (i.e., boat ramps and launch areas). These construction-related impacts to visual resources would be minor, since the vessel launch areas are not readily visible from urbanized areas or park systems, and equipment would only be visible to visitors arriving at the boat ramp areas to launch or those boaters arriving dockside from the project waterways to load. Because the seagrass restoration would consist of the manual placement of sediment tubes, protection buoys, and bird stakes from boats in the large expanse of open-water estuarine areas, no impacts to visual resources would be anticipated. Seagrass restoration would be anticipated to result in a long-term, minor visual enhancement to the three Aquatic Preserves, as the project is intended to mimic the natural process associated with estuarine systems. Therefore, the proposed project impacts would be minor and would not be expected to adversely affect current aesthetics or visual resources.

12.10.5.7.5 Tourism and Recreational Use

Affected Resources
According to the economic development organization, Enterprise Florida's County Profiles for Gulf, Bay, and Franklin Counties (2013), the primary recreational opportunities in these counties are boating, fishing, swimming, diving, snorkeling, and golfing. St. Andrews State Park, St. Joseph Peninsula State Park, and St. George Island State Park are located in this area.

Environmental Consequences
The duration of the proposed project would be relatively short; therefore, negative impacts to recreational experience would be minor as a result of noise and visual disturbances during placement of the sediment bags, protection buoys, and bird stakes. Public access to waters from boat ramps would potentially be restricted during project launching activities. Although temporary inconveniences would result in minor negative impacts to tourism and recreational use, over the long term the project would not result in adverse effects to tourism and recreational use. Opportunities for recreational activity in the project waters would be enhanced as a result of improved fishing and bird-watching opportunities from improved seagrass habitat conditions. Enhancement of the seagrass beds would provide additional habitat that would be beneficial to recreational activities such as fishing, snorkeling, and diving. Over the long term, the project would result in minor beneficial impacts to tourism and recreational uses.

12.10.5.7.6 Infrastructure

Affected Resources
The Port of St. Joe, which is located on St. Joseph Bay, is one of three state-designated deep-water ports on north Florida's Gulf Coast. Access to the Gulf of Mexico is accomplished by an approximate 7-mile channel from the port to the north end of the bay. The port has two bulkheads and can accommodate ships with a 27-foot draft. Ships can directly access the Intracoastal Waterway from the port. St. Joseph Peninsula State Park maintains a marina and boat ramp on the west side of St. Joseph Bay. Alligator Point is sparsely populated but has a marina for recreational boaters and fishing charters. The project area in St. Andrews Bay is bordered by St. Andrews State Park, Shell Island, and Tyndall Air Force Base.

St. Joseph Bay, St. Andrews Bay, and Alligator Harbor Aquatic Preserves are relatively remote natural estuarine systems with no services or infrastructure. With the exception of St. Andrews Bay, the project waters are not located within the immediate vicinity of urban service centers. Panama City, an urbanized service center, is located immediately adjacent to St. Andrews Bay Aquatic Preserve. Hathaway Bridge (U.S. Route 98) connects Panama City to Panama City Beach to the west, and Du Pont Bridge (U.S. Route 98) connects to Tyndall Air Force Base to the east.

Environmental Consequences

The Port of St. Joe is located north of the project area. Because the port is outside the proposed project area, traffic from the port would not affect the seagrass enhancement project, nor would construction activities pertaining to the project have any adverse impacts to the port. Any impacts to the infrastructure around St. Andrews Bay and Alligator Point due to staging areas or increased boat ramp use would be short term and minor. Additionally, the proposed project is not expected to impact transportation, utilities, or any or other infrastructure.

12.10.5.7.7 Public Health and Safety and Shoreline Protection

Affected Resources

There are no known hazardous waste disposal facilities or active water discharge sites permitted in the project vicinity.

Environmental Consequences

The project would have no impact on public health and safety in the area. Enhancement of the seagrass beds would improve the water quality and habitat in the three Aquatic Preserves.

12.10.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Seagrass Recovery project implements restoration techniques within Alternatives 2 and 4.

The proposed Florida Seagrass Recovery project would include surveying and mapping scarring within the seagrass habitats in the three Aquatic Preserves (St. Joseph Bay Aquatic Preserve, Alligator Harbor Aquatic Preserve, and St. Andrews Aquatic Preserve). Additionally, sediment tubes will then be manufactured, filled with local fine grain sediment, and deployed in approximately 2 acres of seagrass propeller scars. The project is consistent with Alternative 2 (Contribute to Restoring Habitats and Living Coastal and Marine Resources) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would provide long-term benefits by restoring approximately 2 acres of seagrass habitat. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal

Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

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12.11 Perdido Key State Park Beach Boardwalk Improvements: Project Description

12.11.1 Project Summary

The proposed Perdido Key project would improve a number of existing boardwalks in Perdido Key State Park in Escambia County. The proposed improvements include removing and replacing six existing boardwalks leading to the beach from two public access areas. The total estimated cost for this project is $588,500.

12.11.2 Background and Project Description

The Trustees propose to improve and enhance a number of boardwalks in Perdido Key State Park in Escambia County (see Figure 12-19 for general project locations and Figure 12-20 for a detailed image of the western component of the project). The existing boardwalks need to be replaced after being reconstructed too close to the ground subsequent to Hurricane Ivan in 2004. As a result, the boardwalks are now being constantly covered by sand from the dune system, which is causing access issues.

The objective of the proposed Perdido Key State Park Boardwalk Improvement project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by improving beach access. The restoration work proposed includes removing and replacing six existing boardwalks that lead to the beach.

12.11.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The project would enhance and/or increase the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response actions. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results and can be implemented with minimal delay. Agencies have successfully completed projects of similar scope throughout Florida over many years. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Additionally, the cost estimates are based on similar past projects therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. This proposed project is not anticipated to negatively affect regional ecological restoration and is therefore not inconsistent with the long-term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

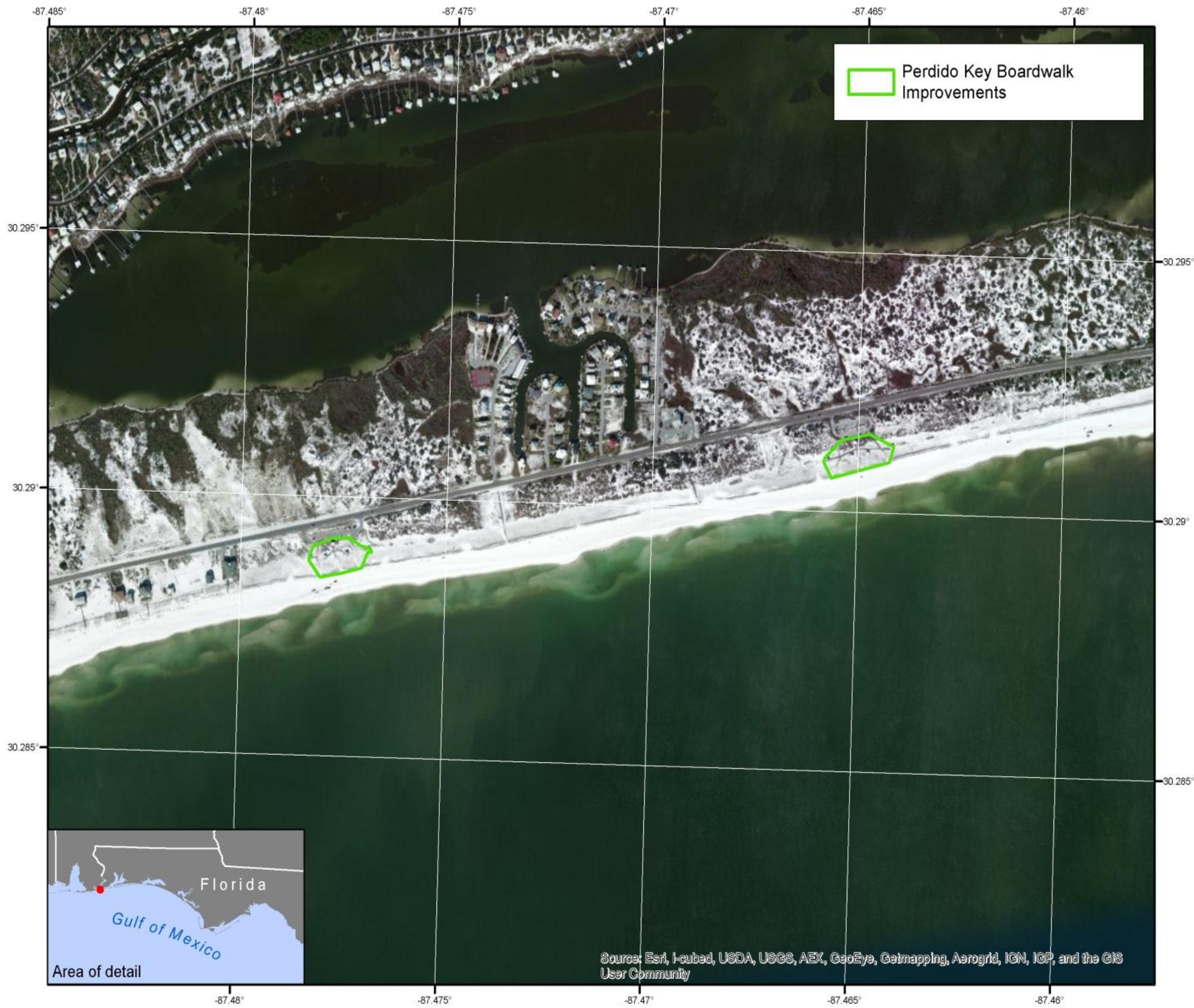

Figure 12-19. Location of the Perdido Key State Park Boardwalk Project.

Figure 12-20. Detailed image of the Western component of the Perdido Key State Park Boardwalk Project.

Many recreational use projects, including ones similar to this project, have been submitted as restoration projects on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Perdido Key State Park Boardwalk Improvements project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.11.4 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or improve the public's use and/or enjoyment of the natural resources by improving beach access. Performance monitoring will evaluate the removal and replacement of the six existing boardwalks. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to natural resources, which will be determined by observation that the boardwalks are available and open.

Long-term monitoring and maintenance of the improved facilities will be completed by staff from the Florida Park Service as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by the Florida Park Service.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the post construction performance monitoring period, the Florida Park Service will monitor the recreational use activity at the site. Florida Park Service staff will monitor the number of visitorsat the boardwalks on a routine basis. The visitation numbers will be kept by the Florida Park Service which is part of the Florida Department of Environmental Protection.

12.11.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $1,177,000 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Florida, which will be determined by the Trustees' assessment of lost recreational use for the Oil Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[5]

12.11.6 Cost

The total estimated cost to implement this project is $588,500. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for engineering and design, construction, monitoring, and contingencies.

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[5] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.12 Perdido Key State Park Beach Boardwalk Improvements: Environmental Review

The Florida Park Service (FPS) and the Florida Department of Environmental Protection (FDEP) propose to improve beach access through the installation of improvements to the Perdido Key State Park boardwalks. The proposed Perdido Key project would enhance the existing boardwalks along Perdido Key in Escambia County. The proposed improvements include removing and replacing six existing boardwalks leading to the beach from two public access areas. The total estimated cost for this project is $588,500.

12.12.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is under way. The Framework Agreement is intended to expedite the start of restoration in the Gulf of Mexico in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, after public review of a draft, the Trustees released a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, NOAA issued a public notice in the Federal Register on behalf of the Trustees, announcing the development of additional future Early Restoration projects for a Draft Phase III Early Restoration Plan (ERP).

The Trustees propose to improve and enhance a number of boardwalks along Perdido Key in Escambia County (see Figure 12-21 for general project locations and Figure 12-22 for a detailed image of the western component of the project). The existing boardwalks need to be replaced after being reconstructed too close to the ground subsequent to Hurricane Ivan in 2004. As a result, the boardwalks are constantly covered by sand from the dune system causing access issues.

The objective of the proposed Perdido Key boardwalk improvement project is to enhance the public's use and/or enjoyment of the natural resources by improving beach access. The restoration work proposed includes removing and replacing six existing boardwalks that lead to the beach. Replacing the boardwalks would improve public access to the beach areas for visitors, especially ADA visitors. The total estimated cost for this project is $588,500. This cost reflects cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for engineering and design, construction, monitoring, and contingencies.

12.12.2 Project Location

The proposed project is located in Escambia County, Florida. The project area is Perdido Key State Park southwest of Pensacola, Florida, and work would be completed on the dunes and beaches facing the Gulf of Mexico (Figure 12-21). Access to the area would primarily be through the parking lot associated with the boardwalks (Figure 12-22).

Figure 12-21. Project Location Map, Perdido Key State Park Boardwalks.

12.12.3 Construction and Installation

The existing boardwalks would be removed and replaced. The new structures would be higher above the ground surface but the footprint of the new boardwalk would fall within the area defined by the existing boardwalks. Some pilings may need to be replaced or upgraded, and new pilings may be required in some locations. A combination of heavy equipment and hand tools would be used to complete project work, depending on specific design elements and needs. Best management practices (BMPs) would be employed to minimize impacts to dune and surrounding habitats.

Figure 12-22. Parking lots adjacent to project site.

The project area would be isolated by construction fencing to prevent incidental access. This fencing material would be erected by hand driving (e.g., with a sledge hammer or post driver) stakes as necessary. These stakes would likely be less than 2 inches in diameter and driven to a depth of 1 foot to 2 feet to secure the fencing. Construction materials would be staged in the parking lot that accesses the existing boardwalks. Additional materials could be temporarily placed near the dune surface as needed to support the construction of the boardwalk (e.g., ladders, scaffolding, daily construction materials).

Full details on construction methods including total size of the boardwalk, depth of placement and method of placement of pilings would be determined as part of the development of final plans and drawings with the award of the contract and different options could be pursued. The project would not be expected to result in a surplus of excavated materials. Excavated sand could be reincorporated in the grading of the site.

Construction would begin 7 to 12 months after funding is received and take 4-6 months to complete. Construction would likely occur between October and March, the low visitation season.

12.12.4 Operations and Maintenance

State park staff would perform operation and maintenance of the facility, which includes keeping the area clean of debris, routine inspection and repair of the boardwalks (e.g., maintaining or fixing loose boards), and similar tasks. Monitoring would include construction monitoring and enhanced use numbers.

The construction would be intensely monitored to ensure that the boardwalks are built according to plans, specifications, and permits. Once the construction is complete, the boardwalks would be under a 1-year warrantee period. Periodically the facilities would be reviewed for structural integrity and any failures would be required to be repaired by the contractor during the year under warrantee. A final complete warrantee inspection would be performed by the contract manager and state parks personnel. State Park staff would provide maintenance after the warrantee period at the end of the year, and any defects that might be noted and repairs that might be required would be made by the contractor. Once the boardwalks are built, State Park staff would record usage of the boardwalks, through parking lot counts during the off season, and revenue acquired during the high visitation season.

12.12.5 Affected Environment and Environmental Consequences

12.12.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.12.5.2 Physical Environment

12.12.5.2.1 Geology and Substrates

Affected Resources

The project area lies within the geographical division known as the West Florida Coast Strip that extends from the mouth of the Ochlockonee River west to Mississippi. Sediments at the proposed project location are primarily sandy. Soil types at the proposed project location are beaches. There are no known minerals of commercial value on Perdido Key State Park (FDEP 2006). The potential for contaminants at the construction site is considered to be extremely low, since the area has already been worked on to install the initial boardwalks.

Environmental Consequences

No adverse impacts to local geology, soils, and sediments associated are anticipated within the project area. This type of construction does not typically require erosion control measures. If erosion control measures are determined necessary, it would be required as a part of the permitting process and would be managed by the construction contractor throughout construction activities and would be monitored on a daily basis by the contracting authority (FDEP). As a result of the proposed project, impacts to geology and substrates would likely be long-term and negligible.

12.12.5.2.2 Hydrology and Water Quality

Affected Resources

Perdido Key State Park is located in the northwestern portion of the state, where hydrology is very complex. Deposits are predominantly marine in origin and generally dip toward the south. Although the strata range from Paleozoic to Recent, only those deposited during the past 60 million years are important for groundwater resources (FDEP 2006). The surface waters of the region are a valuable resource and generally support an abundance of wildlife and aquatic life. Water quality problems found in some areas of the region are high concentrations of nutrients and coliform bacteria. Low dissolved oxygen levels occur, but less frequently. Probable causes of these problems are domestic and industrial waste discharges, natural swamp drainage and urban and agricultural runoff.

The Florida Department of Health's (FDOH) "Florida Healthy Beaches Program" conducts beach water sampling for enterococci and fecal coliform bacteria for 34 coastal Florida counties, including Escambia County, and reporting the results to the public every week. Big Lagoon State Park is the closest water quality testing location to Perdido Key State Park. Based on data collected by the Healthy Beaches Program, Big Lagoon State Park has experienced "good" water quality from September 2012 through September 2013 (FDOH 2013). "Good" water quality is defined as water that has between 0 to 35 colony-forming units of Enterococcus per 100 ml of water.

Environmental Consequences

The project would have a minimal negative impact on hydrology and water quality. Most impacts would be limited to the duration of construction and may include minor re-routing of water courses during construction and increased sedimentation. All appropriate permits would be obtained prior to begin of construction and all conditions set forth would be followed. After construction is complete, no long-term impacts are anticipated as the project would take place within the existing footprint of structures at the Perdido Key boardwalks. Impacts to hydrology and water quality would be short-term and minor.

12.12.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

Air quality and greenhouse gas (GHG) emissions at the site are affected by the nearby Perdido Key Drive, parking areas adjacent to the boardwalks, nearby residential development in the area, and boat traffic in the Gulf of Mexico and Old River. Air quality within the Florida panhandle is in attainment with the National Ambient Air Quality Standards (USEPA 2013). To determine if an area meets the ozone standard in 2012, data from 2009, 2010 and 2011 is needed to determine an area's attainment status with the 8-hr ozone standard. If the average is higher than 75 parts per billion, the area would not meet the ozone standard. In Escambia County, Florida, the 2012 year-to-date 3 year average is 73 parts per billion, thus meeting attainment status (FDEP 2013).

Environmental Consequences
Construction activities would have a short-term moderate negative impact on air quality and GHG emissions at the site. During construction activities, use of construction equipment, including heavy machinery (including a Bobcat and a tractor trailer) and handheld tools, would likely increase emissions at the project site. However, construction would be relatively short in duration and no long-term impacts to air quality or GHG emissions are expected to result from this project.

The following table (Table 12-15) provides GHG emissions estimates for the Bobcat and tractor trailer, which would likely be the only heavy equipment used for this project. The Bobcat emission total is based on an estimated 480 hours of operation over the life of the project (8 hours a day, five days a week, for 3 months). The tractor trailer emission total is based on 80 hours of operation (based on the estimation that it would be used twice per week, for 5 months). A "minor impact" on air quality can be determined if the contributions to GHG of this project are measurable, but fall below 25,000 metric ton/year of CO2 or its equivalent.

Table 12-15. Estimated greenhouse gas emissions for equipment to be used.

EQUIPMENT[6]	CO2 (METRIC TONS)[7]	CH4 (CO2E) (METRIC TONS)[8]	NOX (CO2E) (METRIC TONS)	TOTAL CO2E (METRIC TONS)
Bobcat	21	0.012	0.12	21
Tractor Trailer	3.4[9]	0.002	0.02	3.4
TOTAL	24.4	0.014	0.14	24.4

Based on Table 12-15, no long-term impact to air quality or GHG emissions would result from this restoration project because contributions to GHGs fall below the 25,000 metric ton/year threshold.

12.12.5.2.4 Noise

Affected Resources
The natural ambient soundscape is the aggregate of all the natural sounds that occur in the Perdido Key State Park area. The natural sounds occurring in the area include those generated by wind, waves, and. Soundscapes in the Perdido Key State Park area also include the sound generated by the nearby residential development, traffic on the nearby Perdido Key Drive, parking areas adjacent to the boardwalks, boat traffic on the Gulf of Mexico and Old River, and by military aircraft operations (Pensacola Naval Air Station) (USFWS 2011).

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[6] Emissions assumptions for all equipment based on 8 hours of operation.

[7] CO_2 emissions assumptions for diesel and gasoline engines based on USEPA 2009.

[8] CH_4 and NOx emissions assumptions and CO_2e calculations based on USEPA 2011.

[9] Construction equipment emission factors based on USEPA NONROAD emission factors for 250 hp pieces of equipment. Data was accessed through the California Environmental Quality Act Roadway Construction Emissions Model.

Environmental Consequences
Construction activities would have moderate negative impacts. Use of construction equipment (Bobcat and tractor trailer) and handheld tools would increase the amount of noise at the site. No long-term impacts to noise are expected after construction work is complete.

12.12.5.3 Biological Environment

12.12.5.3.1 Living Coastal and Marine Resources

Natural Communities

Affected Resources

Beach dune
From a habitat and endangered species perspective, this is by far the most important and sensitive community type on the park. The dunes are fragile and very easily damaged by foot traffic. Unfortunately, many unauthorized trails traverse the dune fields from the highway to the beach all along the 1.4-mile length of the park. Deeply rutted foot trails have grown wide and are subject to wind erosion, fragmenting the habitat. The beach dunes are the main habitat of the Perdido Key beach mouse, one of the most critically endangered mammals on earth. This habitat is currently in fair condition and should improve as protective measures are implemented and enforced (FDEP 2006).

Hurricane Frederick removed a vast amount of beach dune from the area in 1979. Hurricane Opal caused increased damage in 1995. Recent erosion from Hurricane Ivan in 2004 and multiple storms in 2005 further set back dune recovery. The entire primary dune field and the majority of the secondary dunes were lost (FDEP 2006).

Coastal Strand
The coastal strand begins just south of the highway, north to the areas defined as mesic flatwoods. Perhaps calling this community "gulf coastal strand" may be more descriptive and specific to this unique and quickly disappearing community. Beach mice occur in this habitat and populate most all of this habitat type at this park (FDEP 2006).

Marine unconsolidated substrate
This is essentially from the waterline to the toe of the primary dunes. This is an important foraging area for many shorebirds. This is a highly dynamic area and is heavily used by the public for swimming and sunbathing. Most of the use of this park takes place in this area. Loggerhead sea turtles mainly use this portion of the beach for nesting. Hurricane Opal (1995) and Hurricane Ivan (2004) caused severe erosion at this unit. Several feet of beach were lost all across the key.

Environmental Consequences
Construction activities at the site would have a temporary minor negative impact on these natural communities. The presence of construction crews and use of heavy equipment would likely temporarily adversely impact these natural communities, but the long-term impacts would be beneficial.

Construction could take up to 6 months to complete, and would likely occur from October through early March.

After work is completed, the project would have a positive impact on these natural communities. The project would be designed to improve the function of the existing boardwalk to reduce the impact of the boardwalk and visitors on the dune habitat, which would benefit dune vegetation and wildlife. Furthermore, the introduction of invasive species is not perceived as a high risk for this project, standard BMPs for construction would be used to prevent the introduction of invasive species.

12.12.5.4 Protected Species

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA).

Affected Resources

Perdido Key Beach Mouse

The Perdido Key beach mouse is one of the rarest mammals in the world. These mice only occur on Perdido Key, within the Johnson Beach unit of Gulf Islands National Seashore and now on Perdido Key State Park. As of March 2006, beach mice numbered less than 50 individuals, which is less than half the number known to exist in September 2002 prior to Hurricane Ivan. The population fluctuates a great deal. In the summer of 2001, only a handful of mice were known to inhabit the park, and only then by the presence of tracks (FDEP 2006).

The continued existence of the beach mouse at this park is threatened by the intermittent presence of a rather high density of feral and free ranging cats. Predation by cats is considered the most significant reason that mice became extirpated here in the early 1980s. Habitat quality has fluctuated throughout 2003 and 2004 (FDEP 2006).

Artificial lighting at night is a problem that is negatively affecting beach mice. The mice prefer dark beaches, and tend to increase surface activity on darker nights, near the new moon. The added light can increase the success predators have catching the mice, and alter the normal behavior of the mice. Trapping data has shown that beach mice generally do not use areas of the park affected most by the artificial lighting. These areas are typically along the east and west boundaries of the park and along the edges of the highway where the lighting is more prevalent (FDEP 2006).

Sea Turtles

There are five species of endangered or threatened sea turtles that may occur or have the potential to occur in the project area. These include green turtle, hawksbill turtle, Kemp's ridley turtle, leatherback turtle, and loggerhead turtle. Sea turtles forage in the waters of the coastal Florida panhandle region and have the potential to occur in the waters where in-water work is proposed. The project site contains suitable sea turtle nesting habitat along the sandy beach and loggerheads commonly nest in this area.

Marine Mammals

Twenty-two marine mammals are native to the Gulf of Mexico: 21 pelagic species of whales and dolphins, and the West Indian manatee (see Chapter 3). Of these species, the endangered West Indian manatee has the potential to occur in the project area waters. Manatee typically seek out shallow seagrass areas as preferred feeding habitat. Additionally, bottlenose dolphin (*Tursiops*) populations are known to migrate into bays, estuaries, and river mouths and could be located in the proposed project area (NMFS 2013a). Bottlenose dolphins have been observed entering and leaving nearshore coastal waters (NMFS 2012).

Essential Fish Habitat (EFH)

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The project is located in uplands above the mean high- tide line, therefore no EFH is located within the project footprint.

Piping Plover

The sandy beaches and shorelines adjacent to the project area offer suitable foraging and resting habitat for the piping plover during the winter migratory season, and piping plover may forage in the shallow waters of the project area. Natural shorelines in the proposed project vicinity provide suitable winter migration resting habitat for the piping plover. Piping plover wintering habitat includes beaches, mudflats, and sandflats, as well as barrier island beaches and spoil islands (Haig 1992 as cited by USFWS 2013). On the Gulf Coast, preferred foraging areas are associated with wider beaches, mudflats, and small inlets (USFWS 2013).

Red Knot

The red knot, a federal proposed species, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate down to specific wintering locations in South America (Niles et al. 2008) and could be present in the project area. Wintering and migrating red knots forage along sandy beaches, tidal mudflats, saltmarshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sand flats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

Migratory Birds

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711) decreed that all migratory birds and their parts (including eggs, nests, and feathers) were fully protected. The migratory bird species protected by the Act are listed in 50 C.F.R. 10.13. More than 250 species of birds have been reported as migratory or permanent residents within the Florida panhandle, several of which breed there as well. These birds can be grouped generally as (1) species that occur year-round, both nesting and overwintering, (2) species that nest during the warm season and overwinter to the south, (3) species that overwinter and nest further north, and (4) species that pass through during spring migrations to more northern nesting sites and/or during fall migrations to overwintering areas. Different populations of the same species sometimes exhibit more than one type of migratory behavior.

Bald Eagles

The bald eagle was delisted by the USFWS and is not listed as threatened or endangered by the FWC. The bald eagle is, however, protected by state law pursuant to 68A-16, Fla. Admin. Code and by the U.S. government under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles feed on fish and other readily available mammalian and avian species and are dependent on large, open expanses of water for foraging habitat. In Florida, conservation measures to protect active nest sites during nesting season must be considered to reduce potential disturbances of certain project activities. If bald eagles are found nesting within 660 feet of a proposed construction area, then activities would need to occur outside of nesting season or coordination with the USFWS would occur to determine if a permit is needed, and Florida's *Bald Eagle Management Plan* guidelines would be followed (FWC 2008). There are no known bald eagle nests within or near the project site.

Environmental Consequences

Construction activities at the site would have a short term, minor impact on these protected species. The presence of construction crews and use of heavy equipment could affect these species. After work is completed, the project would have a positive impact on these protected species. The project would be designed to improve the function of the existing boardwalk to reduce the impact of the boardwalk and visitors on the dune habitat, which would benefit protected species.

Any potential impacts would be avoided or minimized through the implementation of conservation measures developed through the ESA consultation process with the USFWS and implemented as part of the proposed project. Examples of potential conservation measures can be found in the Appendix to Chapter 6, including dune walkover construction guidelines, species specific measures, and guidance to avoid any nesting shorebirds. Therefore, implementation of the proposed project would have minor impacts.

Invasive Species

Affected Resources

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences
Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.12.5.5 Human Uses and Socioeconomics

12.12.5.5.1 Socioeconomics and Environmental Justice

Affected Resources
Escambia County is located in the extreme northwestern corner of the State of Florida, bordered on the west and north by Alabama; on the east by Santa Rosa County, Florida; and on the south by the Gulf of Mexico. The county encompasses 661 square miles, or 420,480 acres, with an additional 64,000 acres of water area. The population of Escambia County, per U.S. Census data (US Census 2013), is currently estimated at 297,619. Table 12-16 provides a brief demographic overview of Escambia County, Florida.

Leisure and recreational pursuits are on the increase on Perdido Key, along with northwest Florida. The impact of recreation and tourism on the economy continues to expand. Recreational visits to state and national parks grew by an estimated 300,000 visitors from 2003 to 2004. In northwest Florida, visitor days for national parks and state parks were up 5 percent from 2003-2004. Taxable sales of transient facilities outpaced Florida's growth rate (7.7 % v. 6.3%). Employment and payroll for the tourism industry was also up (0.8 % and 2.4%, respectively) (USFWS 2011).

Environmental Consequences
Improving site access characteristics is likely to improve the experience for those using the facilities in the future. The extent to which the improvements may support new trips to the state park or region, or induce shifts in location for recreation from other local beaches is difficult to quantify.

The proposed project is expected to have short-term, beneficial effects on socioeconomics for project area and adjacent areas, based on a slight increase in the workforce required to perform the boardwalk improvements. The exact number of persons to be employed by this project is undetermined, but would be estimated to be approximately 12 persons.

12.12.5.5.2 Cultural Resources

Affected Resources

No cultural resources are known to exist at the site at this time.

Environmental Consequences

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.

12.12.5.5.3 Infrastructure

Affected Resources

There is no major infrastructure at the site. The boardwalks are near Perdido Key Drive but are located in Perdido Key State Park, away from developed areas.

Table 12-16. Demographic information for Escambia County, Florida (US Census 2013).

U.S. CENSUS DATA QUICKFACTS	ESCAMBIA COUNTY
Population, percent change, April 1, 2010 to July 1, 2012	1.7%
Population, 2010	297,619
Persons under 5 years, percent, 2012	6.2%
Persons under 18 years, percent, 2012	21.1%
Persons 65 years and over, percent, 2012	15.2%
Female persons, percent, 2012	50.5%
White alone, percent, 2012 (a)	70.1%
Black or African American alone, percent, 2012 (a)	22.9%
American Indian and Alaska Native alone, percent, 2012 (a)	0.9%
Asian alone, percent, 2012 (a)	2.9%
Native Hawaiian and Other Pacific Islander alone, percent, 2012 (a)	0.2%
Two or More Races, percent, 2012	3.0%
Hispanic or Latino, percent, 2012 (b)	5.1%
White alone, not Hispanic or Latino, percent, 2012	66.0%
Living in same house 1 year & over, percent, 2007-2011	80.2%
Foreign born persons, percent, 2007-2011	5.9%
Median value of owner-occupied housing units, 2007-2011	$145,000
Households, 2007-2011	111,928
Persons per household, 2007-2011	2.47
Per capita money income in the past 12 months (2011 dollars), 2007-2011	$23,773
Median household income, 2007-2011	$43,707
Persons below poverty level, percent, 2007-2011	16.9%

(a) Includes persons reporting only one race.

(b) Hispanics may be of any race, so also are included in applicable race categories.

Environmental Consequences
Replacement of the boardwalks at Perdido Key State Park would have no impact on infrastructure. The project includes replacing existing boardwalk structures, within the existing footprint, and no major infrastructure changes would be made.

12.12.5.5.4 Land and Marine Management

Affected Resources
The project area is part of the Perdido Key State Park and is not in a developed area. Surrounding land uses include un-improved areas of the park and some small residential areas.

Environmental Consequences
Replacement of the boardwalks at Perdido Key State Park is anticipated not to have an impact on land and marine management because changes at the site are limited to replacing and improving existing structures. 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.

12.12.5.5.5 Aesthetics and Visual Resources

Affected Resources
Perdido Key State Park is very scenic, especially when contrasted with the new condominium developments and commercial businesses that are rapidly appearing on Perdido Key. Views from the park offer open vistas of the Gulf of Mexico and Old River, with some intruding views of adjacent development. The aesthetic and visual resources at the site include natural dune, beach, and Gulf of Mexico habitat.

Environmental Consequences
Replacement of the boardwalks at Perdido Key State Park would have no negative impact on aesthetics and visual resources because no changes to the viewscape are planned.

Replacement of the boardwalks at Perdido Key State Park would have a long-term beneficial impact on aesthetics and visual resources. The current boardwalks are in a rundown and poorly managed state, which has poor aesthetics in addition to poor functionality. The improved boardwalks would improve the look of the walkways and the natural dune habitat in which they are situated.

12.12.5.5.6 Tourism and Recreational Use

Affected Resources
The project site is currently a tourist and recreational user destination. The dune walkovers provide users with access to the beach and provide opportunities for observing natural dune and beach habitat and wildlife.

Environmental Consequences
The project would have a long-term beneficial impact on tourist and recreational user enjoyment of the site. The project would replace dune walkovers to improve conservation of dune habitat and improve the safety and accessibility of the site structures. The boardwalk improvement would be expected to ease handicap visitor access to the beach, addressing a current limit on who presently can use the resource.

12.12.5.5.7 Public Health and Safety and Shoreline Protection

Affected Resources
Public health and safety and shoreline protection at the site are of high quality. The site is part of the Perdido Key State Park and is managed to maximize health and safety for human use and the environment.

Environmental Consequences
Replacement of the boardwalks at Perdido Key State Park would have a long-term beneficial impact on public health and safety. The work is designed to improve access to the beach by improving the condition of the boardwalk structures. The project would have no impact on shoreline protection, because no work is planned for the shoreline, and current management practices would not be altered by the project.

12.12.6 Summary and Next Steps
Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Perdido Key project implements restoration techniques within Alternatives 3 and 4.

The proposed Perdido Key project would improve a number of existing boardwalks in Perdido Key in Escambia County. The proposed improvements include removing and replacing six existing boardwalks leading to the beach from two public access areas. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and/or increase the public's use and/or enjoyment of the natural resources by improving beach access. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.12.7 References

Florida Department of Environmental Protection (FDEP)

2006 Perdido Key State Park, Unit Management Plan. State of Florida, Department of Environmental Protection, Division of Recreation and Parks. October 13, 2006.

2013 Air Quality Monitoring for Wakulla County, Florida. Accessed online at: http://appprod.dep.state.fl.us/air/flaqs/selectreport.asp

National Marine Fisheries Service (NMFS)

2006 Sea Turtle and Smalltooth Sawfish Construction Conditions. March 23, 2006. Accessed online at: http://www.saj.usace.army.mil/Portals/44/docs/regulatory/sourcebook/other_permitting_factors/inwaterWorkSeaTurtle032306.pdf

United States Census Bureau (US Census)

2013 State and County Quickfacts for Escambia County, Florida. Access online at: http://quickfacts.census.gov/qfd/states/12/12033.html

United States Environmental Protection Agency (USEPA)

2013 Status of State Implementation Plan (SIP) Requirements for Designated Areas. Accessed online at: http://www.epa.gov/airquality/urbanair/sipstatus/reports/fl_areabypoll.html

12.13 Big Lagoon State Park Boat Ramp Improvement: Project Description

12.13.1 Project Summary

The proposed Big Lagoon State Park project would involve enhancing an existing boat ramp and surrounding facilities in the Big Lagoon State Park in Escambia County. These improvements would include adding an additional lane to the boat ramp, expanding boat trailer parking, improving traffic circulation at the boat ramp, and providing a new restroom facility to connect the park to the Emerald Coast Utility Authority (ECUA) regional sanitary sewer collection system. The total estimated cost for this project is $1,483,020.

12.13.2 Background and Project Description

The Trustees propose to improve and enhance an existing public ramp at Big Lagoon State Park (see Figure 12-23 for project location). The objective of the proposed Big Lagoon State Park Boat Ramp Improvement project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by improving the existing boat ramp area. The restoration work proposed includes adding an additional lane to the boat ramp, expanding boat trailer parking, improving traffic circulation at the boat ramp, and providing a new restroom facility to connect the park to the ECUA regional sanitary sewer collection system.

12.13.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. This project would enhance and/or increase the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response activities. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results and can be implemented with minimal delay. Agencies have successfully implemented projects of similar scope throughout Florida over many years. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Additionally, the cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. Finally, this proposed project is not anticipated to negatively affect regional ecological restoration and is therefore not inconsistent with the long-term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

Figure 12-23. Location of envisioned Big Lagoon Boat Ramp Project.

Many recreational use projects, including ones similar to this project, have been submitted as restoration projects on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Big Lagoon State Park Boat Ramp Improvement project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.13.4 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or improve the public's use and/or enjoyment of the natural resources by improving the existing boat ramp area. Performance monitoring will evaluate: 1) the construction of an additional lane to the boat ramp; 2) the expansion of the boat trailer parking; 3) the improvement to the traffic circulation at the boat ramp; and 4) the construction of a new restroom facility that will be connected the park to the Emerald Coast Utility Authority (ECUA) regional sanitary sewer collection system. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to natural resources, which will be determined by observation that the boat ramp area is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Big Lagoon State Park staff as part of their regular public facilities maintenance activities. Corrective actions necessary after completion and signoff of the project will be undertaken by park staff. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Big Lagoon State Park.

During and following the post construction performance monitoring period, the State of Florida park staff will monitor the human use activity at the site. Park staff keeps track of visitation and usage at the park and will provide visitation numbers by the month. This use information is kept by the Florida Department of Environmental Protection.

12.13.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $2,966,040 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Florida, which will be determined by the Trustees' assessment of lost recreational use for the Oil Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[10]

12.13.6 Cost

The total estimated cost to implement this project is $1,483,020. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and contingencies.

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[10] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.14 Big Lagoon State Park Boat Ramp Improvement: Environmental Review

The proposed project is intended to improve the quantity and quality of recreational boating in Florida's Pensacola Bay system by enhancing Big Lagoon State Park (referred to hereafter as "the Park") public boat ramp.

12.14.1 Introduction and Background

In April 2011, the Natural Resources Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the *Framework Agreement for Early Restoration Addressing Injuries Resulting from the* Deepwater Horizon *Oil Spill* (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf of Mexico in advance of the completion of the injury assessment process. Early Restoration is not intended to and does not fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, the Trustees released a Phase I Early Restoration Plan (ERP) in April 2012, after public review of a draft. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the *Federal Register* on behalf of the Trustees announcing the development of additional future Early Restoration projects for a Draft Phase III ERP. This boat ramp project was submitted as an ERP on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and Oil Pollution Act (OPA), the project meets Florida's criteria that ERPs occur in the eight-county Florida panhandle area that deployed boom and was impacted by the Spill.

The Florida State Parks system offers residents and visitors recreation opportunities and scenic beauty. Improved access and facilities at these parks would promote visitation and park use, inspiring a sense of community, improving outdoor experience and education, and contributing to local economies. Roads, parking areas, trails, picnic facilities, and restrooms compose the main infrastructure through which the general public is able to enjoy state parks. Public boat ramps at the state parks provide local boaters with access to public waterways. Boating access is the basis upon which many types of secondary, water-dependent activities may be enjoyed. These activities offer recreational values, and include fishing, scuba diving, water-skiing, swimming, or simply cruising local waterways under power or sail.

The existing two-lane boat ramp in the Park requires maintenance, is congested, and does not meet the current demand. This project would improve the boat ramp area to expand and enhance its use by Park visitors. It would involve adding an additional lane to the boat ramp, improving traffic circulation at the boat ramp, expanding boat trailer parking, and providing a new restroom facility to handle increasing visitor use.

The boat ramp improvement project is part of an ongoing plan by the Florida State Parks system to enhance and improve the ability of the public to use its resources.

12.14.2 Project Location

The Park is at 12301 Gulf Beach Highway, approximately 10 miles southwest of the city of Pensacola in Escambia County, Florida. The Park is on the northern shoreline and west end of Big Lagoon, just east of the Gulf Beach Highway (State Highway 292) and south of County Route 292A (see Figure 12-24) (Florida Department of Environmental Protection [FDEP] 2013a). Big Lagoon is part of the Pensacola Bay system.

The Park separates the mainland from Perdido Key and the Gulf of Mexico, and consists of approximately 655 upland acres and two bodies of water (the freshwater Long Pond and the saltwater Grand Lagoon Lake). It contains beaches, shallow bays, open woodlands, an observation tower, boardwalks, nature trails, camping areas, picnic areas, an amphitheater, and the boat ramp that provides easy access to Big Lagoon (FDEP 2013a). The Park preserves a natural area along the north shoreline of Big Lagoon and the Intracoastal Waterway, providing wildlife and plant habitat and preserving large wetland expanses.

The boat ramp is in the west portion of the Park, along West Beach (Figure 12-25).

12.14.3 Construction and Installation

12.14.3.1 Construction Design

Detailed construction methods and plans have not yet been developed and would be subject to the final design and contractor approach. Most of the project would be upland construction. Standard best management practices (BMPs) for this type of construction with limited in-water work would be used to minimize impacts (e.g., fencing in in-water areas).

Expansions to existing facilities would include adding a lane to the boat ramp and expanding boat trailer parking. Traffic circulation at the boat ramp would also be improved by reconfiguring the launch/tow-out area to accommodate two vehicles at once. One new building, a restroom facility, would be constructed. Construction would require connecting the new restroom to the Emerald Coast Utility Authority (ECUA) regional sanitary sewer collection system. Power access may be upgraded and reconfigured during construction based on final design needs and opportunities. Specific square footage is unknown at this time, but impacts are expected to occur over several acres.

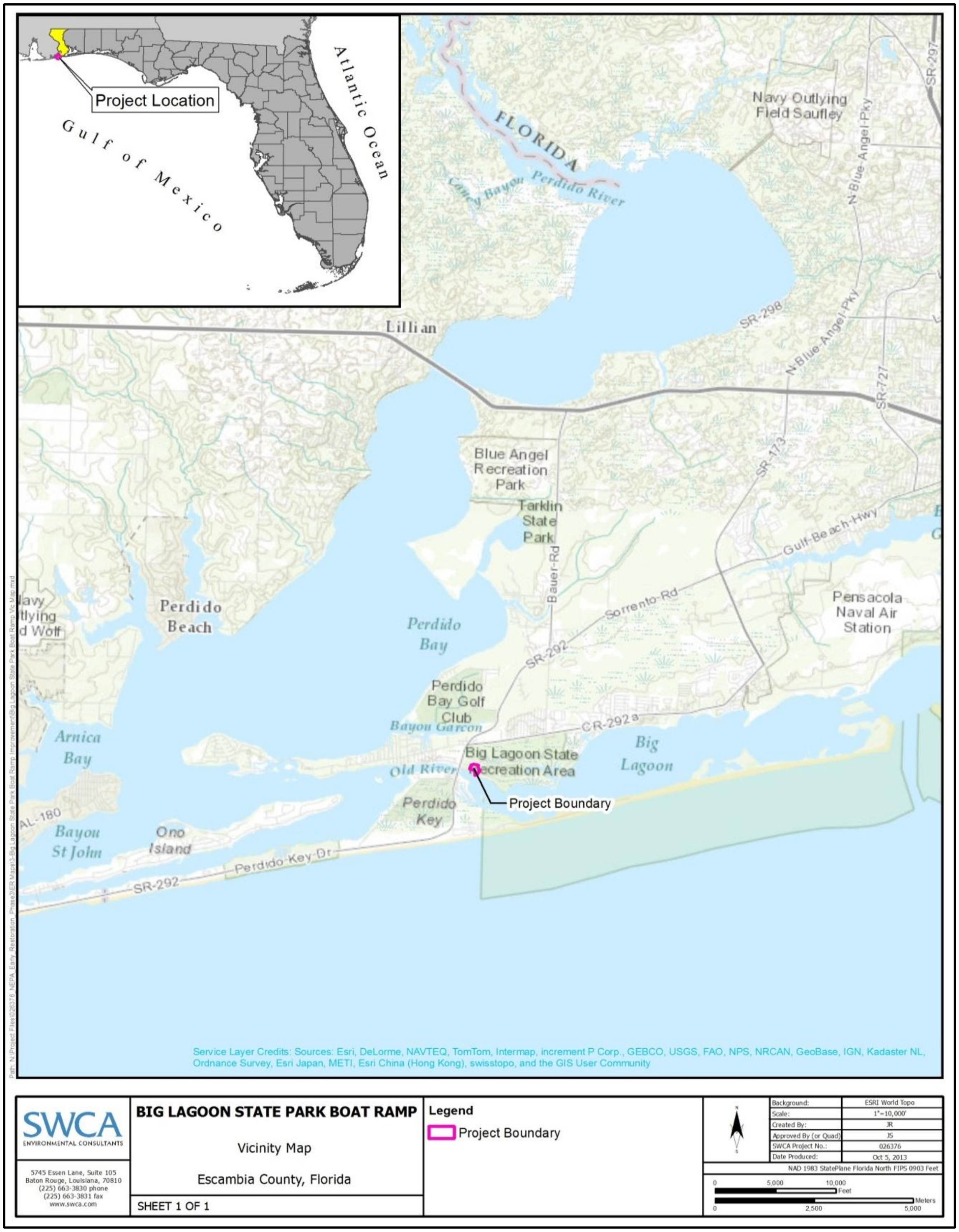

Figure 12-24. Vicinity map of Big Lagoon State Park and the project boundary.

Figure 12-25. Aerial imagery of the project area in Big Lagoon State Park.

12.14.3.2 Construction Methods and Materials

Mechanical excavation would occur on land and in the nearshore area (subtidal waters) during boat ramp lane construction. Some of the in-water portion of the existing ramp would be removed to allow excavation and construction of the new ramp. The direct in-water portion of the proposed work would be limited to renovation of the part of the existing boat ramp that extends into the water and the equivalent portion of the new ramp to be constructed. Mechanical excavation may involve equipment such as an excavator, a backhoe, and a bobcat; some additional hand digging may occur. Ramp construction would likely require excavation in an area of approximately 500 square meters, of which a small portion would be in the subtidal area. Disturbed areas would be excavated to an average depth of 2 feet. Materials planned for removal may include some soil, sand, rubble, and asphalt. Posts may be temporarily placed as part of the construction effort (e.g., to secure concrete forms). These emplacements would generally be driven and have a narrow whole width (i.e., ¼- to ½-inch consistent with a rebar or spike-type anchor).

Standard construction materials would be used for the boat trailer parking expansion and restroom facility. The parking expansion is expected to incorporate a mix of asphalt for primary areas and gravel for secondary parking areas. Sidewalks and landscaped areas would be determined as part of the final design; however, it is anticipated that both would be installed to ease pedestrian travel and improve safety. No new lighting is proposed. For the expansion of the boat trailer parking lot and installation of the sewer line, minimal spoil or borrow areas for fill would be needed. A mix of heavy equipment and specific equipment for various activities would be required (e.g., backhoe/excavator, paving equipment, and compacting equipment).

Construction-related materials such as sand, gravel, and concrete forms may be emplaced on the surface of the site. These materials would be staged on existing paved areas to avoid additional surface disturbance.

Assumed equipment usage and worker needs are detailed in Table 12-17.

Table 12-17. Assumed equipment usage and worker needs.

EQUIPMENT	NUMBER OF DAYS USED	NUMBER OF WORKER DAYS	ASSUMPTION
Small barge w/ crane	160	160	1 month use
Tractor-trailer	27	27	1 trip per week for 6 months; plus 3 extra trips for ramp materials delivery
Dump truck	10	10	1 week excavation; 1 week paving
Pickup truck	396	396	Three pickups per day for 6 months
Concrete truck	5	5	1 week use
Bobcat	10	10	1 week excavation; 1 week paving
Grader	5	5	1 week grading
Paving machine	5	5	1 week paving
Roller	5	5	1 week paving
Trackhoe	5	5	1 week excavation
Dozer	10	10	1 week excavation, 1 week grading
Forklift	24	24	One delivery per week for 6 months

Note: Although the project may take up to 1 year to complete, this table assumes 6 months of active construction.

Sixteen small power tools (nail guns, saws, drills) would also likely be used, along with one or two generators as power sources.

12.14.3.3 Best Management Practices

The following construction BMPs would be followed:

- All construction would be performed in accordance with all local, state, and federal requirements as well as all permit requirements to protect the surrounding vegetation and natural condition.
- The contractor would submit a plan for control of surface water runoff in accordance with all local, state, and federal requirements as well as all permit requirements to protect the surrounding vegetation and natural condition.
- All construction adjacent to open water would be separated and confined by appropriate siltation screens and turbidity barriers to protect the quality of such open water.
- Upon completion of construction, the site would be cleared of all construction materials and restored to its natural state, as shown on the plan drawings.
- The contractor would be responsible for assuring compliance with all permit requirements.

In addition to construction BMPs, the contractor would implement BMPs for adequate erosion control. Erosion control is necessary to prevent damage to adjacent property, natural features, site property, and work in progress. Erosion control measures would be in place prior to any land alteration and would be used throughout the construction process until soils are stabilized. Erosion control BMPs are as follows:

1. To protect against wind and stormwater-runoff erosion, the contactor would place, as appropriate, hay bales and silt fencing with wire fence reinforcement, with sediment to be removed when it reaches approximately one-half of the height of the barrier.
2. Silt fences would be of optimal design and materials for adequate sediment control.
3. Side slopes created during construction would be stabilized at the earliest possible date to avoid erosion with adequate use of compacted soil and staked hay bales.
4. Any disturbed area that would not be paved, sodded, or built upon would have a minimum vegetative cover of 80% and be mature enough to control soil erosion and survive severe weather conditions prior to final inspection.
5. Sod would be sufficiently grown and maintained to secure a dense stand of live grass.

12.14.3.4 Construction Permits and Schedule

The project would require a county building permit from Escambia County; a wetlands permit from the U.S. Army Corps of Engineers (USACE) in consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS); a dock and boat ramp permit; an environmental resource permit and sanitary sewer collection system permit from the Florida Department of Environmental Protection (FDEP); and authorization from the Emerald Coast Utilities Authority (ECUA) for a connection permit.

Construction could occur at any time but would ideally take place during the time of year when recreation use is lowest to minimize impacts to boat ramp users. Construction work is expected to take up to 1 year to complete. As of now, completion of the design and permitting is expected to occur through fall and winter 2013. Bidding would take place in spring 2014, and construction would begin in summer 2014.

12.14.4 Operations and Maintenance

As part of the project cost, performance monitoring would be conducted to ensure project plans and designs are correctly implemented.

Park staff would operate, monitor, and maintain the new and expanded facilities under the existing management plan. Maintenance would include tasks such as checking and cleaning restrooms, removing debris and trash from the boat ramp and boat trailer parking areas, and maintaining the parking area over time. Monitoring would include construction monitoring and tracking visitor use.

12.14.5 Affected Environment and Environmental Consequences

12.14.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.14.5.2 Physical Environment

12.14.5.2.1 Geology and Substrates

Affected Resources

According to the Geologic Map of Florida, the Park is likely located on the Quaternary system, Pleistocene/Holocene series, Undifferentiated Quaternary Sediments stratigraphic unit. This stratigraphic unit consists of siliciclastics, organics, and freshwater carbonates (Scott et al. 2001). The siliciclastics are light gray, tan, brown to black, unconsolidated to poorly consolidated, clean to clayey, silty, unfossiliferous, variably organic-bearing sands to blue green to olive green, poorly to moderately consolidated, sandy, silty clays. Gravel is occasionally present. Organics occur as plant debris, roots, disseminated organic matrix, and beds of peat. Freshwater carbonates, or marls, are buff-colored to tan, unconsolidated to poorly consolidated, fossiliferous carbonate muds. Sand, silt, and clay may be present in limited quantities, and these carbonates often contain organics. The dominant fossils in the freshwater carbonates are mollusks. Undifferentiated Quaternary Sediments were subdivided during the geologic mapping process according to where they occur. The Park is located on Undifferentiated Quaternary Sediments showing surficial expression in beach ridges and dunes, which primarily consist of sand (Scott 2001).

The Park area lies within the geographical division known as the West Florida Coast Strip, which extends from the mouth of the Ochlockonee River west to Mississippi. This geographic region is characterized by coastal islands and narrow peninsulas. Notable geographic features include the long barrier peninsulas of Santa Rosa Island and Perdido Key (Florida Division of Recreation and Parks 2006).

Topographically, the Park lies in the Coastal Lowlands physiographic region that extends along Florida's entire Gulf coastline. In recent geologic times, the Coastal Lowlands were marine terraces (sea floors) during at least three successive high-ocean-level periods. The area is a flat region, except where remnant dune ridges occur or where the surface has been modified by erosion or underground solution cavities. The Park topography has been slightly modified by roads, parking lots, and recreational facilities (Florida Division of Recreation and Parks 2006).

General soil map units show broad areas that have a distinctive pattern of soils. In the Park, there are likely two general soil map units, both of which are on coastal lowlands. The Lakeland-Hurricane unit is defined as nearly level to moderately sloping, excessively drained, and somewhat poorly drained soils that are sandy throughout. It consists of soils on broad, low ridges; slopes range from 0% to 8%. The Corolla-Newhan-Duckston unit is nearly level to rolling, somewhat poorly drained, excessively drained, and poorly drained soils that are sandy throughout. It consists of soils on dunes, on flats, and in depressions and swales between dunes. It is adjacent to the coast, and slopes are mostly less than 8% (NRCS 2004).

Five distinct soil types occur in the Park: Lakewood Sand, Leon Sand, Coastal Dune Land and Beach, Tidal Marsh, and Freshwater Swamp (Carlisle). Almost all the Park's recreational facilities have been developed on the Coastal Dune Land and Beach soil type (Florida Division of Recreation and Parks 2006).

Environmental Consequences
Mechanized equipment and hand tools would be used to complete construction of the restroom facility, the boat ramp lane, and expansion of the boat trailer parking. Some excavation of soils would occur; however, adverse impacts to geology and substrates would be minor. Soil, rock, and vegetation may be removed from the area where facilities would be built. Long-term, permanent disturbance would occur where the boat ramp and boat trailer parking is expanded and on the footprint of the restroom. The possible construction of sidewalks and landscaped beds would also be long-term permanent disturbance. Temporary short-term disturbance may occur in other portions of the project area.

Disturbance to geologic features or soils would be detectable, but would be short term, small, and localized. There would be no long-term changes to local geologic features or soil characteristics. Erosion and/or compaction may occur in localized areas, but would be minimized by the erosion-control BMPs specified above.

12.14.5.2.2 Hydrology and Water Quality

Affected Resources
Northwest Florida has seven major watersheds, all of which have been identified as priorities under the Surface Water Management and Improvement (SWIM) program. Water quality protection is the underlying goal of SWIM, along with the preservation and restoration of natural systems and associated

public uses and benefits (Northwest Florida Water Management District [NWFWMD] 2011). Big Lagoon is part of the Pensacola Bay watershed system, which includes Pensacola, Escambia, Blackwater, and East bays, the western portion of Santa Rosa Sound, and numerous rivers and bayous. The waterways are primarily used for transportation, seafood harvesting, recreation, and waste disposal. The total drainage area covers nearly 7,000 square miles, approximately 34% of which is in Florida. The entire system discharges into the Gulf of Mexico, primarily through a narrow pass at the mouth of Pensacola Bay (NWFWMD 2013). Broad issues for the Pensacola Bay system include water and sediment quality degradation through point and nonpoint pollution sources, habitat quality that is threatened by and degraded through sedimentation and deposition, management and coordination between two states and numerous local governments and agencies, and public education and awareness (Thorpe 1997).

Big Lagoon has been classified as an Outstanding Florida Water (OFW) by the State of Florida (Florida Administrative Code 62-302.700). An OFW is water designated worthy of special protection because of its natural attributes (e.g., excellent water quality or exceptional ecological, social, educational, or recreational value). OFWs are protected through more stringent requirements for activities requiring a permit from the FDEP or a water management district. Waters are designated OFW to prevent the lowering of existing water quality and to preserve the exceptional features of the waterbody. Surface waters are also classified as Class III waters by the FDEP (Florida Division of Recreation and Parks 2006). Class III waters have the designated uses of fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

Impaired waters are waters that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes. Big Lagoon has been listed as an impaired waterbody for mercury in fish tissue, and the Park itself has been listed as an impaired waterbody for fish and wildlife propagation; however, total maximum daily loads (TMDLs) have not yet been adopted for either location (Environmental Protection Agency [EPA] 2010).

The typical hydrogeological sequence in the Park region consists of predominantly sandy materials in the uppermost deposits. Underlying these upper sandy deposit are variably thick layers of clayey materials that function as confining beds. Beneath this zone is the Floridian Aquifer, composed of several limestone formations. No known groundwater wells exist in the Park (Florida Division of Recreation and Parks 2006).

Several large ditches occur in the Park with origins or outflows extending beyond Park boundaries.

Wetlands

Big Lagoon is designated as an estuarine and marine deep water wetland. The Park contains the following wetlands: freshwater forested and shrub, freshwater emergent wetland, estuarine and marine deep water, estuarine and marine wetland, and freshwater pond (USFWS 2013). Based on the National Wetland Inventory data, the on-land portion of the project in the Park does not appear to overlap any wetlands; however, the in-water portion of the project would take place within Big Lagoon, a designated wetland.

Floodplains
Based on Federal Emergency Management Agency (FEMA) flood insurance rate maps (Panel 12033C0508G and 12033C0516G), the project appears to be primarily in Zone X, with the coastal area located in Zone AE. Zone X is defined as other flood areas, consisting of areas with a 0.2% chance of flood, or a 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, or areas protected by levees from a 1% annual chance flood. Zone AE has defined base flood elevations and is an area of special flood hazard (FEMA 2006).

Environmental Consequences
Hydrology would likely be affected only if water is channeled or otherwise controlled around the boat ramp area during construction. Water quality would be impacted during construction by leaks or spills from equipment and disturbance of sediments that affect siltation, turbidity, and the release of chemicals from sediments. If the disturbed sediments are anoxic, the biological oxygen demand in the water column would increase. Erosion from the banks of Big Lagoon would also affect water quality. With required mitigation in place, the effect on hydrology and water quality would be measurable or detectable but small, short term, and localized. Upon project completion, water quality impacts would quickly become undetectable; the area's hydrology would be only temporarily altered during construction.

All permit conditions, including mitigation measures for siltation, erosion, turbidity, and release of chemicals, would be strictly followed. During construction, BMPs and boom placement along with other avoidance and mitigation measures required by state and federal regulatory agencies would be employed to minimize any water quality and sedimentation impacts, as well as the damage and loss of wildlife habitats. FDEP permit conditions require erosion and turbidity mitigation measures, which include the following:

- Installation of floating turbidity barriers.
- Installation of erosion control measures along the perimeter of all work areas.
- Stabilization of all filled areas with sod, mats, barriers, or a combination.
- Stoppage of work if turbidity thresholds are exceeded. The soils would then be stabilized, work procedures modified, and the FDEP would be notified.

The FDEP permit also constitutes a Certification of Compliance with State Water Quality Standards under Section 401 of the CWA, which indicates that the project would comply with state water quality standards and other aquatic resource protection requirements.

After construction, increased boat traffic in Big Lagoon could result in minimal impacts to surface water quality. Boat wakes created by additional boat traffic that could increase shoreline erosion would be controlled through no-wake or speed zones to mitigate shoreline erosion on the lagoon.

Impacts from chemicals that could be released from sources such as construction equipment and boats would likely be negligible. Required spill containment measures would be implemented for applicable construction activities. FDEP permit conditions require spill containment protection and mitigation measures as follows:

- Prohibiting boat repair or fueling facilities over the water
- Prohibiting vessels from being removed from the water for maintenance or repair
- Prohibiting activities such as hull cleaning and painting; discharge or release of oils or greases; and related metal-based bottom paints associated with hull scraping, cleaning, and painting (Consolidated Wetland Resource Field Permit and Sovereign Submerged Lands Authorization, FDEP, July 12, 2010).

The project would not be expected to impact groundwater.

Wetlands

A wetlands permit would be required for the project and would stipulate appropriate BMPs and mitigation. Because all permit conditions would be strictly adhered to, the effect on wetlands would be minor and short term, and wetland function would be remain unimpaired or would be replaced through required mitigation.

Floodplains

No appreciable increased risk of flood loss, including impacts to human safety, health, and welfare, is expected to occur because the project would not impact vegetation, slopes, or coastal conditions in a substantial manner.

12.14.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

The Clean Air Act (CAA) requires that the Environmental Protection Agency (EPA) set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS have been set for six common air pollutants (also known as criteria pollutants), consisting of particle pollution or particulate matter, ozone, carbon monoxide, sulfur dioxide (SO_2), nitrogen dioxide, and lead. Particulate matter is defined as fine particulates with a diameter of 10 micrometers or less (PM_{10}), and fine particulates with a diameter of 2.5 micrometers or less ($PM_{2.5}$). When a designated air quality area or airshed in a state exceeds the NAAQS, that area may be designated as a “nonattainment” area. Areas with levels of pollutants below the health-based standard are designated as “attainment” areas. To determine whether an area meets the NAAQS, air monitoring networks have been established and are used to measure ambient air quality. The EPA also regulates 187 hazardous air pollutants (HAPs) that are known or suspected to cause cancer or other serious health effects.

Air quality in the Florida panhandle is in attainment with the NAAQS (EPA 2013a). The Northwest District Air Program (NDEP) operates two air monitors in Escambia County. The Ellyson Industrial Park monitor in Ferry Pass records ozone, $PM_{2.5}$, and SO_2 concentrations. The Naval Air Station monitor records ozone concentrations. Readings at both monitors for the last 3 years show attainment with the NAAQS for ozone and SO_2 (FDEP 2013c). $PM_{2.5}$ attainment data were not available (EPA 2013c).

Greenhouse Gases

Gases that trap heat in the air are called greenhouse gases (GHGs). The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_x), and fluorinated gases. Over the past century, human activities have released large amounts of GHGs into the atmosphere, which are contributing to global warming. Global warming is defined as the ongoing rise in global average temperature near the Earth's surface, and is known to cause changes in climate patterns.

According to the EPA, the average annual temperature in the southeast portion of the United States has increased by approximately 2.0 degree Fahrenheit (°F) since 1970. Winters, in particular, are getting warmer, and the average number of freezing days has decreased by 4–7 days per year since the mid-1970s. Most areas are getting wetter; autumn precipitation has increased by 30% since 1901 (EPA 2013b). In many parts of the region, the number of heavy downpours has increased. Despite the increases in fall precipitation, the area affected by moderate and severe drought has increased since the mid-1970s (EPA 2013b).

Average annual temperatures in the region are projected to increase from 4°F to 9°F by 2080. Hurricane-related rainfall is projected to continue to increase. Models suggest that rainfall would arrive in heavier downpours, with increased dry periods between storms. These changes would increase the risk of both flooding and drought. The coasts would likely experience stronger hurricanes and sea level rise. Storm surge could present problems for coastal communities and ecosystems (EPA 2013b).

Total GHG emissions in Florida from 1990 to 2007 have increased at an average rate of 2.1% per year. Total GHG emissions in 2007 were 290 million metric tons of CO_2 equivalent ($MMTCO_2E$). In 2007, 91% of GHG emissions in Florida were CO_2 emissions (FDEP 2010).

Environmental Consequences

Project implementation would require the use of heavy mechanized equipment, which would lead to temporary emissions (e.g., criteria pollutants, HAPs, GHGs) from the operation of construction vehicles and equipment. Any air quality impacts that occurred would be measurable but minor due to their localized nature and short-term duration as well as the small size of the project. BMPs would be employed to prevent, mitigate, and control potential air pollutants during project implementation, such as following speed limits and prohibiting idling unless necessary to run equipment. No air quality-related permits would be required because of the minimal levels of emissions.

Greenhouse Gases

The major types of construction equipment that would contribute to GHG emissions for this project are listed in Table 12-18, along with their estimated GHG emissions. GHG emissions from the remaining (hand) equipment would be negligible. The emissions estimates are based on the operating assumptions in Table 12-18.

Based on the assumptions detailed in Table 12-18, the project would generate approximately 429 metric tons of GHGs over the duration of all phases. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project:

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

- Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.

The project would have short-term minor impacts but no long-term impacts on GHG emissions. Mitigation measures would minimize GHG emissions.

Table 12-18. Greenhouse gas impacts of the proposed project from major construction equipment.

EQUIPMENT DESCRIPTION	TOTAL HOURS USED	CO_2 FACTOR-MT/100HRS*	CO_2 (MT)	CH_4 FACTOR-MT/100HRS	CH_4 (MT)	NO_2 FACTOR-MT/100HRS	NO_2 (MT)	TOTAL CO_2 (MT)
Dump trucks / flatbed trucks	296	1.7	5.0	0.5	1.5	7.2	21.3	27.8
Pickup trucks	3,168	1.1	34.8	0.35	11.1	4.4	139.4	185.3
Concrete trucks	40	1.7	0.7	0.5	0.2	7.2	2.88	3.76
Bobcat (bare and w/auger mount)	80	2.65	2.1	0.9	0.7	10.6	8.5	11.3
Moto grader	40	2.25	0.9	0.65	0.3	1.08	0.4	1.6
Paving machine	40	2	0.8	0.5	0.2	8	3.2	4.2
Rollers	40	2	0.8	0.5	0.2	8	3.2	4.2
Trackhoe (w/ bucket/ thumb or vibratory attachments)	40	2.55	1.0	0.85	0.3	10.2	4.1	5.4
Dozer	80	2.25	1.8	0.65	0.5	1.08	0.9	3.2
Forklift	192	2.25	4.3	0.65	1.2	1.08	2.1	7.6
Crane (bare and w/clamshell attachment)	1,280	2.55	32.6	0.85	10.9	10.2	130.6	174.1
Total	**5,296**							**428**
*mt = metric tons								

At project completion, visitor use (and therefore vehicle and boat use) could increase due to the improved access. Increased exhaust emissions could affect air quality over the long term. However, adverse impacts to air quality are expected to be minor because management actions could be taken if necessary to limit Park visits and boat use, and because these would be negligible in the context of the total miles traveled in the regional airshed.

12.14.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted or nuisance sound. The Noise Control Act of 1972 (42 United States Code [USC] 4901–4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. Amplitude is the magnitude of a sound and is usually expressed in decibels (dB), a dimensionless ratio of sound pressure to that of a reference pressure. The A-weighted decibel (dBA) is the adjusted unit of sound used to describe the human response to noise from industrial and transportation sources. The threshold of hearing is 0 dBA. A 3-dBA increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear.

Table 12-19 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Table 12-19. Typical noise levels for common sources.

NOISE SOURCE OR EFFECT	SOUND LEVEL (DBA)
Rock-and-roll band	110
Truck at 50 feet	80
Gas lawnmower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Source: Adapted from U.S. Department of Energy (1986).

Noise levels in the project area vary depending on the season, time of day, number and types of noise sources, and the distance of the receptor from noise sources. Existing sources of noise in the project area are from recreational boating, traffic on nearby roads and highways, overhead aircraft, nearby residential activities (such as lawn care), and ambient natural sounds such as wind, waves, and wildlife.

Noise-sensitive receptors include sensitive land uses as well as individuals and/or wildlife that could be affected by changes in noise sources or levels due to the project. Noise-sensitive receptors in the project area include recreational users, nearby residences, and wildlife. No residential properties are directly adjacent to the boat ramp location.

Environmental Consequences

Instances of increased noise would occur during the project. Equipment, tools, and vehicles used during the construction of the restroom facility, addition of the boat ramp lane, and expansion of the boat trailer parking would generate noise. Construction equipment noise is known to disturb fish, marine mammals, and nesting shorebirds. Construction noise would also negatively affect the experience of Park visitors in areas near project construction activities. The noise would be temporary and the construction period is not anticipated to last more than 12 months. Because of the temporary nature of the construction noise, negative impacts to the soundscape would be short term and of a level that is likely to attract visitor attention but not cause any changes in visitor or resident activities.

After project completion, the soundscape would return to pre-project levels. The potential for increased vehicle and boat traffic exists due to the improved access to Big Lagoon, which would result in a slight increase in noise levels in the vicinity. Overall, long-term noise effects from boating and other recreational activities would remain minor.

12.14.5.3 Biological Environment

12.14.5.3.1 Living Coastal and Marine Resources

Vegetation

Affected Resources

A variety of plant communities occur in the Park, from tidal salt marshes to pine flatwoods. Sandpine scrub is present on sandy relic dunes, and slash pines grow throughout the dune "swales," as well as in wet or water-logged soils among impenetrable thickets (FSP 2010).

The Park contains nine distinct natural communities, in addition to ruderal and developed areas. These communities are mesic flatwoods (23.3 acres), scrub (107.8 acres), scrubby flatwoods (273.6 acres), basin swamp (41.3 acres), baygall (99.0 acres), wet flatwoods (84.3 acres), estuarine seagrass bed (0.7 acre), estuarine tidal marsh (47.6 acres), and estuarine unconsolidated substrate (4.7 acres). Ruderal areas comprise 14.1 acres of the Park; developed areas comprise 36.1 acres. The project area is located partly within ruderal and previously developed areas; undeveloped portions of the project area consist of scrubby flatwoods (Florida Division of Recreation and Parks 2006). A list of state designated threatened, endangered, candidate, and other plant species of concern likely to occur in Escambia County and the Park can be found in Table 12-20.

Although Godfrey's golden aster (*Chrysopsis godfreyi*) was not reported as likely to occur in Escambia County, it has been observed in the Park as a relatively small population along the ridgeline near the East Beach use area. According to Florida Natural Areas Inventory (FNAI) rankings, it is imperiled in Florida due to rarity or vulnerability to extinction from some natural or manmade factor. (The FNAI maintains a comprehensive database of the biological resources of Florida.) This plant is endemic to barrier islands and spits from Franklin County to Escambia County, and typically blooms in late October–November (Florida Division of Recreation and Parks 2006).

Table 12-20. State protected threatened, endangered, candidate, and other plant species of concern likely to occur in Big Lagoon StatePark.

RESOURCE CATEGORY	COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Plants	Curtiss' sandgrass	*Calamovilfa curtissii*	--	T	Palustrine: mesic and wet flatwoods, wet prairie, depression marsh Terrestrial: mesic flatwoods **Observed in the Park.**
Plant	Godfrey's golden aster	*Chrysopsis godfreyi*	--		Terrestrial: Grassland/herbaceous, Sand/dune, Shrubland/chaparral **Observed in the Park.**
Plants	Large-leaved jointweed	*Polygonella macrophylla*	--	T	Terrestrial: scrub, sand pine/oak scrub ridges **Major concentrations occur in the Park in the large ruderal area west of the boat ramp, in scrub north of the campground, and throughout the northern strip of scrub along the Gulf Beach Highway.**
Plants	Red-flowered or sweet pitcher plant	*Sarracenia rubra*	–	T	Palustrine: bog, wet prairie, seepage slope, wet flatwoods Riverine: seepage stream banks **Believed to be extirpated in the Park.**
Plants	White-top pitcher plant	*Sarracenia leucophylla*	--	E	Palustrine: wet prairie, seepage slope, baygall edges, ditches **Believed to be extirpated in the Park.**

E = endangered; T = threatened; USFWS = U.S. Fish and Wildlife Service
Source: USFWS Panama City Ecological Services/Fish and Wildlife Conservation Office (2013) and Florida Division of Recreation and Parks (2006).

* All plants listed on the Florida Endangered Plant List, the Threatened Plant List, and the Commercially Exploited Plant List as set forth herein are referred to as regulated. Information concerning scientific name, references, common names, family, and descriptions for these listed plants is available in the Florida Department of Agriculture and Consumer Services, Division of Plant Industry's "Notes on Florida's Endangered and Threatened Plants," (Bureau of Entomology, Nematology and Plant Pathology – Botany Section, Contribution No. 38, 3rd edition – 2000). A copy of the publication is free to Florida residents and may be obtained by writing to the Florida Department of Agriculture and Consumer Services, Division of Plant Industry, P. O. Box 147100, Gainesville, Florida 32614-7100.

The Park provides extensive habitat for the large-leaved joint weed, which has segmented stems and tiny white flowers that bloom in the early fall. These plants grow in the semi-arid sands of scrub-like habitats, and require relative openings in canopy cover. The total number of plant species in the Park is estimated at 500–1,000 (Florida Division of Recreation and Parks 2006).

The two species of pitcher plants listed in Table 12-20 occurred in the Park as recently as the early 1980s. Small colonies of both were reported in a low shrub-dominated wetland in the western portion of the Park. A small colony of white-top pitcher plant was also recorded in the open wet flatwoods just south of the campground. No pitcher plants were found during field surveys in 2001; both species are believed to be extirpated from the Park (Florida Division of Recreation and Parks 2006).

In 2003, 543 acres of seagrass beds were identified in Big Lagoon through mapping from aerial photography. No seagrass beds were identified near the boat ramp area of the Park. Turtle grass (*Thalassia testudinum*) was the most common species in eastern Big Lagoon, followed by shoal grass (*Halodule wrightii*). Both species were identified during a limited 2010 sampling effort. Currently, acreage of seagrass beds in Big Lagoon is probably stable (Yarbro, L.A. and P.R. Carlson 2011).

Environmental Consequences

Construction of the facilities would require the permanent removal of vegetation within the affected areas. The long-term, permanent surface disturbance would occur on ruderal and previously developed areas that may lack vegetation, but could also impact areas of scrubby flatwoods. Expansion of the boat ramp could impact in-water vegetation through permanent removal or short-term disturbance.

In areas of short-term surface disturbance, infrequent and minimal disturbance to individual plants would be expected, and local or range-wide population stability would not be affected. One-time disturbance to locally suitable habitat could occur, but sufficient habitat would remain functional at the local and regional scales to maintain the viability of the species. Where new structures and facilities are placed, the loss of vegetation would be limited to the project footprint but would persist for the life of the facilities (i.e., indefinitely).

The use of equipment and disturbance of soil and existing vegetation would also create a risk of noxious weed or invasive vegetative species introduction. Those undeveloped areas disturbed during construction would be monitored, and exotic species removed. The opportunity for the increased spread of non-native species would be temporary and localized, and would not be anticipated to displace native species populations and distributions.

Due to the prevalence of both weeds and rare plants in the Park, preconstruction vegetation surveys and preconstruction and postconstruction weed treatments would likely be required. The presence of any special status species would be considered during the design phase of the project, and precautions would be taken to avoid them.

Improvements to the Park would likely attract additional visitors. Increased human presence could have a long-term minor effect on vegetation in the Park because of the greater likelihood of trampling, picking, or other vegetative disturbance. This type of impact would probably occur in areas closest to Park facilities.

12.14.5.4 Wildlife Habitat

Affected Resources

A variety of wildlife can be found in the Park, including reptiles (specifiacally the diamondback terrapin (*Malaclemys terrapin*); and Gulf salt marsh snake (*Nerodia clarkii clarkii*), and other general snakes, turtles, and lizards, including skinks); amphibians (frogs and toads); at least seven butterfly species; beavers (*Castor canadensis*), opossums (*Didelphis virginiana*); striped skunks (*Mephitis mephitis*); white-tailed deer (*Odocoileus virginianus*); raccoons (*Procyon lotor*); gray squirrels (*Sciurus carolinensis*); gray foxes (*Urocyon cinereoargenteus*); marsh rabbits (*Sylvilagus palustris*); and big brown bats (*Eptesicus fuscus*). The Park also hosts a wide variety of resident and migratory birds, especially during spring and fall migrations (Florida Division of Recreation and Parks 2006).

Environmental Consequences

Although common wildlife may be disturbed by the noise and activity of construction, the disturbance would be of a temporary and short-term nature (less than 6 months). Additional habitat is present in the Park, which would allow for the movement and dispersal of individual animals away from the construction area during this time. Permanent habitat loss would occur where new facilities are developed.

12.14.5.5 Marine and Estuarine Fauna

Affected Resources

Big Lagoon provides habitat for numerous turtles, fishes, and other marine species. Redfish (*Sciaenops ocellatus*), bluefish (*Pomatomus slatatrix*), flounder (*Paralichthys* spp.), sea trout (*Cynoscion nebulosus*), striped mullet (*Mugil cephalus*), and crabs are regularly caught in Big Lagoon (FDEP 2013a). Benthic organisms (including bivalves, gastropods and other mollusks), annelids, and crustaceans may also be present in the waters off the Park.

Environmental Consequences

Construction activities would be expected to have a minor, short-term impact on fish because of the small project footprint, the short (up to 1 year) temporal timescale, and adherence to the BMPs listed above. Over the long term, increases in boating and other recreational uses may occur due to the improved access and facilities at the sites. These recreational activities are generally low-impact for fish and would be expected to have a negligible impact on fish populations.

12.14.5.6 Protected Species

Affected Resources

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA).

The federally listed threatened and endangered species reported for the Big Lagoon State Park and Escambia County include the Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis*), piping plover (*Charadrius melodus*), and Gulf sturgeon (*Acipenser oxyrinchus desotoi*). Two candidate species, the gopher tortoise (*Gopherus polyphemus*) and the saltmarsh topminnow (*Fundulus jenkinsi*), were also reported for the Park. Federally and State listed threatened, endangered, candidate, and other wildlife species of concern likely to occur in Big Lagoon State Park are listed in Table 12-21.

Tortoises

The gopher tortoise, a candidate species in Florida, prefers high dry sandy habitats such as longleaf pine-xeric oak sandhills. It is also found in scrub, dry hammocks, pine flatwoods, dry prairies, coastal grasslands and dunes, mixed hardwood-pine communities, and a variety of disturbed habitats such as pastures (FWC 2013a). Two gopher tortoises have been reported in the Park (Florida Division of Recreation and Parks 2006). The primary threat to the gopher tortoise is habitat loss. Habitat alteration such as urbanization often occurs in the same high dry habitats that the tortoise prefers (FWC 2013a).

Perdido Key Beach Mouse

Big Lagoon State Park is close to Perdido Key, which forms the southern boundary of the lagoon. This area includes the Gulf Islands National Seashore Unit, a part of Perdido Key containing a portion of the only remaining population of the Perdido Key beach mouse. This species was listed as endangered by the USFWS on June 6, 1985 (50 *Federal Register* 23872). Critical habitat for this species, as shown on Figure 12-26, was designated at the time of listing to include primary and secondary dunes characterized by dense stands of mostly sea oats (*Uniola paniculata*) and blue stem (*Schizachyrium scoparium*) (71 *Federal Register* 197). The project area is not in or adjacent to critical habitat. Habitat loss and fragmentation associated with residential and commercial real estate development are the primary threats contributing to the endangered status of beach mice (Holler 1992a; Humphrey 1992). Artificial lighting alters behavior patterns, causing beach mice to avoid otherwise suitable habitat and decreases the amount of time they are active in those areas (Bird et al. 2004).

Table 12-21. Federally and State protected endangered and threatened species likely to occur in Big Lagoon State Park.

RESOURCE CATEGORY	COMMON NAME	SPECIES NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Birds	Least tern	*Sterna antillarum*	MBTA	T	Estuarine: Various Lacustrine: Various Riverine: Various Terrestrial: Beach dune, ruderal. Nests common on rooftops. **Habitat present; Occurs in the Park**
Birds	Piping plover	*Charadrius melodus*	T (CH)	T	Estuarine, Marine: Exposed unconsolidated substrate Terrestrial: Dunes, sandy beaches, and inlet areas. Mostly wintering and migrants. **Habitat Present; Occurs in the Park**
Birds	Southeastern kestrel	*Falco sparverius paulus*	MBTA	T	Estuarine, Palustrine: various Terrestrial: open pine forests, clearings, ruderal, various **Habitat present; Occurs in the Park**
Birds	Red knot	*Calidris canutus rufa*	P	-	• Estuarine: exposed unconsolidated substrate; • Marine: exposed unconsolidated substrate; • Terrestrial: dunes, sandy beaches, and inlet areas; mostly wintering and migrants **Potential habitat present**
Fish	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T (CH)	T	Estuarine, Marine: various Riverine: alluvial and blackwater streams Critical habitat present
Fish	Saltmarsh topminnow	*Fundulus jenkinsi*	C	SSC	Salt marshes and estuaries. **Occurs in the Park**
Mammals	Perdido Key beach mouse	*Peromyscus polionotus trissyllepsis*	E (CH)	E	Inhabits the coastal dunes along Perdido Key in Escambia County. **Habitat nearby**
Mammals	West Indian manatee	*Trichechus manatus latirostris*	E	E	• Estuarine: submerged vegetation, open water • Marine: open water, submerged vegetation • Riverine: alluvial stream, blackwater stream, spring-run stream **habitat present**
Reptiles	Gopher tortoise	*Gopherus polyphemus*	C	T	Terrestrial: Sandhills, scrub, scrubby flatwoods, xeric hammocks, coastal strand, ruderal **Occurs in the Park in mesic flatwoods and sandhill habitats**

E = endangered; T = threatened; ce = consideration encouraged; SSC = species of special concern; C = candidate; CH = critical habitat; BGEPA = Bald and Golden Eagle Protection Act; USFWS = U.S. Fish and Wildlife Service.
Source: USFWS (2013b) and Florida Fish and Wildlife Conservation Commission (2013) and Florida Division of Recreation and Parks (2006).

Marine Mammals

Escambia County is not listed as one of the 36 Florida coastal and inland counties in which manatees (*Trichechus manatus*) regularly occur (USFWS 2011), though the species could be present. Manatees would not be attracted to the boat ramp area due to the lack of submerged vegetation for foraging at the site. In addition, the project area is not adjacent to manatee protection zones, so the risk of collision around the boat ramp is low.

Gulf Sturgeon

The Gulf sturgeon (also known as the Gulf of Mexico sturgeon) is one of seven species of sturgeon in North America. It inhabits both saltwater and freshwater habitats in the fall/winter and spring/summer, respectively. The Gulf sturgeon is a benthic feeder that eats organisms in or on the bottom of the water, including crabs, grass shrimp, lancets, brachiopods, and marine worms. It typically gorges on food during the fall-to-spring period when in brackish and saltwater habitats; however, it appears to fast from spring to fall when in freshwater habitats. Gulf sturgeon usually return to their home freshwater river or stream to spawn (in the spring). Currently, the main threat to Gulf sturgeon is constituted by dams on Gulf seaboard rivers that prevent connections to historic spawning areas. Habitat destruction is also a threat, especially because the sturgeon lives in areas at risk of dredging, which destroys eggs and affects food sources. Other threats include lethal by-catch and declining water quality (FWC 2013a).

The Gulf sturgeon was federally listed as threatened on September 30, 1991, after stocks were greatly reduced or extirpated throughout much of their historic range by overfishing, dam construction, and habitat degradation. Critical habitat was designated in 14 geographic areas in Gulf of Mexico rivers and tributaries on March 19, 2003 (NOAA FS 2013).

As shown on Figure 12-26, the project is in designated Gulf sturgeon critical habitat (Unit 9). Unit 9 is the Pensacola Bay System in Escambia and Santa Rosa Counties, which includes Big Lagoon. This unit provides winter feeding and migration habitat for Gulf sturgeon from the Escambia and Yellow River subpopulations. Gulf sturgeon collect, or migrate through, during the fall and winter season. Movement is generally along the shoreline area of Pensacola Bay.

Essential Fish Habitat (EFH)

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity.” The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum, brown shrimp, pink shrimp, and white shrimp. There are no marine components of EFH in the vicinity of the project site.

The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. Table 12-22 provides a list of the species that NMFS manages under the federally Implemented Fishery Management Plan in the vicinity of the Big Lagoon State Park Boat Ramp Improvement site, Big Lagoon and Perdido Bay.

Table 12-22. List of species managed by NMFS in vicinity of the project study area (NMFS EFH mapper, 2013).

MANAGEMENT UNIT / SPECIES	LIFESTAGE(S) FOUND AT LOCATION	FMP
Red Drum (*Sciaenops ocellatus*)	ALL	Red Drum
Highly Migratory Species		
Scalloped Hammerhead Shark	Neonate, Juvenile	
Bonnethead Shark	Adult	Highly Migratory Species
Blacktip Shark	Neonate, Juvenile	
Bull Shark	Juvenile, Adult	
Spinner Shark	Juvenile	
Tiger Shark	Neonate, Juvenile	
Atlantic Sharpnose Shark	Neonate	
Shrimp		
Brown shrimp (*Penaeus aztecus*)		
White shrimp (*Penaeus setiferus*)	ALL	Shrimp
Pink shrimp (*Penaeus duararum*)		
Royal red shrimp (*Pleoticus robustus*)		
Coastal Migratory Pelagics		
King mackerel (*Scomberomorus cavalla)*		
Spanish mackerel (*Scomberomorus maculatus*)		
Cobia (*Rachycentron canadum*)	ALL	Coastal Migratory Pelagics
Dolphin (*Coryphaena hippurus*)		
Reef Fish		
Balistidae - Triggerfishes		
Gray triggerfish (Balistes capriscus)		
Carangidae - Jacks		
Greater amberjack (Seriola dumerili)		
Lesser amberjack (Seriola fasciata)		
Almaco jack (Seriola rivoliana)		
Banded rudderfish (Seriola zonata)		
Labridae - Wrasses	ALL	Reef Fish
Hogfish (Lachnolaimus maximus)		
Lutjanidae - Snappers		
Queen snapper (Etelis oculatus)		
Mutton snapper (Lutjanus analis)		
Blackfin snapper (Lutjanus buccanella)		
Red snapper (Lutjanus campechanus)		
Cubera snapper (Lutjanus cyanopterus)		
Gray (mangrove) snapper (Lutjanus griseus)		
Lane snapper (Lutjanus synagris)		
Silk snapper (Lutjanus vivanus)		
Wenchman (Pristipomoides aquilonaris)		
Vermilion snapper (Rhomboplites aurorubens)		
Malacanthidae – Tilefishes		
Goldface tilefish (Caulolatilus chrysops)		
Blueline tilefish (Caulolatilus microps)		

MANAGEMENT UNIT / SPECIES	LIFESTAGE(S) FOUND AT LOCATION	FMP
Golden Tilefish (Lopholatilus chamaeleonticeps)		
Serranidae – Groupers		
Speckled hind (Epinephelus drummondhayi)		
Yellowedge grouper (Epinephelus flavolimbatus)		
Red grouper (Epinephelus morio)		
Warsaw grouper (Epinephelus nigritus)		
Snowy grouper (Epinephelus niveatus)		
Nassau grouper (Epinephelus striatus)		
Black grouper (Mycteroperca bonaci)		
Yellowmouth grouper (Mycteroperca interstitialis)		
Gag (Mycteroperca microlepis)		
Scamp (Mycteroperca phenax)		
Yellowfin grouper (Mycteroperca venenosa)		

Piping Plover

The piping plover, a threatened species, typically inhabits sandy beaches, sandflats, and mudflats along coastal areas for wintering (FWC 2013a). Piping plover habitat is located in and around the East Beach use area. This eastern portion of the Park surrounding the observation tower, including the peninsula and mudflats to either side of the tower, has been designated as critical habitat for the plover (see Figure 12-26) (Florida Division of Recreation and Parks 2006). The project area is not in or adjacent to the critical habitat. Threats to this species include loss of habitat by development on beaches. Human and domestic animal disturbance can also lead to nest abandonment. Other threats include predation by raccoons, skunks, and foxes (FWC 2013a).

Red Knot

The red knot, a federal proposed species, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate down to specific wintering locations in South America (Niles et al. 2008). Wintering and migrating red knots forage along sandy beaches, tidal mudflats, saltmarshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sand flats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

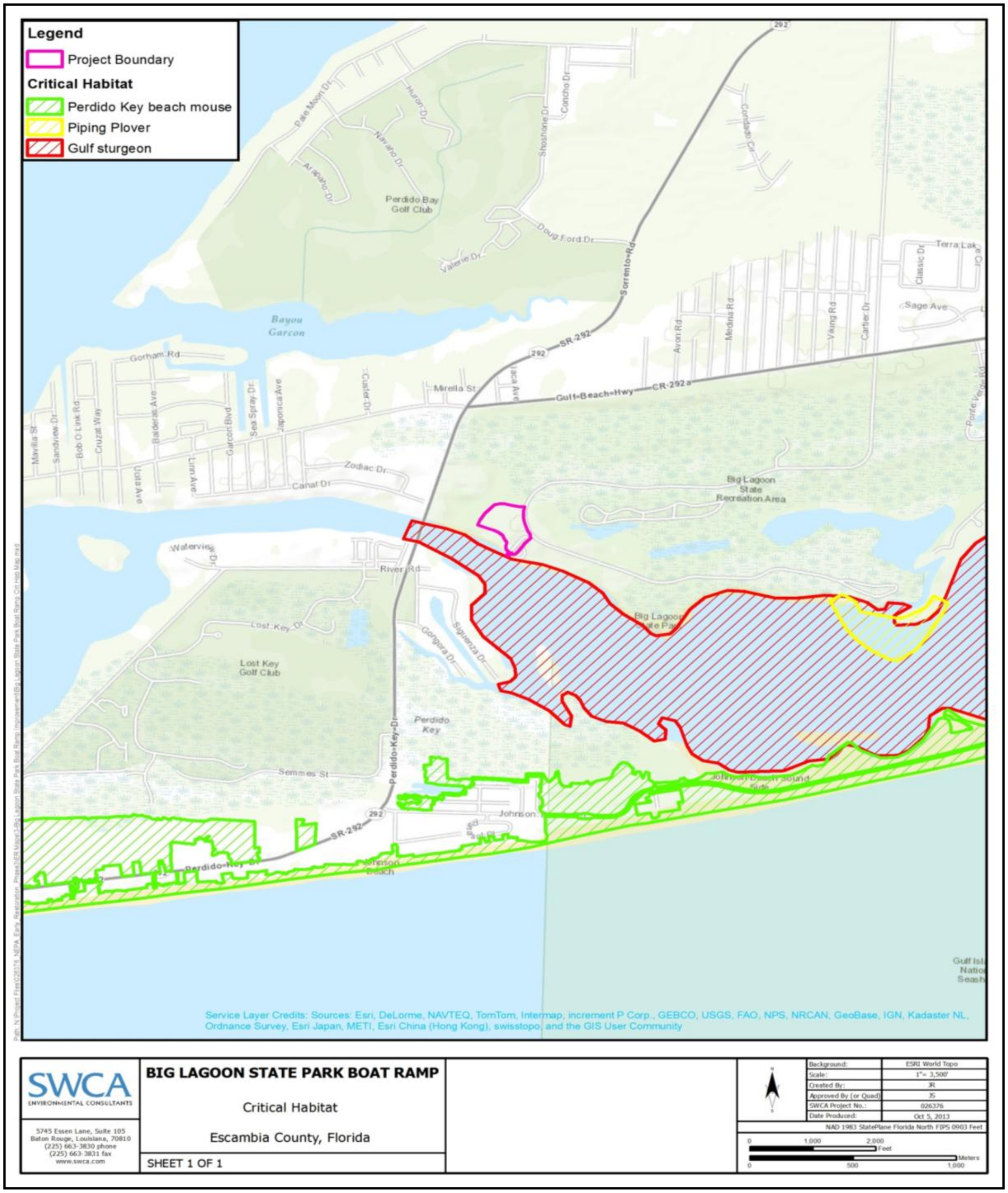

Figure 12-26. Perdido Key beach mouse, Gulf sturgeon, and piping plover critical habitat in and near Big Lagoon State Park.

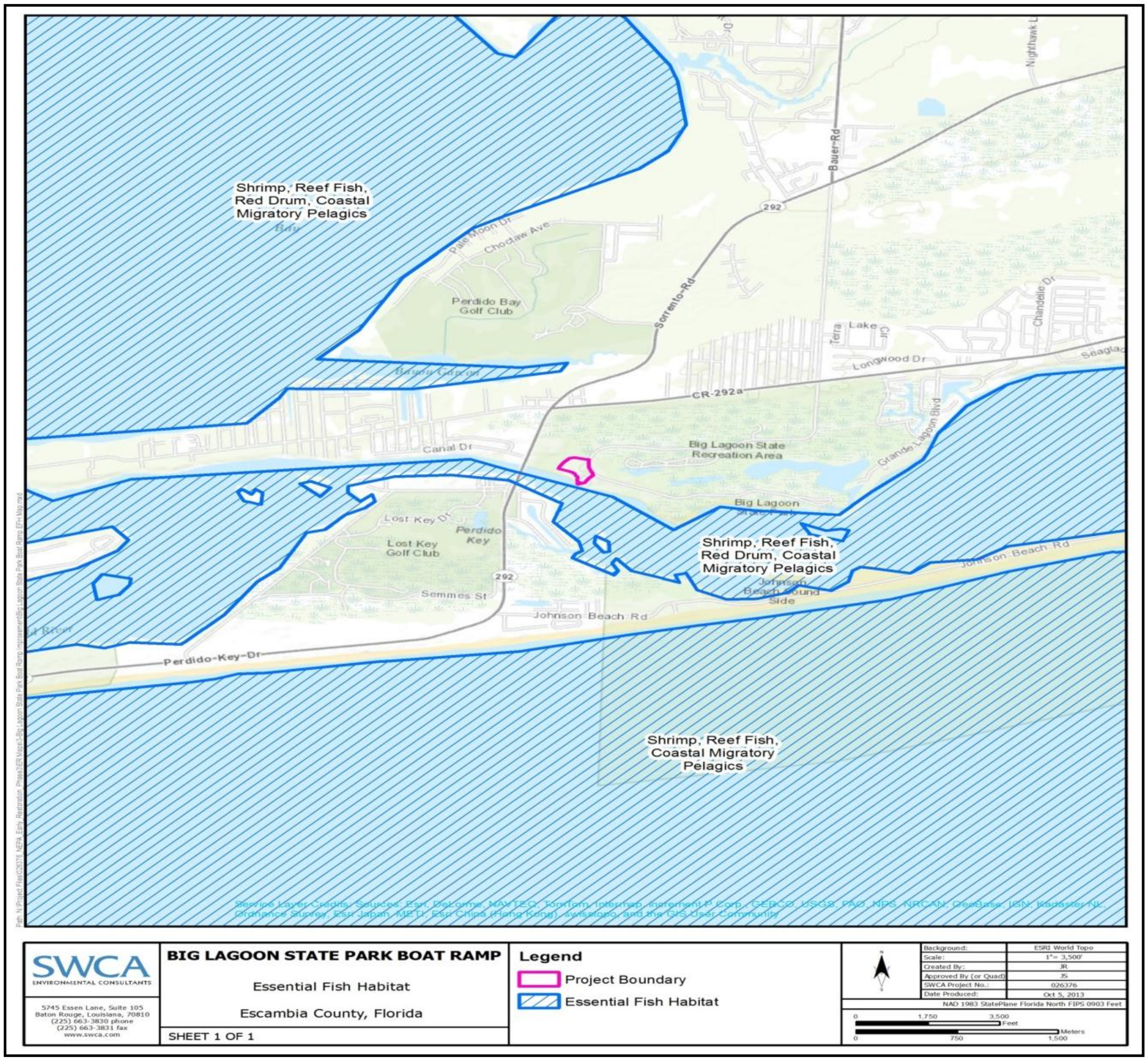

Figure 12-27. Essential fish habitat adjacent to Big Lagoon State Park.

Saltmarsh Topminnow

The saltmarsh topminnow, a candidate species, inhabits low-salinity salt marshes and estuaries dominated by *Spartina* cordgrasses. It feeds primarily on insects and a type of crustacean called amphipods. It is vulnerable to human development such as the dredging and filling of marshes. Marsh erosion and hurricanes that can damage salt marsh habitat are also threats to the topminnow, as well as global climate change (FWC 2013a).

State-Listed Birds, MBTA and BGEPA
The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711) decreed that all migratory birds and their parts (including eggs, nests, and feathers) were fully protected. The migratory bird species protected by the Act are listed in 50 C.F.R. 10.13. More than 250 species of birds have been reported as migratory or permanent residents within the Pensacola Bay system, several of which breed there as well. These birds can be grouped generally as (1) species that occur year-round, both nesting and overwintering, (2) species that nest during the warm season and overwinter to the south, (3) species that overwinter and nest further north, and (4) species that pass through during spring migrations to more northern nesting sites and/or during fall migrations to overwintering areas. Different populations of the same species sometimes exhibit more than one type of migratory behavior. There are several State of Florida–listed bird species with potential to occur in and around the Park. These include the eastern brown pelican, little blue heron, southeastern American kestrel, least tern, black skimmer, and piping plover (discussed above).

The nearest known, active bald eagle nest is 4 miles east of the project area. One other active nest is nearly 10 miles northeast in Escambia Bay. There are no known bald eagle nests at the site, but there is potential for nesting in the Park due to the presence of bald eagle habitat such as open water, forests, clearings, and swamp edges. Bald eagles have been observed flying over the Park (Florida Division of Recreation and Parks 2004).

Environmental Consequences

Gopher Tortoises
The Park provides appropriate habitat for the gopher tortoise. There would be short-term, minor effects to gopher tortoises during construction activities if individuals were traveling or had burrows in the project area. If gopher tortoises are found to be present, BMPs as described in Florida's *Gopher Tortoise Management Plan* (FWC 2012) would be followed to avoid or minimize any effects.

Perdido Key Beach Mouse
Because the project area is not located in or near Perdido Key beach mouse critical habitat, it would not be expected to impact the species. However, indirect effects could occur to the beach mouse if visitors using the ramp travel to Gulf Islands National Seashore. Signage will be posted at the boat ramp to provide educational information to visitors in order to avoid impacts to the Perdido Key beach mouse.

Marine Mammals
Manatees are unlikely to be in the project area. However, if present the main risk to manatees during the implementation of the proposed project would be from boat collisions that could result in harm or mortality. To avoid any risk of impacts to the manatee the Standard Manatee Conditions for In-Water Work (USFWS 2011) and educational signage will be posted at the ramp, if necessary, to remind boaters to avoid manatees. Because of the conservation measures, we would expect any impacts to manatee to be short term and minor.

Gulf Sturgeon
The Gulf sturgeon uses Big Lagoon as winter feeding and migration habitat. Direct impacts will be avoided due to the implementation of the standardized Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) which are protective of Gulf sturgeon. Minor short-term disturbances may occur as a result of in-water work associated with the proposed project. Disturbances to the water column from in-water work could temporarily affect certain primary constituent elements (e.g., abundant food items, adequate flow regime, sediment quality, and safe and unobstructed migratory pathways) of the Gulf sturgeon by increasing turbidity, dispersing potential prey, and disturbing substrate. These impacts would be limited to an area immediately surrounding the boat ramp and would occur only during construction. Therefore, impacts to Gulf sturgeon would be short term and minor.

Essential Fish Habitat
The proposed marina restoration would take place within the footprint of the existing marina facility. Construction would take place within the existing marina boundaries where the habitat is presently likely to be disturbed as a result of the current use of the boat launch. Therefore, impacts to EFH or the natural processes sustaining them may be detectable but localized, and would not measurably alter natural conditions. Small changes to local population numbers, population structure, and other demographic factors would be unlikely to occur. Sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species. Therefore, the project may result in minor, short term, adverse impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans.

EFH considerations would be coordinated with the NMFS Habitat Conservation Division through an EFH consultation. If necessary, species specific measures would be recommended by NMFS and would be incorporated into the project construction plan. The project would not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of potential effect during the construction process.

Piping Plover and Red Knot
The main risk to piping plovers and red knot would be from human disturbance while birds were resting and foraging in habitats in the vicinity of the project area. The proposed project would result in short-term increases in noise, which could startle individuals, though normal activity would be expected to resume within minutes. Noise may also cause plovers to move to a nearby area to alternate habitat, which is available in the Park. Piping plovers and red knots are highly mobile species and if disturbed by construction activities may be temporarily displaced from foraging and resting areas within normal movement patterns. These effects would be considered short term and minor. The project would be located near but not within or adjacent to designated piping plover critical habitat (see Figure 12-26); therefore, no impacts to critical habitat would be expected

Essential Fish Habitat

Impacts to EFH or the natural processes sustaining them may be detectable but localized, and would not measurably alter natural conditions. Small changes to local population numbers, population structure, and other demographic factors would be unlikely to occur. Sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species. Therefore, adverse effects to EFH would be short term and minor.

Saltmarsh Topminnow

Short-term minor impacts could occur to the saltmarsh topminnow if individuals were present near construction activities. Small changes to local population numbers, population structure, and other demographic factors would be unlikely to occur. Sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species.

State-Listed Birds, MBTA and BGEPA

State-listed birds may use habitat near the project area, and all migratory birds are protected under the MBTA. If construction activities were to occur during the nesting season (March 1 to August 1), birds could be disturbed by noise and human activity in the project area. In such circumstances, FWC nesting shorebird avoidance measures will be followed. These measures generally call for surveys within 300 feet and an avoidance buffer of 300 feet for nesting birds.

No bald eagles are known to nest in or adjacent to the Park; therefore, no effects to bald eagles would be anticipated. However, if a bald eagle nest were observed in the vicinity of the project area, conservation measures provided by the USFWS and FWC would be implemented (see chapter 6 Appendix for specific measures). Consultation with the FWC concerning the proposed project and anticipated construction schedule relative to known bald eagle nest sites near the project area and the nesting season in Florida (October 1 to May 15) would be required prior to commencement of project activities. To minimize potential for impacts to nesting bald agles, the consultation protection measures may include 1) addressing prescribed nest tree protection zones, and 2) preparation of a bald eagle nest protection plan (including nesting behavior disturbance monitoring). Bald eagles have been known to tolerate certain potential disturbances in their breeding territories. Should these conservation measures be implemented for active nest sites adjacent to construction activities in the project area, potential impacts to the bald eagle would be short term and minor.

Section 7 and Essential Fish Habitat Consultations

Section 7 (ESA) consultations with the USFWS and NMFS are ongoing for the proposed project. An EFH consultation under the Magnuson-Stevens Fishery Conservation and Management Act also would be completed to address any situations where proposed project activities may affect EFH habitat. The projects would incorporate any additional conservation recommendations provided by the NMFS and USFWS during the consultation to avoid, minimize, mitigate, or otherwise offset the impcats of the proposed project on listed species or EFH.

For all protected species discussed in this section, there is potential for an increase in visitors to the Park due to the improved access and facilities. Increased visitor use could impact wildlife through noise and disturbance of habitat and food sources. There is a possibility for a minor, short-term or long-term effect on more vulnerable species; however, impacts to protected species would be minimized by Park management and control of visitors (e.g., limiting the number of visitors, directing activities away from protected species, and creating trails to direct use), and by the Park's species and habitat protection goals.

Invasive Species

Affected Resources

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not been fully identified. However, Chinese tallow (*Sapium sebiferum*) is considered a significant exotic plant threat at the Park. Cogon grass (*Imperata cylindrica*) has also been identified around the box culvert flowing into the northwest portion of the Park, along Gulf Beach Highway, and along the main Park drive north of the entrance station.

Environmental Consequences

Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Developed areas adjacent to the Park are a constant source of exotics. Also, improvements to the Park would likely attract additional visitors. Increased human presence could have a long-term minor effect on vegetation in the Park because of the greater likelihood of trampling, picking, or other vegetative disturbance, including accidential introduction or spread. This type of impact would probably occur in areas closest to Park facilities.

Management measures have been implemented that include efforts to survey and remove invasive plant species (Florida Division of Recreation and Parks 2006). Additionally, preconstruction vegetation surveys and preconstruction and postconstruction weed treatments would likely be required. The use of equipment and disturbance of soil and existing vegetation would also create a risk of noxious weed or invasive vegetative species introduction. Those undeveloped areas disturbed during construction would be monitored, and exotic species removed. The opportunity for the increased spread of non-native species would be temporary and localized, and would not be anticipated to displace native species populations and distributions.

Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.14.5.7 Human Uses and Socioeconomics

12.14.5.7.1 Socioeconomics and Environmental Justice

Affected Resources

The proposed project would be in Escambia County, which is Florida's nineteenth most populous county. Escambia County contains 1.6% of Florida's population (Florida Office of Economic and Demographic Research [FOEDR] 2013a). Home to approximately 300,000 residents, the county has an annual budget of more than $370 million. Pensacola is the county seat. Escambia County contains the U.S. Navy's first operating air station and flight school (Escambia County 2013).

According to census data, 87.1% of the county's residents are high school graduates (or higher), and 23.3% have bachelor's degrees or higher (compared to 85.5% for high school graduates and 26.0% for bachelor's degrees in the state of Florida as a whole). The 2012 crime rate (index crimes per population of 100,000) was 4,895.5, which was higher than the state of Florida's 3,805.8 (FOEDR 2013a).

Census data indicate that 23.6% of Escambia's residents are employed in the trade, transportation, and utilities industry; 18.7% in professional and business services; 11.7% in education and health services; 11.0% in construction; 10.3% in financial activities; 10.2% in leisure and hospitality; and the remaining population in such industries as natural resources and mining, manufacturing, information, government, and other services. The county unemployment rate in 2012 was 8.4% (8.6% for the state of Florida), with 59.9% of the population in the labor force (FOEDR 2013a).

Data and characteristics of the population of Escambia County are summarized and compared to those for the population of the state as a whole in Table 12-23. Escambia County is in the Pensacola-Ferry Pass-Brent Metropolitan Statistical Area (MSA). Population growth increased 1.3% from 2010 to 2012 and 8.9% from 2000 to 2010 in this MSA. Escambia County is projected to grow to a population of 322,330 by 2040 (FOEDR 2013b). As seen in the table, Escambia County has similar racial and economic/income demographic characteristics as Florida as a whole.

Table 12-23. Population characteristics of Escambia County compared with State of Florida data.

PEOPLE QUICK FACTS	ESCAMBIA COUNTY	FLORIDA
Population, 2012 estimate	302,715	19,317,568
Persons under 5 years, 2012	6.2%	5.5%
Persons under 18 years, 2012	21.1%	20.7%
Persons 65 years and over, 2012	15.2%	18.2%
Female persons, 2012	50.5%	51.1%
White alone, 2012[1]	70.1%%	78.3%
Black or African American alone, 2012[1]	22.9%	16.6%
American Indian and Alaska Native alone, 2012[1]	0.9%	0.5%
Asian alone, 2012[1]	2.9%	2.7%
Native Hawaiian and Other Pacific Islander alone, 2012[1]	0.2%	0.1%
Two or More Races, 2012	3.0%	1.9%
Hispanic or Latino, 2012[2]	5.1%	23.2%
White alone, not Hispanic or Latino, 2012	66.0%	57.0%
Homeownership rate, 2007–2011	67.3%	69.0%
Median household income, 2007–2011	$43,707	$47,827
Persons below poverty level, 2007–2011	16.9%	14.7%
Manufacturers' shipments, 2007 ($1,000)	2,117,030	104,832,907
Merchant wholesaler sales, 2007 ($1,000)	11,838,916	221,641,518
Retail sales, 2007 ($1,000)	4,055,667	262,341,127

Source: U.S. Census Bureau State and County (2013).
[1] Includes persons reporting only one race.
[2] Hispanics may be of any race, so also are included in applicable race categories.

Environmental Consequences

The proposed project would create approximately 662 worker days of employment during construction (see Table 12-20). The improved access to Big Lagoon may result in a minor to moderate increase in visitation to the Park because of the substantial improvement of Park facilities. As a result, the local economy could benefit over the long term through the economic activity generated through fees, new jobs, and purchases from recreational visitors (food, fuel, food, equipment, etc.). This project would not create a benefit for any specific group or individual, but rather would produce benefits realized by the local community and visitors. Overall, only a few individuals, groups, and properties would be affected; therefore, the overall impact is expected to be minor and would not substantively alter socioeconomic conditions.

Escambia County has similar racial and economic/income demographic characteristics as Florida as a whole. Thus, there are no indications that the Park improvements would be contrary to the goals of Executive Order 12898, or would create disproportionate, adverse human health or environmental impacts on minority or low-income populations of the surrounding community. Therefore, no short-term or long-term environmental justice issues would be anticipated.

12.14.5.7.2 Cultural Resources

Affected Resources
A review of the Florida Master Site File indicates that there are at least three previously recorded prehistoric archaeological sites located within 1 mile of the existing boat ramp (FDHR 2013).

It does not appear that the area has been subjected to previous, formal cultural resources surveys. Based on the presence of previously recorded sites in contexts similar to the project area, it is possible that there are unrecorded sites present in the project area.

Environmental Consequences
The lands in the Park have been used by humans for thousands of years. The area is culturally rich and has a diversity of previously recorded archaeological sites that range from prehistoric to modern era.

The proposed construction would involve ground-disturbing activities. Project plans for the Park improvements have not been finalized. Once the project plans are finalized, the area would be subjected to a Phase I cultural resources survey. Based on the results of the survey, project plans would be altered to avoid any historic properties that would be adversely affected by the project work (ground disturbance and construction).

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.

12.14.5.7.3 Infrastructure

Affected Resources
The following infrastructure currently exists as part of Big Lagoon State Park:

- Park roads (2.6 miles)
- Service roads (3 miles)
- Parking areas
- An amphitheater seating 300 people (with a lighting system and stage)
- Boardwalks
- Observation platforms
- Restrooms
- Playgrounds
- Five miles of hiking and nature trails with interpretive exhibits
- A four-story wooden observation tower at the east beach area
- A boat ramp
- A full-service campground with 75 sites, electricity, picnic tables, fire rings, three restrooms, and a dump station
- A tent camping area accommodating up to 60 people with a group fire ring, water spigots, and a restroom with showers

- Fifteen family-style picnic pavilions, seating 10–150 people
- Picnic tables
- Public showers for day visitors
- An entrance station/administrative office
- A temporary office building
- A ranger residence
- A shop building, a three-bay equipment shelter, and several sheds

Park water is acquired from Escambia County's municipal water supply. Sewage is disposed of through septic tanks and drain-field systems (Florida Division of Recreation and Parks 2006).

Environmental Consequences

Construction of the new restroom would require connection to the ECUA regional sanitary sewer collection system. The impact to the regional system would be long term but minor because it would be localized and within operational capacity. Local water quality should benefit because of the removal of a septic tank system near surface waters. Visitor experience at the Park would be improved with the provision of a new restroom, reducing crowding. A sanitary sewer collection system permit would be obtained from the FDEP.

Other changes to infrastructure (the addition of a lane to the boat ramp, improvement of traffic circulation at the boat ramp, and the expansion of boat trailer parking) would have a beneficial, long-term impact because they would improve the visitor experience. A minor, long-term increase in the pace of the need for maintenance of existing facilities could occur if visitor use increased due to better infrastructure at the Park; minor increases in local daily traffic volumes could also occur, resulting in perceived inconveniences to drivers but no actual disruption of traffic.

12.14.5.7.4 Land and Marine Management

Affected Resources

The land use surrounding the Park to the west, north, and east is primarily residential with a few recreational facilities and some commercial businesses. Big Lagoon is located to the south, and on the south edge of Big Lagoon is a long, narrow spit of land called Johnson Beach. Perdido Key, an unincorporated community on a barrier island, is located southwest of the Park.

The Park is managed by the FDEP, Florida Division of Recreation and Parks, under the 2006 *Big Lagoon State Park Unit Management Plan*. Under this plan, public outdoor recreation is the designated single use of the property. Major emphasis is placed on maximizing the recreational potential of the area; however, preservation of resources is also important (Florida Division of Recreation and Parks 2006). The Park has designated the basin swamp, baygall, estuarine tidal marsh, and scrub communities as protected zones, defined as areas of high sensitivity or outstanding character from which most types of development are excluded. Generally, facilities requiring extensive land alteration or more intensive use such as parking lots and camping areas are not allowed in protected zones. Facilities with minimal resource impacts such as trails, interpretive signs, and boardwalks are generally allowed (Florida Division of Recreation and Parks 2006).

The project would be located in a coastal area that is regulated by the federal Coastal Zone Management Act (CZMA) of 1972, and the Florida Coastal Management Act of 1978.

The Park is adjacent to the Fort Pickens Aquatic Preserve. It is also a component of the Florida Greenways and Trails System, a statewide system of greenways and trails.

Environmental Consequences
Although the action would require several permits for the short-term construction period, it would not require a variance, zoning change, or amendment to a land use area or comprehensive management plan. The long-term impact of the project would be minor because it would not affect overall use and management beyond the local Park area. It would be consistent with current land use because construction would take place in an already developed area of the Park. It would also be consistent with and support the *Big Lagoon State Park Unit Management Plan*, which has a recreational goal of expanding parking, improving circulation, and constructing a restroom at the boat ramp area (Florida Division of Recreation and Parks 2006).

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.

12.14.5.7.5 Aesthetics and Visual Resources

Affected Resources
Existing aesthetics and visual resources from the project site are views of a minimally developed area. Views include those of a sandy shoreline, Park vegetation such as trees, Big Lagoon, an access road, and Park facilities (parking lots, boat ramp, and several small structures).

Environmental Consequences6
Short-term introduction of unnatural elements to the existing visual landscape would occur during construction activities due to the presence of equipment and materials. These impacts would be minor because they would only be visible from a small portion of the Park, would not dominate the viewshed, and would not detract from current visitor activities. Long-term changes to visual resources would occur from the addition of a boat ramp and restroom as well as the expansion of boat trailer parking. These changes would be readily apparent but minor because they are consistent with other state park facilities and would not attract attention, dominate the view, or detract from visitor experiences.

12.14.5.7.6 Tourism and Recreational Use

Affected Resources
Park use from January 1, 2012, through December 31, 2012, included 44,734 overnight campers and 80,239 day use visitors for a total of 124,973 Park visitors. The Park sold 644 annual passes. Approximately two-thirds were after-hour use passes for launching boats before or after Park hours. The Park estimates that the minimum number of boat launches had been 10 per day over the 2012 year. On

many days, the boat ramp was filled, and boaters were turned away (personal communication between M. Domini and Pearce Barrett on September 26, 2013).

Recreation at the Park currently includes boating, swimming, fishing, canoeing/kayaking, hiking, camping, windsurfing, picnicking, wildlife viewing, and nature appreciation.

Environmental Consequences6
During the construction period, visitor recreational experience would be negatively impacted by noise and visual disturbances associated with the use of construction equipment. The impact would be short term and minor because it would only affect some recreationalists in the boat ramp area for a limited period of time (up to 1 year). Users would likely be aware of the construction, but changes in use would be slight. The construction process would also limit recreational activities near construction areas to protect public safety, which would be a minor short-term inconvenience to visitors. Over the long term, minor beneficial impacts to tourism and recreational use would be expected due to the enhancement of recreational opportunities associated with improved facilities and accessibility. Fewer boaters would need to be turned away due to crowding.

12.14.5.8 Public Health and Safety and Shoreline Protection

Affected Resources
The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Emergency Planning and Community Right-to-Know Act; and the Hazardous Materials Transportation Act. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites that have already been contaminated by releases of hazardous materials, wastes, or substances.

A review of the EPA's EnviroMapper revealed that there are no CERCLA sites on or immediately adjacent to the Park. There are several nearby facilities that produce hazardous waste, including an automotive facility, a pharmacy, and an alloy company. The Park itself is a conditionally exempt small-quantity generator of hazardous waste (EPA 2013c).

The Park's shoreline is a highly dynamic area subject to both erosion and accretion. Periodic maintenance dredging of the Intracoastal Waterway further influences currents and long shore drift that affect physical changes along the Park's shoreline. Recent increases in commercial barge traffic and dredge operations have also occasionally impacted the shore. Sand accumulation at the boat ramp is a problem that needs to be addressed (Florida Division of Recreation and Parks 2006). The *Big Lagoon State Park Unit Management Plan* recommends that additional plantings of emergent vegetation occur west of the boat ramp, and the plan is working toward a long-term solution to sand accretion at the boat ramp and erosion to the west. The shoreline will be managed by the Florida Division of Recreation and Parks (FDRP) in cooperation and coordination with the Office of Coastal and Aquatic Managed Areas, FDEP Bureau of Beach and Coastal Systems, and the USACE as necessary.

Environmental Consequences

Project construction would require mechanical equipment that uses oil, lubricants, and fuels. The contractor would be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials, and to avoid releases and spills. If a release should occur, it would be handled promptly in accordance with all applicable regulations. The period of time during which a release could occur from construction activities would be short term, and any release would be expected to be minor.

The principal impacts of the proposed project on public health and safety would be related to the potential mobilization of hazardous waste from excavation and handling of sediments containing oil, heavy metals, or other materials, which could result in exposure to the environment and workers. Sediment analysis for contaminants at the boat ramp site and potential borrow pits would be completed and analyzed prior to project implementation. If hazardous materials were encountered in the project area during construction activities, appropriate measures for the proper assessment, remediation, management, and disposal of the contamination would be required in accordance with applicable federal, state, and local regulations. The period of time during which mobilization of hazardous waste from sediments could occur from construction activities would be short term. Because sediments analysis would occur and appropriate handling and management measures would be taken, impacts to public health and safety are expected to be minor. All occupational and marine safety regulations and laws would be followed to ensure safety of all workers and monitors.

No impact is expected to the shorelines because of the protective erosion control measures and BMPS that would be used. Shoreline integrity would remain intact, and there would be no increased risk of potential hazards (e.g., increased likelihood of storm surge) to visitors or residents.

12.14.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Big Lagoon State Park project implements restoration techniques within Alternatives 3 and 4.

The proposed Big Lagoon State Park project would involve enhancing an existing boat ramp and surrounding facilities in the Big Lagoon State Park in Escambia County. These improvements would include adding an additional lane to the boat ramp, expanding boat trailer parking, improving traffic circulation at the boat ramp, and providing a new restroom facility to connect the park to the Emerald Coast Utility Authority (ECUA) regional sanitary sewer collection system. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories may occur, no moderate to major adverse impacts are anticipated to result. The project would enhance and/or increase the public’s use and/or enjoyment of the natural resources by improving the existing boat ramp area. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

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12.15 Bob Sikes Pier, Parking and Trail Restoration: Project Description

12.15.1 Project Summary

The proposed Bob Sikes Pier project would improve access to a fishing pier in the Pensacola area in Escambia County as well as enhancing the quality of the experience for its recreational users. The proposed improvements include renovating parking areas, enhancing bicycle/pedestrian access, and aesthetic improvements to the surrounding area. The estimated cost for this project is $1,023,990.

12.15.2 Background and Project Description

The Trustees propose to improve and enhance the Bob Sikes pier (see for project location). At 1,800 feet in length, the Bob Sikes Fishing Pier is the longest fishing pier in the Pensacola area as well as the only free fishing pier on Santa Rosa Island. Historically, the Bob Sikes fishing pier has provided an opportunity for the general public to access Santa Rosa Sound for fishing and sightseeing.

The objective of the proposed Bob Sikes Pier Restoration project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by improving the access to the existing fishing pier. The restoration work proposed includes: 1) adding solar-powered lighting to illuminate dark areas along the pier; 2) completing a series of minor pier and rail modifications to generally improve the pier's safety; 3) renovating and rehabilitating designated parking areas to improve parking efficiency of visitors and to improve traffic flow leading into and within the pier parking lot; 4) adding a *Bob Sikes Pier* entrance sign and informational/educational signage for pier users (e.g., proper actions to take if a sea turtle should be hooked while fishing); 5) widening and enhancing half mile section of multipurpose (bicycle/pedestrian) access trail that connects the Bob Sikes Fishing Pier to other recreational and commercial areas on the beach; 6) eliminating a directional north bound right turn lane into parking area from Pensacola Beach Boulevard in order to address a major vehicle/pedestrian/bicycle safety conflict point while creating additional parking area for visitors; and 7) aesthetic improvements to the parking area, parking access road and multipurpose trail leading to Bob Sikes Pier.

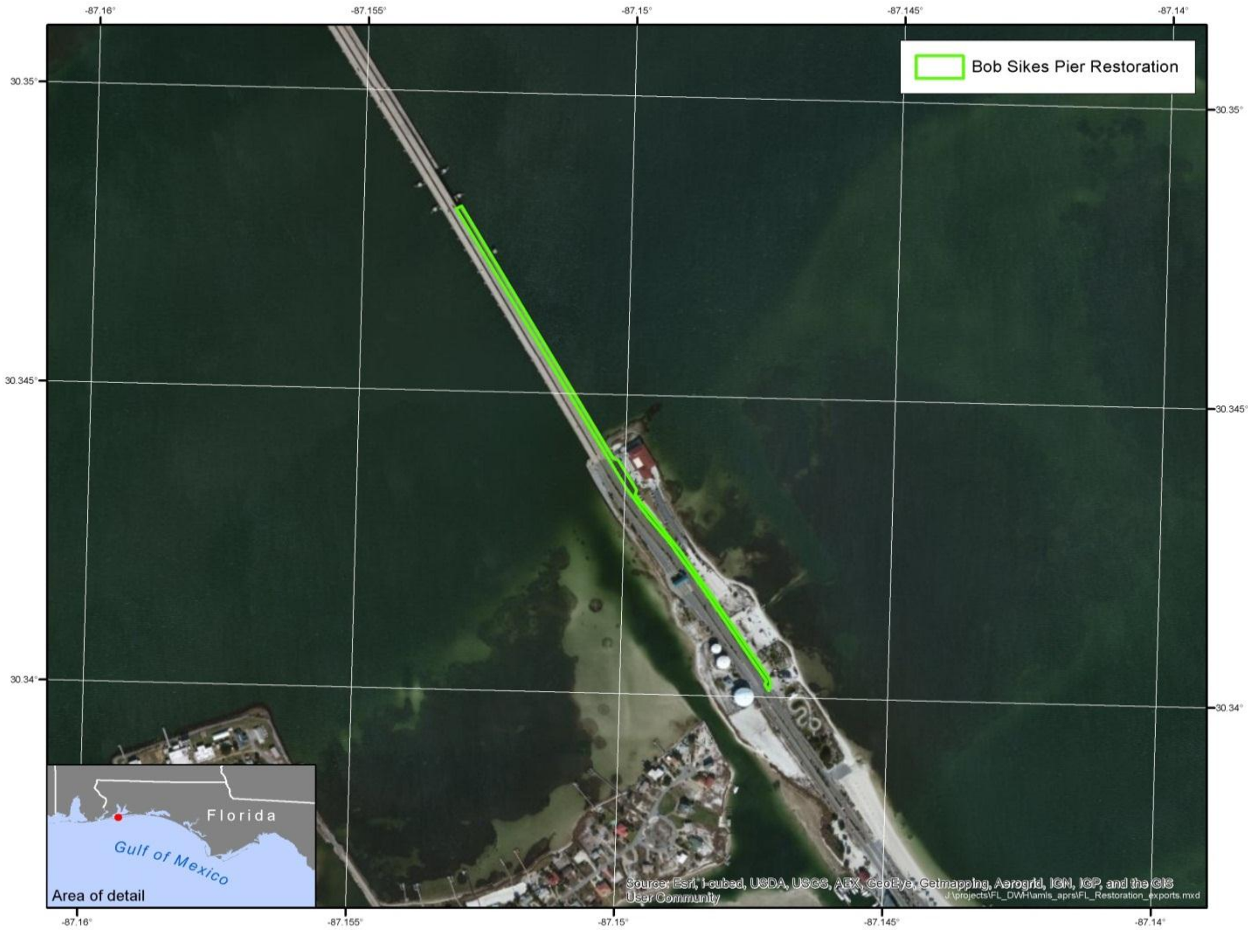

Figure 12-28. Location of envisioned Bob Sikes Pier Restoration Project.

12.15.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The project would enhance and/or increase the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response activities. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results and can be implemented with minimal delay. Florida counties have successfully completed projects of similar scope throughout Florida over many years. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Furthermore, cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. Finally, this project is not anticipated to negatively affect regional ecological restoration and is therefore not inconsistent with the long-term restoration needs of the State of Florida. See Sections 6d of the Framework Agreement.

Many recreational use projects, including ones similar to this project, have been submitted as restoration projects on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Bob Sikes Pier Restoration project also meet the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.15.4 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or increase the public's use and/or enjoyment of the natural resources by improving access to the existing pier. Performance monitoring will evaluate: 1) the addition of solar-powered lighting; 2) the completion of a series of minor pier and rail modifications; 3) renovation and rehabilitation of designated parking areas; 4) construction of informational/educational signage; 5) enhancement of bicycle/pedestrian access trail; 6) elimination of a directional north bound right turn lane into parking area from Pensacola Beach Boulevard; and 7) the completion of the aesthetic improvements to the parking area, parking access road and multipurpose trail leading to Bob Sikes Pier. Specific success criteria include: 1) the completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined by observation that the pier is open and available.

Long-term monitoring and maintenance of the improved facilities will be completed by Escambia County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Escambia County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the post construction performance monitoring period, the Escambia County will monitor the recreational use activity at the site. Escambia County will visit the site twice a year to count the number of users at the fishing pier. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

12.15.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $2,047,980 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Florida, which will be determined by the

Trustees' assessment of lost recreational use for the Oil Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[11]

12.15.6 Cost

The total estimated cost to implement this project is $1,023,990. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and contingencies.

[11] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.16 Bob Sikes Pier, Parking and Trail Restoration: Environmental Review

The proposed Bob Sikes Pier project would improve access to a fishing pier in the Pensacola area in Escambia County while enhancing the quality of the experience for its recreational users. The proposed improvements include renovating parking areas, enhancing bicycle/pedestrian access, and aesthetic improvements to the surrounding area.

12.16.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the Deepwater Horizon Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement for Early Restoration Addressing Injuries Resulting from the Deepwater Horizon Oil Spill (Framework Agreement), the Trustees released, after public review of a draft, a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the Federal Register on behalf of the Trustees announcing the development of additional future Early Restoration projects for a Draft Phase III Early Restoration Plan (ERP). This boat ramp project was submitted as an Early Restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and the Oil Pollution Act (OPA), the project meets Florida's criteria that Early Restoration projects occur in the eight-county Florida panhandle area that deployed boom and was impacted by the Spill.

The Trustees propose to improve and enhance the Bob Sikes pier(Figure 12-28). At 1,800 feet in length, the Bob Sikes Fishing Pier is the longest fishing pier in the Pensacola area as well as the only free fishing pier on Santa Rosa Island. Historically, the Bob Sikes fishing pier has provided an opportunity for the general public to access Santa Rosa Sound for fishing and sightseeing.

The proposed restoration would enhance and/or increase the public's use and/or enjoyment of the natural resources by improving the access to the existing fishing pier. The restoration work proposed includes: 1) adding solar-powered lighting to illuminate dark areas along the pier; 2) completing a series of minor pier and rail modifications to generally improve the pier's safety; 3) renovating and rehabilitating designated parking areas to improve parking efficiency of visitors and to improve traffic flow leading into and within the pier parking lot; 4) adding a *Bob Sikes Pier* entrance sign and informational/educational signage for pier users (e.g., proper actions to take if a sea turtle should be hooked while fishing); 5) widening and enhancing half mile section of multipurpose (bicycle/pedestrian) access trail that connects the Bob Sikes Fishing Pier to other recreational and commercial areas on the beach; 6) eliminating a directional north bound right turn lane into parking area from Pensacola Beach Boulevard in order to address a major vehicle/pedestrian/bicycle safety conflict point while creating additional parking area for visitors; and 7) aesthetic improvements to the parking area, parking access road and multipurpose trail leading to the Bob Sikes pier.

The total estimated cost to implement this project is $1,023,990. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and contingencies.

12.16.2 Project Location

The proposed Project is located in the State of Florida, Escambia County. The pier runs parallel to the Pensacola Beach Boulevard Bridge (Highway 399) that spans the Santa Rosa Sound. Figure 12-28 shows project location.

12.16.3 Construction and Installation

Proposed construction and installation associated with restoration of the Bob Sikes Pier includes:

- Installation of solar lighting on the existing pier using appropriate construction equipment.
- Modifications to the pier and rail, designed to improve access for handicap users and improve safety of the pier, will be completed using appropriate construction equipment.
- Improvements to parking lot
    - Demolish and renovate using heavy construction equipment and hand-held tools, as appropriate.
    - Improve handicap parking areas, including replacing signs and striping.
- Improvements to recreational path
    - Widen and enhance path, via removal of old material, re-routing some areas of the path, and paving the repaired area.
    - Reroute road leading to the parking area to improve traffic flow and safety.
    - Remove old road material and replace using heavy equipment to reroute, regrade, and pave the new road surface.

Any improvements would be implemented using heavy equipment and hand held tools, as necessary. Project construction would begin 4 to 6 months after funding is received, with construction scheduled to last from 7 to 12 months.

12.16.4 Operations and Maintenance

Long-term monitoring and maintenance of the improved facilities will be completed by Escambia County as part of their regular public facilities maintenance activities. Funding for this post-construction maintenance is not included in the previously provided value for the project cost and will be accomplished by Escambia County.

During the one year construction performance monitoring period, the Florida Trustees' Project Manager will go out twice to the site to record the number of users. Following the post construction performance monitoring period, the Escambia County will monitor the recreational use activity at the site. Escambia

County will visit the site twice a year to count the number of users at the fishing pier. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

12.16.5 Affected Environment and Environmental Consequences

12.16.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.16.5.2 Physical Environment

12.16.5.2.1 Geology and Substrates

Affected Resources

The Bob Sikes Pier runs parallel to the Pensacola Beach Boulevard Bridge (Highway 399) that spans the Santa Rosa Sound with proposed project site being located on the northern portion of the Santa Rosa Island. The majority of the project area has previously been developed leaving few areas of undisturbed soils remaining, and for those soils remaining that have not been developed most have been previously impacted through landscaping. Areas remaining void of development primarily consist of sand and are classified by the United States Department of Agriculture Natural Resources Conservation Services (USDA NRCS) as Arents-Urban land, a soil type primarily impacted by development with remaining undeveloped soils having low erosion potential, gradual slopes and that is somewhat poorly drained with some tendency for ponding (USDA NRCS 2013).

Environmental Consequences

Construction and construction activities associated with the widening and enhancement of the multipurpose access trail, the elimination of the directional north bound right turn lane and the enhancement/landscaping around the parking area, access road and trail will expose, modify and compact soils in the project footprints, impacting approximately 1-3 acres. Construction activities would likely include the use of a backhoe or bobcat and construction staging is anticipated to occur in an existing parking lot. Impacts to soils would occur as a result of construction and construction activities and would only occur during the construction period. Specific mitigation measures would be implemented during campground construction. These would include following established best management practices (BMPs) such as the implementation of an erosion control and storm water management plan, the installation of sediment traps prior to commencement of construction activities; and on-going construction monitoring to ensure compliance. Based on previous disturbances to the project area soils, the relatively small area and amount of soils impacted and the nature of construction activities, alterations to soil through fill, compaction, grading, and earth moving activities would result in long and short-term, minor adverse impacts to affected soils.

Given that there would be no substantial change in uses at the project area following implementation of the proposed rehabilitation activities, it is anticipated that there would be no long-term negative impacts to soils as a result of site use.

12.16.5.2.2 Hydrology and Water Quality

Affected Resources

The site is located over Santa Rosa Sound, adjacent to the Pensacola Beach Bridge. The pier extends over open waters of Santa Rosa Sound. Pensacola Bay and the waters surrounding the project area have been impacted by numerous non-point and point source pollution sources resulting in a reduction of natural biodiversity and productivity. Hydrology and water quality are influenced by substantial urban development throughout the area surrounding the project site.

Environmental Consequences

Project Activities are not anticipated to require construction in water however, based on construction activities on-land it is possible that some impacts via turbidity and the potential for increased sediment released into water could occur. It is anticipated that all impacts would be short-term in nature occurring only during construction resulting in short-term, minor, adverse impacts to water quality. BMPs along with other avoidance and mitigation measures required by state and federal regulatory agencies would be employed to minimize any water quality and sedimentation impacts. Effects to hydrologic and water quality resources are expected to be minimal.

Long-term, the planned improvements to the parking area, including re-paving and planting native vegetation in appropriate areas, would have a minor beneficial impact on water quality.

12.16.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

The U.S. Environmental Protection Agency (USEPA) defines ambient air in 40 C.F.R. Part 50 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA), the USEPA has promulgated National Ambient Air Quality Standards (NAAQS). The NAAQS include primary standards which set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. To date, the USEPA has issued NAAQS for seven criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO2), particles with a diameter less than or equal to a nominal 10 micrometers (PM10), particles with a diameter less than or equal to a nominal 2.5 micrometers (PM2.5), ozone (O3), nitrogen dioxide (NO2), and lead (Pb). Individual states may promulgate their own ambient air quality standards for these “criteria” pollutants, provided that they are at least as stringent as the federal standards. In Table 12-24, below, both State of Florida and federal primary ambient air quality standards for criteria air pollutants are presented.

The project is located in a developed urban area and is adjacent to a large roadway. The surrounding upland habitat is a developed residential and commercial area. In 2013, Escambia County was in attainment of the NAAQS for all criteria pollutants as designated by the USEPA (USEPA 2010).

The USEPA proposed strengthening the air quality standards for ground-level ozone to 0.075 ppm in 2008. To attain this standard, the three-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. The 2006 to 2008 average of the fourth-highest daily maximum 8-hour ozone concentration for Pensacola was 0.079 ppm, and thus Escambia County would be designated as nonattainment according to the proposed 2008 ozone standard (USEPA 2009a).

Table 12-24. State and Federal ambient standards for criteria air pollutants.

POLLUTANT	AVERAGING PERIOD	FEDERAL PRIMARY STANDARD	STATE OF FLORIDA STANDARD
Ozone	8-hour	0.075 ppm	Same as Federal
	1-hour (daily max.)	0.12 ppm	Same as Federal
PM2.5	Annual (arithmetic mean)	15.0 μg/m3	Same as Federal
	24-hour	35 μg/m3	Same as Federal
PM10	Annual (arithmetic mean)	NA	50 μg/m3
	24-hour	150 μg/m3	150 μg/m3
Carbon Monoxide	8-hour	9 ppm	9 ppm
	1-hour	35 ppm	35 ppm
Nitrogen Dioxide	Annual (arithmetic mean)	0.053 ppm	0.05 ppm
	1-hour	0.100 ppm	Same as Federal
Sulfur Dioxide	Annual (arithmetic mean)	0.03 ppm	0.02 ppm
	24-hour	0.14 ppm	0.10 ppm
	1-hour (per annum)	NA	0.40 ppm
	1-hour (per 7 days)	NA	0.25 ppm
	5-minute	NA	0.80 ppm
Lead	Rolling 3-month average	0.15 μg/m3	Same as Federal
	Quarterly average	1.5 μg/m3	Same as Federal
Total Suspended Particulate	Annual (geometric mean)	NA	60 μg/m3
	24-hour	NA	150 μg/m3

Greenhouse gases (GHGs) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The principal GHGs emitted into the atmosphere through human activities are CO2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (USEPA, 2011). CO_2 is the major GHG emitted, and the burning of fossil fuels accounts for 81 percent of all U.S. GHG emissions (USEPA 2009b).

Implementation of the proposed project would include transportation and heavy construction equipment which may include a backhoe, bulldozer and a dump truck.

Environmental Consequences

Project implementation would require the use of heavy equipment which would temporarily affect air quality in the project vicinity due to construction vehicle emissions. Excavation activities associated with the construction portions of the project may produce fine particulate matter. Available BMPs would be employed to prevent, mitigate, and control potential air pollutants during Project implementation. Any air quality impacts that would occur would be localized, short in duration and minimal based on the fact that the majority of construction would consist primarily of renovations to existing structures overall impacts to air quality would be short-term and minor. The implementation of solar-powered lighting along the pier as opposed to fossil fuel powered lights would result in a minor beneficial impact on air quality and GHG emissions through the reduction in the amount of fossil fuel used. Long-term, the site may experience some increase in use by the public but the renovations are expected to improve efficiency and changes in air quality and GHG are expected to be minor in the long-term.

The use of gasoline and diesel-powered construction vehicles and equipment, including cars, trucks, bulldozers, dump trucks and backhoes, would contribute to an increase in GHG emissions. The following table describes the likely GHG emission scenario for the implementation of this project.

Based on the assumptions described in Table 12-25, and the small scale and short duration of the construction portion of the proposed project, predicted GHG emissions would be short-term and minor and would not exceed 25,000 metric tons of CO_2e per year. Available BMPs would be employed to reduce the release of GHGs during implementation. Based on the small scale and short duration of the project, GHG emissions in the project staging and deployment areas would be minimal. Therefore, any increase in GHG emissions would be short-term and minor.

12.16.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted sound and noise levels, and impacts are interpreted in relationship to its effects on nearby residents. Noise associated with recreational land uses, such as boating, can be of concern to surrounding communities. Noise also emanates from vehicular traffic associated with new facilities and from Project sites during construction. Ambient noise (the existing background noise environment) can be generated by a number of noise sources, including mobile sources, such as airplanes, automobiles, trucks, and trains; and stationary sources such as construction sites, machinery, or industrial operations.

Table 12-25. Projected project greenhouse gas emissions.

VESSEL/CONSTRUCTION EQUIPMENT	NO. OF HOURS OPERATED[12]	CO2 (METRIC TONS)[13]	CH4 (CO2E) (METRIC TONS)[14]	NOX (CO2E) (METRIC TONS)	TOTAL CO2E (METRIC TONS)
Grader (1)	320	125	0.10	0.10	125.20
Barge[15] (1)	640	10,240	19.2	76.8	10,336
Backhoe[16] (1)	960	336	0.19	0.19	336.38
Dumptruck[17] (1)[18]	48	16	0.01	0.01	16.02
TOTAL					**10,813.60**

The Noise Control Act of 1972 (42 U.S.C. 4901 to 4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale which approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 12-26 presents some familiar sounds and their decibel levels.

[12] Emissions assumptions for all equipment based on 240 10-hour days of operation per piece of equipment over a 12-month construction period.

[13] CO_2 emissions assumptions for diesel and gasoline engines based on U.S. EPA 2009

[14] CH_4 and NOx emissions assumptions and CO_2e calculations based on U.S. EPA 2011

[15] GHG emission estimates were not available for a barge. In order to present the highest estimate, GHG estimates for a tugboat were used.

[16] GHG emission estimates were not available for a Bobcat. In order to present the highest estimate, GHG estimates for a backhoe were used.

[17] GHG emission estimates were not available for a tractor trailer. In order to present the highest estimate, GHG estimates for a dumptruck were used.

[18] Construction equipment emission factors based on U.S EPA NONROAD emission factors for 250hp pieces of equipment. Data was accessed through the California Environmental Quality Act Roadway Construction Emissions Model.

Table 12-26. Familiar sounds and their decibel levels.

SOUND	DECIBEL LEVEL (DB)
Whisper	30
Normal Conversation	50-65
Vacuum cleaner at 10 feet	70
Midtown Manhattan Traffic Noise	70-85
Lawnmower	85-90
Train	100
Nearby Jet Takeoff	130

Source: Occupational Health and Safety Administration 2012

The primary sources of ambient (background) noise in the project area are operation of vehicles, commercial and recreational vessels, the nearby Pensacola Airport and natural sounds such as wind and wildlife. City noise is mainly from vehicles and also daily and recreational human activities. The levels of noise in the project area varies, 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 levels in the project area are primarily from commercial and recreational vessels, and vehicles on Highway 399. Noise levels fluctuate with highest levels usually occurring during the spring and summer months due to the increased boating and coastal beach activities.

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 pier recreationists.

Environmental Consequences

Project area visitors and wildlife may be sensitive to changes in noise sources or levels due to the project. Instances of increased noise are expected during construction of the project. The proposed project would generate construction noise associated with equipment during construction. Construction noise can also be a nuisance to residents living near the pier to project construction activities or to visitors.

Mitigation measures that serve to limit noise during construction include: limiting activity at project sites to daytime hours; limiting truck traffic ingress/egress to the site to daytime hours; promoting awareness that producing prominent discrete tones and periodic noises (e.g., excessive dump truck gate banging) should be avoided as much as possible; and requiring that work crews seek pre-approval for any weekend activities, or activities outside of daytime hours. Because construction noise is temporary, any negative impacts to the human environment during construction activities would be short-term and minor.

Once facilities are constructed, noise can be generated from facility operations and the vehicles associated with these facilities. However, these noise levels would be representative of a pier and similar in nature to those currently generated. Overall, long-term noise effects from recreationists and recreational activities would be minor.

12.16.5.3 Biological Environment

12.16.5.3.1 Living Coastal and Marine Resources

Affected Resources

Coastal and marine resources at the site include open water habitat in Santa Rosa Sound. Nearby areas are mostly developed along the shoreline. Seagrass is present in the area surrounding the Bob Sikes Pier.

Gulf sturgeon, manatees, sawfish, and sea turtles (Kemp's Ridley, loggerhead, leatherback, and green) may visit the waters of the boat ramp location. The project is located in designated Gulf sturgeon critical habitat. Smalltooth sawfish are not likely to be encountered at the project site because their current distribution has contracted to peninsular Florida and, within that area, they can only be found with regularity off the extreme southern portion of the state (NOAA, National Marine Fisheries Service (NMFS) consultation letter, April 2, 2012). In addition, birds addressed through the MBTA and BGEPA may also be present, at least occasionally, at the Bob Sikes Pier reflecting both the project's location and the recreational angling the pier supports.

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences

Impacts to living coastal and marine resources are expected to be negligible. Because the proposed project is not anticipated to require any in-water work, or involve the construction of new structures there will be no additional disturbance or modification of existing habitat. Further, because the project area is already used by the public for recreation and fishing and is adjacent to an active bridge-highway that will remain in operation throughout the project, construction activity is anticipated to represent a marginal source of additional disturbance to species already in the area. Potential impacts would also be mitigated by the availability of nearby suitable habitat that mobile species, including birds, manatees, and turtles, could, and presumably would, access for short periods in response to any disturbance related to project implementation activities.

Endangered Species Act consultations with either USFWS and/or NOAA Fisheries will ensure adequate protection measures are ultimately incorporated for implementing this project including as part of permit conditions and identification of specific BMPs to adhere to. Planting native vegetation and some of the other facility improvements would have a minor beneficial impact on the biological environment.

Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The project is located in uplands above the mean high- tide line, therefore no EFH is located within the project footprint.

12.16.5.4 Human Uses and Socioeconomics

12.16.5.4.1 Socioeconomics and Environmental Justice

Affected Resources

The population of Escambia County was 302,715 in 2012 and accounted for 1.6 percent of the state's total population. In 2013, median household income in Escambia County was $40,917, which was approximately 7 percent lower than median household income in the State of Florida (U.S. Census 2013). Escambia County contains both minority and low-income populations; however, no communities of environmental justice concern are located adjacent to the project area.

Environmental Consequences

Based on the relatively small scale of construction activities it is not anticipated that the proposed project would create jobs nor would it have substantial impacts to the socioeconomic environment as a result of construction. It is likely that there would be direct beneficial impacts to the local economy as a result for increased recreational and tourist activity in response to the project components. These economic benefits would be concentrated to the Park as well as in the service and retail industry sectors. Beneficial economic effects would accrue to local recreational supply retailers, restaurants, and hospitality providers. The proposed project would not adversely affect any low income or minority populations. Overall, no adverse impacts would occur to socioeconomics and environmental justice as a result of the proposed project.

12.16.5.4.2 Cultural Resources

Affected Resources
No cultural resources have been identified at the site at this time. Construction would take place within the existing footprint of the Bob Sikes Pier and it is surrounded by urban development.

Environmental Consequences
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.

12.16.5.4.3 Infrastructure

Affected Resources
The Bob Sikes Pier is an artificial pier that was designed to support recreational activities. There is currently a recreational path at the site and a parking lot accessed by a roadway. Vehicle use (for both transportation and maintenance) constitutes the primary source of energy consumption in the project area. Other energy uses include electricity consumption at recreational facilities and fuel consumption for landscape management (mowers and gas-powered maintenance equipment). The proposed project would not prevent access to any known energy resources in the project vicinity, such as coal, oil, or natural gas. The project would have no such impacts on the availability of these resources.

Environmental Consequences
Based on the nature of proposed improvements there would be no additional public utility requirements, and all waste generated would be disposed of in an off-site landfill.

Improvements to the Bob Sikes Pier would have a long-term beneficial impact to infrastructure from the renovation of the roadway parking area and recreational path to improve safety and traffic flow.

12.16.5.5 Land and Marine Management

Affected Resources
Surrounding land uses includes recreational facilities and parking, with surrounding land uses being considered developed urban areas. The project area is bordered by Highway 399 to the west and Santa Rosa Sound to the east. The proposed project area is currently used for recreational activities.

Environmental Consequences
Improvements to the Bob Sikes Pier is not anticpated to affect land and marine management because the site is already developed for recreational use; project plans would not change the nature of land use or management but would improve the function of the existing site, resulting in no impacts.

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.

12.16.5.5.1 Aesthetics and Visual Resources

Affected Resources

The general visual character of this region can be described as semi-urban and developed, with the proposed project area and the pier extending into open water on Santa Rosa Sound adjacent to a major roadway (Highway 399). Surrounding areas/development consist primarily of low-density residential interspersed with commercial developments located along major roadways, with some larger areas remaining in agricultural use or as undeveloped open space. There are no designated protected viewsheds or historic resources in the vicinity of either project site.

Environmental Consequences

Temporary impacts to visual resources would result from construction of the proposed project components. Large construction equipment such as backhoes removal would temporarily obstruct the views for visitors and recreational users at the site. These short-term construction-related impacts to visual resources would be minor. Beneficial impacts to viewsheds would occur after improvements to the pier have been made as much of the work is designed to improve the aesthetics of the site.

12.16.5.5.2 Tourism and Recreational Use

The proposed project area is a public facility that provides opportunities for recreation, including use of the recreational path and fishing. Visitation to the pier is currently not monitored.

Environmental Consequences

During the construction period, recreational experience would be impacted from noise and visual disturbances associated with the use of heavy equipment. Access to the site would also be restricted or impacted to some degree during parking and trail enhancements. Improvements to the Bob Sikes Pier would have a moderate positive impact on tourism and recreational use. While these temporary inconveniences would result in minor short term impacts on tourism and recreational use during the construction and rehabilitation activities at the shoreline, over the long term improved access and improved recreational area would result in benefits to tourism and recreational use

12.16.5.5.3 Public Health and Safety and Shoreline Protection

Affected Resources

No hazardous materials currently exist at the project site where the potential for human exposure to natural or man-made hazards does not present a substantial risk. The project area is situated along an area of stable coastline not prone to significant shoreline erosion under normal conditions, and the recreation facility as a whole is in good condition with respect to public health. Contaminated soils at the project area are not anticipated, if during construction areas of concern are identified appropriate testing and actions would be taken. The project and its construction are not anticipated to generate hazardous waste or the need for disposal of hazardous waste. All waste generated during construction would be disposed of in the appropriate waste or recycling receptacles on-site would be taken off-site and disproved in an approved waste disposal site by the construction contractor. All occupational and safety regulations would be followed to ensure safety of all workers and the public.

Environmental Consequences

No hazardous wastes would be created during restoration construction. All hazardous materials handled during construction including paints, solvents, chemicals and petroleum products would be contained and appropriate barriers would be in place to ensure the protection of adjacent water resources from potential spills and leaks. In the event of a discharge of oil or release of hazardous substances all spills would be reported to the FDEP and all federal and state regulations would be followed during the cleanup. BMPs in accordance with the Occupational Safety and Health Administration (OSHA) and state and local requirements would be incorporated into construction activities to ensure proper handling, storage, transport and disposal of all hazardous materials. While the majority of project work would take place within the existing footprint of the recreational site and no changes to infrastructure or habitat would occur, soil and sediment stabilization measures would be incorporated into project design as needed in areas where the potential for erosion exists in order to protect resources and public health and safety. No adverse effects to public health and safety are anticipated as a result of project construction. Project improvements including enhanced lighting, upgraded wheelchair access, minor pier and rail modifications, and trail enhancements are designed to improve public safety, resulting in long-term beneficial impacts.

12.16.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Bob Sikes Pier Restoration project implements restoration techniques within Alternatives 3 and 4.

The proposed Bob Sikes Pier Restoration project would improve access to a fishing pier in the Pensacola area in Escambia County as well as enhancing the quality of the experience for its recreational users. The proposed improvements include renovating parking areas, enhancing bicycle/pedestrian access, and aesthetic improvements to the surrounding area. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and/or increase the public's use and/or enjoyment of the natural resources by improving access to the existing fishing pier. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.16.7 References

National Park Service (NPS)

2011 Fort Pickens Pier and Ferry Service Environmental Assessment at Gulf Islands National Seashore. July 2011

Occupational Health and Safety Administration

2012 Occupational Noise Exposure. Accessed on September 25, 2013 from: http://www.osha.gov/SLTC/noisehearingconservation/

U.S. Census Bureau

2013 American Factfinder – Escambia County and State of Florida Profile.

U.S. Department of Agriculture – Natural Resources Conservation Service

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U.S. Environmental Protection Agency (USEPA)

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2009b Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel. http://www1.eere.energy.gov/vehiclesandfuels/facts/2009_fotw576.html

2010 Green Book: Currently Designated Nonattainment Areas for All Criteria Pollutants. http://www.epa.gov/air/oaqps/greenbk/phistory.html.

2011 Emission Factors for Greenhouse Gas Inventories. www.epa.gov/climateleaders/documents/emission-factors.pdf

12.17 Florida Artificial Reef Creation and Restoration: Project Description

12.17.1 Project Summary

The proposed Florida Artificial Reef Creation and Restoration project involves creating artificial reefs in Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties. These proposed improvements include emplacing artificial reefs in already permitted areas. The total estimated cost for this project is $11,463,587.

12.17.2 Background and Project Description

The Trustees propose to place artificial reefs in already permitted areas in Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties (see Figure 12-29 for the location of these existing permitted artificial reef areas). Florida has a state artificial reef program that was created by the legislature in 1980. The program is described in section 379.249, Florida Statutes, and operates under Chapter 68E-9, Florida Administrative Code, with staff under Florida Fish and Wildlife Conservation Commission's Division of Marine Fisheries Management. Florida's public artificial reefs are generally placed by commercial marine contractors selected through a competitive bid process and subcontracted by the local coastal government permit holder of the reef area where the artificial reef will be constructed.

The objective of the proposed Florida Artificial Reef Creation and Restoration project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by increasing the number of artificial reefs in state waters. The restoration work proposed includes emplacing artificial reefs units at different depths across the participating counties (Escambia, Santa Rosa, Okaloosa, Walton, and Bay). The reefs will use different approved designs and will be placed in existing permitted areas for emplacement of artificial reefs.

12.17.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The project would enhance and/or increase the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response activities. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results and can be implemented with minimal delay. Government agencies have successfully completed projects of similar scope throughout Florida over many years. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Furthermore, the cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. This proposed project is not anticipated to negatively affect regional ecological restoration and is therefore not inconsistent with the long-term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

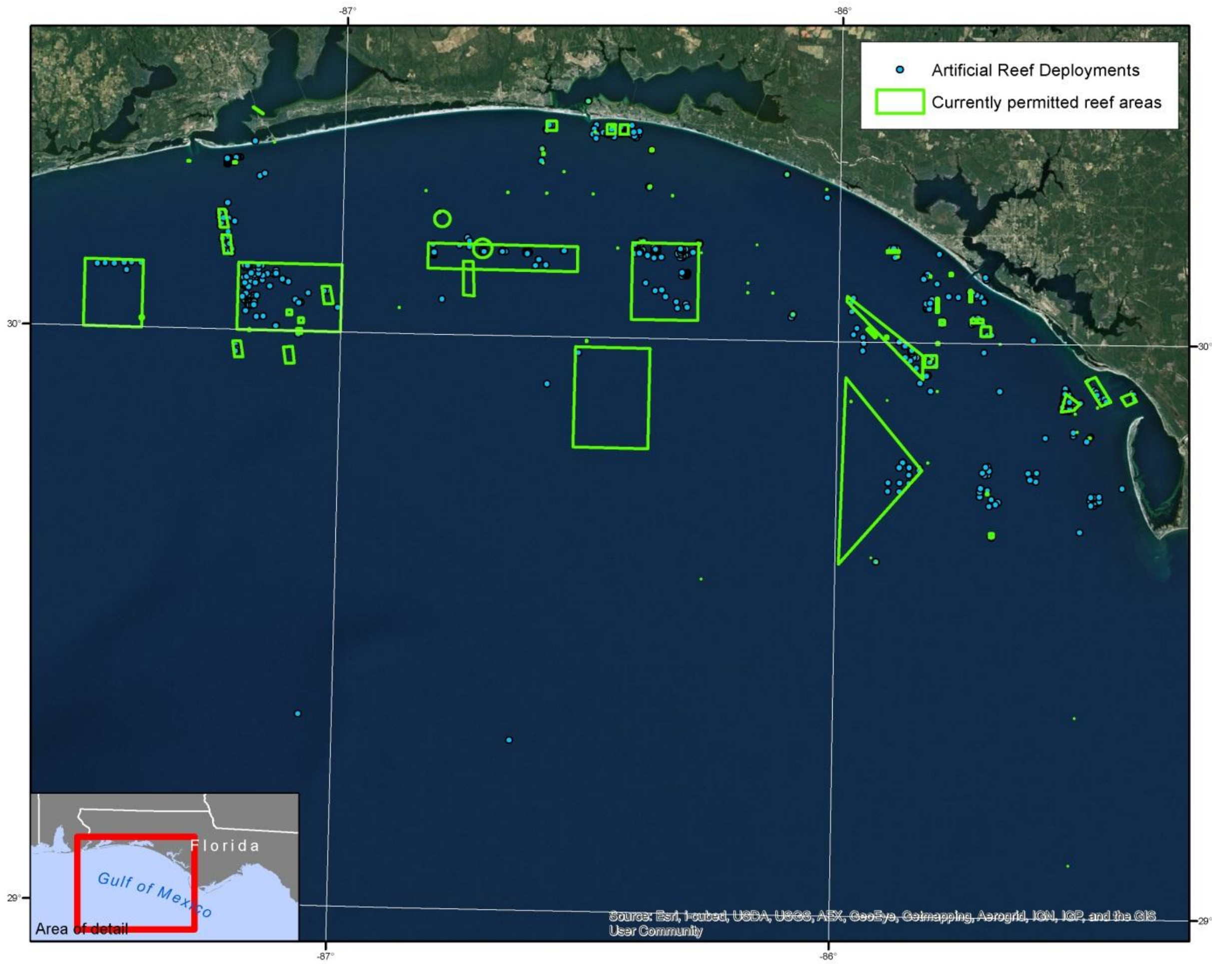

Figure 12-29. Location for potential emplacement of artificial reefs as part of the Florida Artificial Reef Creation and Restoration Project.

Many recreational use projects, including ones similar to this project, have been submitted as restoration projects on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Florida Artificial Reef Creation and Restoration project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.17.4 Performance Criteria, Monitoring and Maintenance

As part of the project cost, both pre-construction and post-construction monitoring will be conducted by the contracted entity (typically a county agency) or their subcontractors to ensure ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is enhance and/or improve the public's use and/or enjoyment of the natural resources by creating artificial reefs in Escambia, Santa Rosa, Okaloosa, Walton, and Bay counties. Specific success criteria include: 1) completion of the construction as designed and permitted, and 2) enhanced and/or increased access is provided to the natural resources, which will be determined that the reefs are available for public use.

Pre-construction monitoring will primarily be related to siting and determining that there is no hard substrate already present. Post-construction monitoring (typically annually for at least 3 years) is required by permits, and generally includes 1) observations of organisms that populate the structures, and 2) documentation and measurement of physical changes to the reef over time. Additional post-construction monitoring of recreational use will be required by the terms of agreements with the local governments implementing the project and will likely consist of boat or snorkeler diver counts taken at pre-determined intervals for at least 3 years post-construction. The recreational use data will be provided to the Florida Department of Environmental Protection.

12.17.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $22,927,174 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Florida, which will be determined by the Trustees' assessment of lost recreational use for the Oil Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[19]

12.17.6 Cost

The total estimated cost to implement this project is $11,463,587. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and contingencies.

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[19] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.18 Florida Artificial Reef Creation and Restoration: Environmental Review

The proposed Florida Artificial Reef Creation and Restoration project involves creating artificial reefs in Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties, in areas already permitted for reef construction and restoration. The objective of the proposed Florida Artificial Reef Creation and Restoration project is to enhance and increase the public's use and enjoyment of natural resources by increasing the number of artificial reefs in state waters.

12.18.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf Coast in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not, fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, the Trustees released, after public review of a draft, a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the *Federal Register* on behalf of the Trustees announcing the development of additional future Early Restoration projects for a Draft Phase III ERP (ERP). This restoration project was submitted as an Early Restoration project on the NOAA website (NOAA 2013) and submitted to the state of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and the requirements of the Oil Pollution Act (OPA), the project meets Florida criteria that Early Restoration projects occur in the eight-county panhandle area that deployed boom and was impacted by the spill.

The intent of the proposed project is to provide additional long-term fishing and diving opportunities through construction and restoration of artificial reefs. In Florida, the state artificial reef program was legislatively created in 1980. The program is described in Section 379.249 of Florida Statutes and operates under Chapter 68E-9 of the Florida Administrative Code (FAC), with staff located as a subsection within Florida Fish and Wildlife Commission's (FWC's) Division of Marine Fisheries Management. Artificial reefs are enjoyed by thousands of visitors and residents of the Florida panhandle each year. Restoring and constructing artificial reefs would be a means to compensate for recreational opportunities that were lost due to the *Deepwater Horizon* Oil Spill. Artificial reefs support a range of human uses, including: snorkeling, recreational fishing, kayaking, and scuba diving, and provide a location where anglers and divers can access aggregated populations of marine species (Adams et al. 2011).

The proposal consists of projects located in five panhandle counties: Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties, and includes reef designs that would be constructed at various depths (Figure 12-30). The project would place artificial reef units at multiple locations currently permitted by the U.S.

Army Corps of Engineers (USACE) and the Florida Department of Environmental Protection (FDEP) for artificial reefs.

12.18.2 Project Location

The proposed project area includes coastal waters with existing permitted areas for emplacement of artificial reefs in Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties (Figure 12-30). The project would place artificial reef units at multiple locations currently permitted by the USACE and the FDEP for artificial reefs: deeper water "nearshore reefs" would be located within 9 nautical miles of shore, in open water**:** shallower "snorkeling reefs" would be less than 20 feet deep and within 950 feet of shore. Figure 12-30 and Table 12-27 identify placement locations for artificial reef structures in areas that have been approved based on permits held by the respective counties. Figure 12-31 provides an aerial overview of the project area.

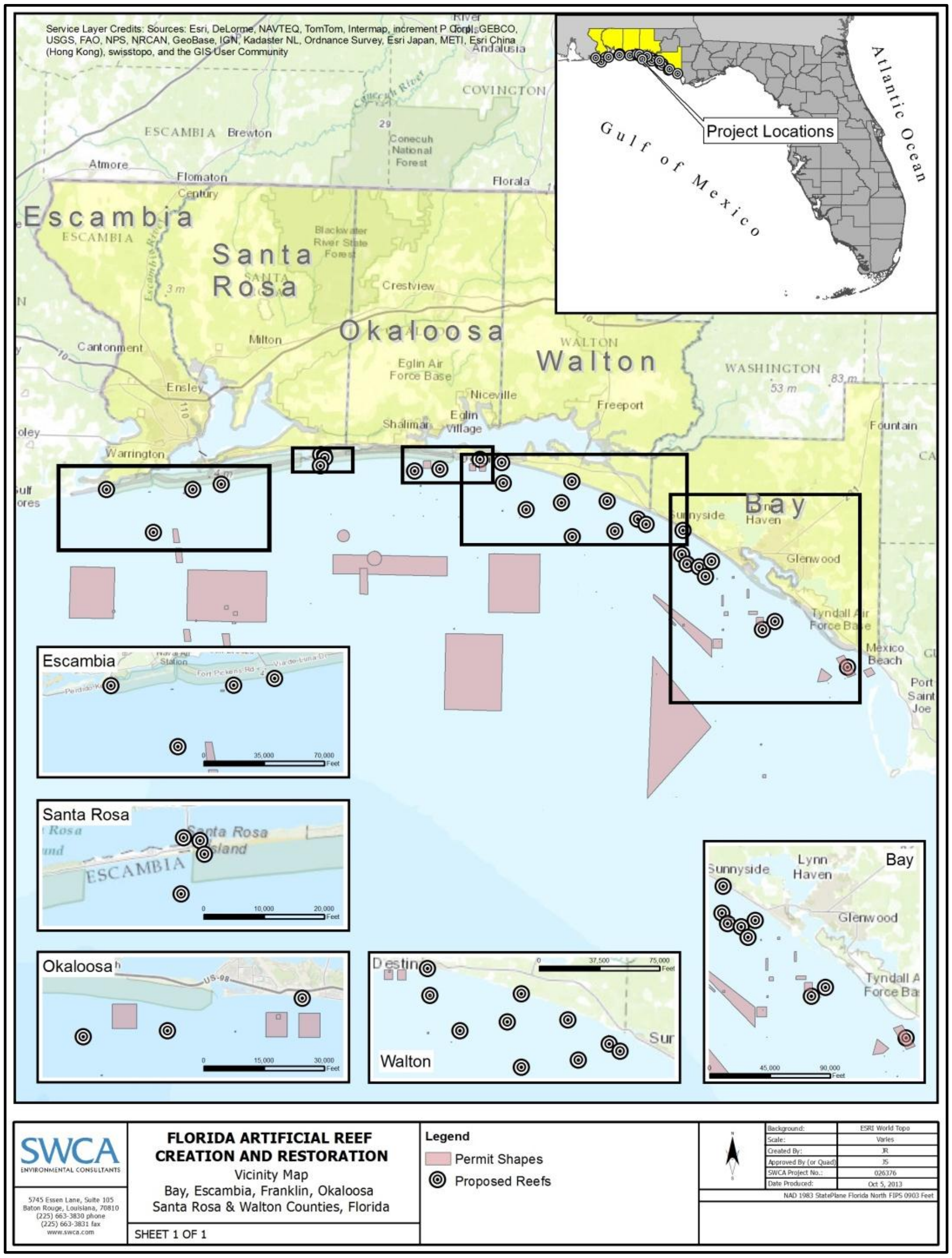

Figure 12-30. Map illustrating the areas where artificial reef structures would be deployed.

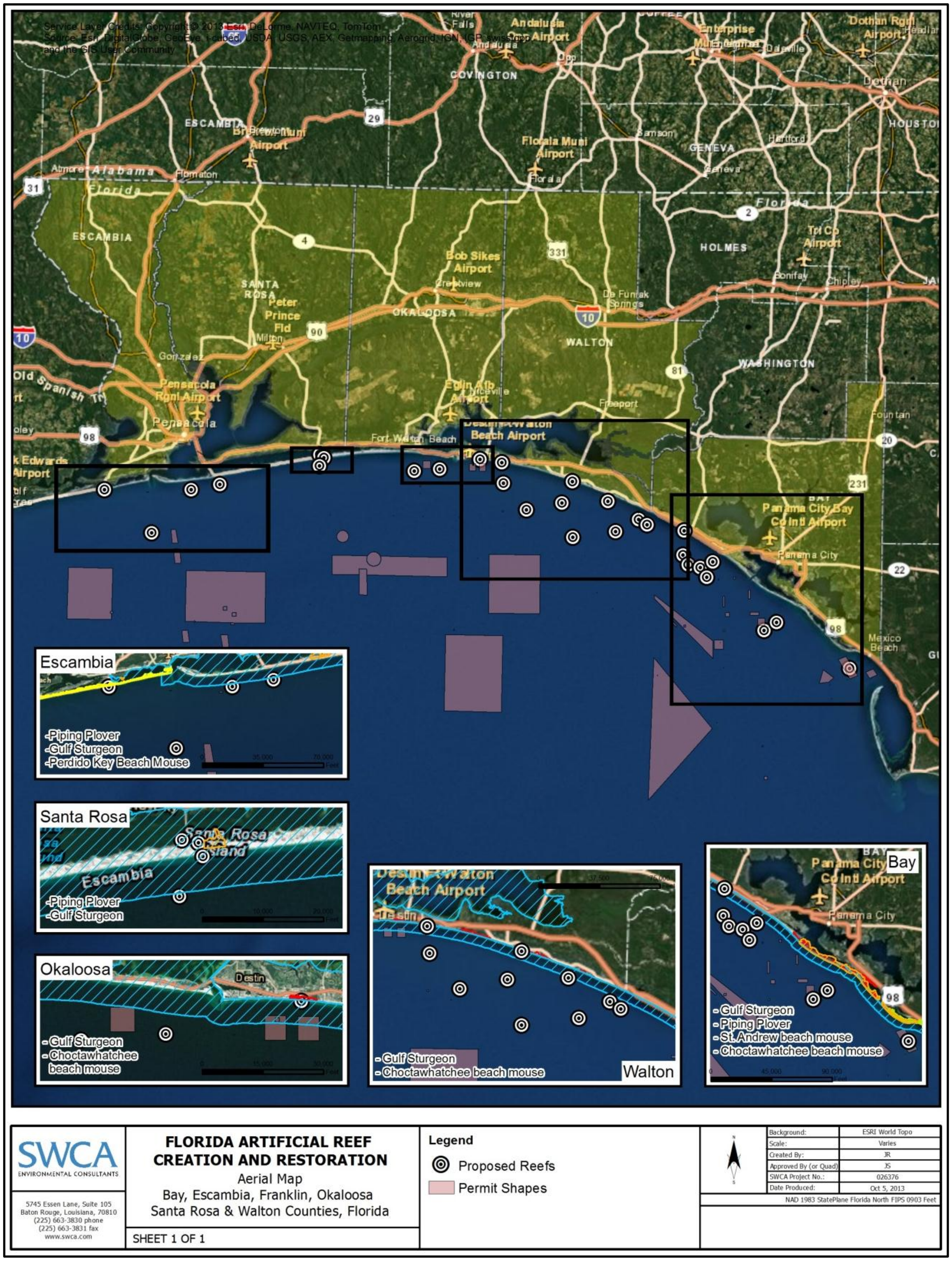

Figure 12-31. Aerial map of artificial reef deployment locations throughout the Gulf of Mexico.

Table 12-27. Artificial Reef Installation Locations.

COUNTY	LATITUDE, LONGITUDE, AND TYPE*
Escambia	30° 18.00 N, 87° 12.00 W (N) 30° 12.00 N, 87° 17.90 W (N) 30° 17.39 N, 87° 25.20 W (S) 30° 18.59 N, 87° 7.20 W (S)
Santa Rosa	30° 23.12' N, 86° 51.37' W (S) 30° 23.18' N, 86° 51.59' W (S) 30° 22.75' N, 86° 51.23' W (S) 30° 21.63’ N, 86° 51.92’ W (N)
Okaloosa	30° 21.49' N, 86° 32.99' W (N) 30° 21.16' N, 86° 36.99' W (N) 30° 22.92' N, 86° 26.65' W (S)
Walton	30° 15.05’ N, 86° 1.60’ W(N) 30° 17.44’ N, 86° 6.49’ W (N) 30° 19.75’ N, 86° 22.91’ W (N) 30° 14.33’ N, 86° 0.28’ W (N) 30° 17.18’ N, 86° 13.69’ W (N) 30° 12.53’ N, 86° 11.93’ W (N) 30° 13.33’ N, 86° 5.20‘ W (N) 30° 22.51’ N, 86° 23.25’ W (S) 30° 20.08’ N, 86° 12.09’ W (S) 30° 16.17’ N, 86° 19.28’ W (S)
Bay	30° 10.27’ N, 85° 54.56’ W (N) 30° 8.96’ N, 85° 53.77’ W (N) 30° 8.61’ N, 85° 51.83’ W (N) 30° 9.43’ N, 85° 49.86’ W (N) 30° 7.32’ N, 85° 50.83’ W (N) 30° 0.12’ N, 85° 41.72’ W (N) 30° 1.26’ N, 85° 39.79’ W (N) 29° 55.09’ N, 85° 28.27’ W (S) 30° 13.57’ N, 85° 54.45’ W (S)

*The two types of reefs are denoted as (N) for nearshore reefs and (S) for snorkeling reefs.

12.18.3 Construction and Installation

12.18.3.1 Engineering and Design

Deeper water “nearshore reefs” would have a single, prefabricated modular design and would be located within 9 nautical miles of shore (Figure 12-32). Shallower “snorkeling reefs” would have a piling-mounted design using disc-shaped concrete and limestone layers with spacers between the layers (Figure 12-33). Snorkeling reefs would be less than 20 feet deep and within 950 feet of shore. No material would exceed 8 feet in height, and a minimum clearance of 26 feet from the top of the employed material relative to mean lower low water (MLLW) would be maintained at all times. Final engineering and design processes would determine material needs for artificial reef construction. Transportation, staging, and deployment of the material would be contracted to a bidder who would offer the best value to the counties through a request for proposals (RFP) process. Currently, artificial reef installation measures have yet to be finalized for all proposed installation sites, so materials would likely change as design plans are finalized.

Figure 12-32. Example of a modular artificial reef unit that would likely be placed in deeper water.

Figure 12-33. Example of a layered artificial reef unit that would likely be placed in shallower water.

12.18.3.2 Artificial Reef Construction Material Type and Amount by County

Escambia County

Although solicitation regulations would apply, Escambia County's Marine Resources Division (MRD) would likely use a concrete, prefabricated tetrahedral artificial reef module commonly deployed in the northeastern Gulf of Mexico, like Florida Limestone or EcoSystem Reef modules from Walter Marine. The "Florida Limestone" module measures 10 feet along each base and is 8 feet in height, yielding a total volume (per module) of approximately 116 cubic feet. Each module covers approximately 43.3 square feet of seafloor area. Alternatively, Walter Marine EcoSystem Reef modules consist of discs made of concrete and limestone rock with a hole formed in the center to fit over a composite Pearson piling. The conceptual proposal suggests various sizes of patch reefs, designed according to the ratio of potential open seafloor forage space Escambia County would likely require 1,333 modules for the 43.31-square-foot footprint of Escambia Nearshore East sites and the 57,732-square-foot footprint of the West sites. Additional module numbers would be determined for other sites depending on the funding available to Escambia County.

Santa Rosa County

Artificial reef modules, such as Florida Limestone discussed above, would be deployed at two existing reef sites in Santa Rosa County, the SR-26 Reef Site and the SR-27 Reef Site. At the SR-26 Reef Site, 60 pole mounted circular disk EcoSystem Reef snorkel modules would be placed, with 19.6 square feet for each module and a total footprint for all modules of 1,177 square feet. At the SR-27 Reef Site, 703 Walter Marine Florida Limestone–type modules, with 43.3 square feet for each module, would be emplaced, creating a 30,448-square-foot total footprint for all modules combined. The total footprint for both SR-26 and SR-27 Reef Sites would be 31,625 square feet.

Okaloosa County

There are 52 individual pilings that would be set in the project area, with three circular disks per piling, though the number of disks per piling could be doubled depending on further funding. The circular base footprint would be 19.62 square feet for each EcoSystem Reef snorkel module proposed to be used. The total footprint for 52 snorkel reef modules would be 1,020 square feet.

Walton County

An estimated 840 prefabricated concrete modules made with natural limestone, similar to Florida Limestone modules, each having a 43.3-square-foot base footprint, would be distributed among three existing artificial reef locations for an approximate total footprint of 36,372 square feet.

Bay County

Artificial reef installation sites within the waters of this county would likely require one of the following material types and amounts: (1) 260 Florida Limestone modules at 43.3 square feet per module, for a total footprint of 11,261 square feet; (2) 206 EcoSystem modules at 19.62 square feet for each circular EcoSystem snorkel reef module with a total footprint of 4,041 square feet; (3) 182 Grouper modules at 50 square feet for each circular EcoSystem snorkel reef module, with a resulting 9,100-square-foot total footprint; (4) 30 sculptures or alternative modules at 44.3 square feet for each unit, with a resulting

1,299-square-foot total footprint of all sculptures or alternative prefabricated units combined. These proposed reef structures would have a total estimated footprint of 30,296 square feet in Bay County.

12.18.3.3 Artificial Reef Installation

Artificial reefs would be constructed on several sites using a similar process; however, the average water depth and substrate composition of the water bottom at each reef site may differ. A survey would be conducted to determine the placement, alignment, and boundaries of the artificial reefs. All artificial reef installation measures have yet to be finalized, but the following installation process would likely be used during construction.

Modules would be fabricated and staged at the reef manufacturer's location and then transported to a contractor's staging area. At this location, the reef modules for each deployment would be loaded onto a deployment vessel equipped with a crane for loading/offloading the prefabricated and disk modules. Deployment vessels would travel to the reef locations where boundaries would be marked by the county or their designee using a submeter accurate global positioning system. Disk modules would be assembled on the ship immediately prior to deployment. Each reef module would be lifted separately, by crane, from the barge deck using a pelican hook and then lowered to the seafloor. Modules would be deployed on either side of the vessel in a specific order and adjusted so each successive drop would be far enough from the previous drop to prevent any two modules from touching.

12.18.3.4 Anticipated Construction Schedule

Artificial reef installation is expected to take 1 to 2 years once design plans are finalized. Estimates of in-water work are difficult to project as they would reflect conditions at the time of the successful bid (e.g., local conditions, available equipment, and nature of materials to be placed). Depending on module design/size or use of concrete precast material, project placement could take a single day or take multiple days. Typically, a barge would carry one load of materials per day, return to the shore/staging area, reload (which might take a day), and then be deployed the next day. Cumulatively, the in-water work time is likely to be best measured in terms of weeks of effort. A general timeline would be as follows:

- Design Complete: Modules suitable for use have already been identified
- Permitting Complete: Fall 2014
- Contract Bid: post Final ERP, Spring 2014
- Construction Start: Summer 2014
- Construction Complete: Summer 2016, for final reef placement activity

12.18.4 Operations and Maintenance

12.18.4.1 Anticipated Pre- and Post-project Monitoring Activities

Monitoring activities would be performed at various times, beginning before construction and continuing after construction. Monitoring would ensure project designs are correctly implemented during construction and in a subsequent period, defined by contract, where corrective actions could be taken. Monitoring activities would include the following:

- Topographic/bathymetric surveys
- Public use monitoring

Pre-restoration deployment would be conducted to confirm that no hard substrate is already present in areas where artificial reef structures would be placed.

Construction-related monitoring would consist of having divers observe the placement of the modules and record exact coordinates of placed materials so that existing state databases can be updated.

Post-construction monitoring would be conducted to evaluate the project's performance over time with respect to the agreed-upon Offsets, goals, and objectives. In general, monitoring would evaluate the production and support of organisms on the living shoreline structure (e.g., secondary production), document and measure physical changes to the reef over time, and possibly provide observations of public use. Components of this monitoring would include collecting information with respect to reef height and structural integrity, water quality parameters (e.g., salinity, dissolved oxygen), bivalve and algal presence, coverage, and composition on the reef.

12.18.4.2 Anticipated Short-term Maintenance Activities

In accordance with the USACE permitting process, fathometer scans would be conducted once per year for all artificial reef sites to verify material location and condition. Yearly monitoring would also include the use of SCUBA to conduct Level 1, 2, 4, and 4a monitoring. Definitions of each monitoring level are provided in the USACE permit.

12.18.4.3 Anticipated Long-term Maintenance Activities

Over the long term, project sites would be incorporated into FWC's ongoing diver-based artificial reef monitoring survey program, which evaluates the status of emplaced reef modules. In addition, some counties (e.g., Escambia) also have their own independent reef monitoring programs. Once placed, artificial reef units would require little or no maintenance. Over a period of years to decades, the artificial reef structures would degrade gradually or may be covered through a combination of subsidence and sediment transport/accumulation.

12.18.5 Affected Environment and Environmental Consequences

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 and environmental consequences of the project.

12.18.5.1 No action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected environment subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.18.5.2 Physical Environment

12.18.5.2.1 Geology and Substrates

Affected Resources

The existing geology and substrates in the project area for artificial reef installation is generally flat or gently sloping. The five counties where restoration is planned are part of the Gulf of Mexico formation. Each proposed project location supports existing artificial reef structures.

Sediments

Sediments in the area have been sculptured from alluvial plain underlain by sand, gravel, silt, and clay. The soil surveys for the various counties identify the areas for reef deployment as “waters of the Gulf of Mexico,” and no soils data are provided (NRCS 2013).

Environmental Consequences

As a result of the emplacement, there may be a minor, short-term impact to the geology and substrates associated with the conversion of relatively small areas of similar sandy habitat to areas with hard substrate. There would be no impact over the long term as materials degrade and/or subside or are covered by sand and other sediment. The project would have no net negative impact on geology and substrates.

12.18.5.2.2 Hydrology and Water Quality

Affected Resources

Artificial reef installation would take place in nearshore, open-water habitats and shallower waters closer to shores in the waters of five counties in the panhandle of Florida. Existing hydrology and water quality are affected by shoreline development and management, as well as boat traffic in the bays and Gulf of Mexico.

Water Quality

The CWA requires that the surface waters of each state be classified according to designated uses. Florida has six classes with associated designated uses, which are arranged in order of degree of protection required. According to 62-302.400, Fla. Admin. Code, most of the project occurs within Class III waters. Therefore, standards to meet the following uses apply to the project area: fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The surface waters of the state are designated Class III unless otherwise described in Florida rule. Short-term water quality impacts are possible due to sediment disturbance during artificial reef installation at project sites.

Outstanding Florida Waters and Aquatic Preserves
There are no waters that are designated as Outstanding Florida Waters (OFW), wild and scenic rivers, or aquatic preserves located in or immediately adjacent to the project area (FDEP 2013).

In Florida, state aquatic preserves are generally listed as OFWs. Apalachicola Bay, Fort Pickens, St. Joseph Bay, and St. Andrews Aquatic Preserves are located in the general area of several of the proposed shallower snorkeling artificial reef locations. Waters in aquatic preserves and state parks, as OFWs, require additional water quality considerations; the FWC would be consulted to determine any concerns due to proposed project activities. These OFWs are significant distances upstream of the proposed sites and not likely to be affected by the proposed projects. Very short-term impacts, such as increased turbidity, due to reef module placement are possible but pose no long-term threat to water quality. Over time, the accumulation of filter feeding organisms on the reefs, such as oysters, may improve local water quality.

Wetlands
The project is located in open water, and no wetlands are known to be in the project area. Land-based storage areas for artificial reef material would be placed outside of wetland areas (USFWS 2013b).

Environmental Consequences
Artificial reef installation would have no long-term, adverse impact on hydrology and water quality. Some construction would be completed at existing artificial reef locations so no water bottom impacts are expected as reef modules would be placed on natural or artificial materials. There may be short-term impacts during the approximately 1-year period of construction including increased sediment disturbance and turbidity during reef module placement. All required permits would be obtained, and conditions, permit requirements, and best management practices (BMPs) would be followed during construction.

The placement of artificial reef modules would result in short-term, minor, temporary impacts to water quality, specifically short-term elevations in turbidity. BMPs, along with other avoidance and mitigation measures required by state and federal regulatory agencies, would be employed to minimize any water quality and sedimentation impacts. . Rivers and Harbors Act Section 10 and Clean Water Act Section 404 and water quality certifications would be required and all permit conditions would be adhered to.

12.18.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources
The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS have been set for six common air pollutants (also known as criteria pollutants)—particle pollution or particulate matter, ozone, carbon monoxide, sulfur dioxide (SO_2), nitrogen dioxide, and lead. Particulate matter is defined as fine particulates with a diameter of 10 micrometers or less (PM_{10}) and fine particulates with a diameter of 2.5 micrometers or less ($PM_{2.5}$). When a designated air quality area or airshed in a state exceeds a NAAQS, that area may be designated as a "nonattainment" area. Areas with levels of pollutants below the health-based standard are designated as "attainment" areas. To determine whether an area

meets the NAAQS, air monitoring networks have been established and are used to measure ambient air quality. The EPA also regulates 187 hazardous air pollutants (HAPs) that are known or suspected to cause cancer or other serious health effects. Air quality in the Florida panhandle is in attainment with the NAAQs (EPA 2013a).

Greenhouse Gases

Gases that trap heat in the air are called greenhouse gases (GHGs). The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_x), and fluorinated gases. Over the past century, human activities have released large amounts of GHGs into the atmosphere, which are contributing to global warming. Global warming is defined as the ongoing rise in global average temperature near the Earth's surface and is known to cause changes in climate patterns.

According to the EPA, the average annual temperature in the southeast portion of the United States has increased by approximately 2.0°F (degrees Fahrenheit) since 1970. Winters, in particular, are getting warmer, and the average number of freezing days has decreased by 4 to 7 days per year since the mid-1970s. Most areas are getting wetter; autumn precipitation has increased by 30% since 1901 (EPA 2013b). In many parts of the region, the number of heavy downpours has increased. Despite the increases in fall precipitation, the area affected by moderate and severe drought has increased since the mid-1970s (EPA 2013b).

Average annual temperatures in the region are projected to increase from 4°F to 9°F by 2080. Hurricane-related rainfall is projected to continue to increase. Models suggest that rainfall would arrive in heavier downpours, with increased dry periods between storms. These changes would increase the risk of both flooding and drought. The coasts would likely experience stronger hurricanes and sea level rise. Storm surge could present problems for coastal communities and ecosystems (EPA 2013b).

Total GHG emissions in the state of Florida from 1990 to 2007 have increased at an average rate of 2.1% per year. Total GHG emissions in 2007 were 290 million metric tons of CO_2 equivalent ($MMTCO_2E$). In 2007, 91% of GHG emissions in Florida were CO_2 emissions (FDEP 2010).

Environmental Consequences

Project implementation would require the use of heavy mechanized equipment, which would lead to temporary air pollution (e.g., criteria pollutants, HAPs, GHGs) due to emissions from the operation of construction vehicles and equipment. Any air quality impacts that occur would be minor due to their localized nature, short-term duration, and the small size of the project. Available BMPs would be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality–related permits would be required. The project areas are currently in attainment with NAAQS parameters. The proposed action would not affect the attainment status of the project areas or region. A State Implementation Plan conformity determination (42 USC 7506 (c)) is not required since the project areas are in attainment for all criteria pollutants.

Project plans have not been finalized for this project. As such, it is unclear what equipment would be used and the duration of use for that equipment. The following table provides GHG emissions estimates for a variety of construction and transportation equipment that may be used for the placement of reefs. Each of these emissions is based on use of the heavy equipment over an 8-hour day (Table 12-28).

Table 12-28. Greenhouse gas emissions for mechanized equipment likely to be used.

EQUIPMENT DESCRIPTION[1]	TOTAL HOURS USED	CO_2 (METRIC TONS)[2]	CH_4 (CO_2E) (METRIC TONS)[3]	NO_X (CO_2E) (METRIC TONS)	TOTAL CO_2E (METRIC TONS)
Dump Trucks/ Flatbed Trucks[4,5]	360	6.12	1.8	25.92	33.84
Crane (bare and with clamshell attachment)	720	18.36	6.12	73.44	97.92
Tug Boat (8 trips)	720	468	144	1872	2484
Total	**5,040**				**7813.44**

[1] Emissions assumptions for all equipment based on 8 hours of operation.

[2] CO_2 emissions assumptions for diesel and gasoline engines based on EPA (2009).

[3] CH_4 and NO_x emissions assumptions and CO_2e calculations based on EPA (2011).

[4] Construction equipment emission factors based on EPA nonroad emission factors for 250-horsepower pieces of equipment. Data were accessed through the California Environmental Quality Act Roadway Construction Emissions Model.

[5] Emissions assumptions are for an 8-cylinder, 6.2-liter gasoline engine Ford F150 pickup and 18 gallon (half-tank) daily fuel consumption (U.S. Department of Energy 2013).

Based on the assumptions described in Table 12-28 above, GHG emissions would not exceed 25,000 metric tons per year. Given the projected construction-phase GHG emissions, the small scale and short duration of the project, and increased project area use, predicted impacts on air quality from GHG emissions would be anticipated to be minor in both the short term and the long term.

Boat use could increase due to subsequent monitoring requirements of the artificial reef expansion/restoration, but monitoring would likely only require a single boat several times a year. This boat use would likely increase exhaust emissions and could affect air quality, but it would occur over a short time period and would be temporary, so adverse impacts to air quality would be expected to be minor because management actions could be taken to limit boat use.

12.18.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted sound and noise levels, and its effects are interpreted in relation to effects on nearby visitors to the recreational areas and wildlife in the project vicinity. The Noise Control Act of 1972 (42 USC 4901–4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale that approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 12-29 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Table 12-29. Common noise levels.

NOISE SOURCE OR EFFECT	SOUND LEVEL (DBA)
Rock-and-roll band	110
Truck at 50 feet	80
Gas lawnmower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Source: Adapted from U.S. Department of Energy and Bonneville Power Administration (1986).

Noise levels in the project area vary depending on the season, time of day, number and types of noise sources, and distance from noise sources. Existing sources of noise in the project area are mainly from recreational boating or commercial traffic. Ambient natural sounds such as wind, waves, and wildlife also contribute to existing noise levels. Existing ambient noise levels in the project area are generally low and predominantly result from daily boating activities.

Artificial reef installation would take place in deeper, Gulf of Mexico open-water habitats and shallower, nearshore areas in the Florida panhandle. 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 proposed project. Noise-sensitive receptors in the project vicinities include beach recreational use and wildlife. Existing noise conditions are affected by boat traffic in the Gulf of Mexico and may be somewhat impacted from industrial, commercial, or other human activities both in the Gulf of Mexico and in nearby shoreline areas.

Environmental Consequences

Artificial reef creation would have a minimal, short-term impact on noise. There would be a temporary increase in noise caused by barge engines while reef material is placed. In the short term, barges and machinery and equipment used during artificial reef creation would generate noise, which may disturb wildlife and humans using the area but would be kept to a minimum using BMPs (e.g., state requirement to use appropriately muffled equipment). Long-term, minor noise impacts may result from any increase in motor boat access to the emplacement areas.

12.18.5.3 Biological Environment

12.18.5.3.1 Living Coastal and Marine Resources

Marine and Estuarine Resources (benthic organisms, oysters, fish)

Affected Resources

There are a number of aquatic species found in the project area. More than 200 species of fish and shellfish have been reported in the open and estuarine waters of the northern Gulf of Mexico, specifically the Pensacola and Apalachicola Bay systems. Four anadromous fish are known to inhabit the river systems: Gulf sturgeon (*Acipenser oxyrhynchus desotoi*), Alabama shad (*Alosa alabamae*), skipjack herring (*Alosa chrysochloris*), and striped bass (*Morone saxatilis*). Other species native to the area include spot (*Leiostomus xanthurus*), bay anchovy (*Anchoa mitchilli*), Atlantic croaker (*Micropogonias undulatus*), spotted seatrout (*Cynoscion nebulosus*), , Gulf menhaden (*Brevoortia patronus*), , striped mullet (*Mugil cephalus*), American eel (*Anguilla rostrata*), chain pickerel (*Esox niger*), , coastal shiner (*N. petersoni*), silver perch (*Bairdiella chrysura*), clown goby (*Microgobius gulosus*), darter goby (*Gobionellus boleosoma*), blue crab (*Callinectes sapidus*), ghost crab (*Ocypode quadrata*), American oyster (*Crassotrea virginica*), and Penaeid shrimp (*Penaeus* spp.). The dominant epibenthic macroinvertebrates include brown shrimp (*Penaeus aztecus*) and blue crabs (Livingston 1999). Benthic organisms include bivalves, gastropods and other mollusks, anemones, amphipods, annelids, crustaceans, and echinoderms, and are also abundant in these waters.

Environmental Consequences

The proposed project would likely result in short-term, minor adverse impacts to fish that may be present during the in-water construction as a result of turbidity and noise disturbance during construction of the artificial reefs. Benthic organisms present in the substrate may also be adversely affected during reef construction. However, the proposed project is intended to increase available reef habitat by providing appropriate habitat for species that inhabit reef ecosystems, as well as surface for attachment of sessile organisms, so reef construction effects would be short term and minor and in the long term would benefit the ecosystem around the artificial reef.

12.18.5.4 Wildlife

Affected Resources

The project is in open-water esturine/marine habitats. No impacts to general terrestrial wildlife species are anticipated. Marine wildlife are discussed below in a different section.

Environmental Consequences

No impacts to terrestrial wildlife species are anticipated. Marine wildlife are discussed below in different section.

12.18.5.5 Protected Species

Affected Resources

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA).

The federally listed threatened and endangered species that may occur in or near the project area in Escambia, Santa Rosa, Okaloosa, Walton and Bay Counties include five species of sea turtles, West Indian manatee (*Trichechus manatus latirostris*), piping plover (*Charadrius melodus*), and Gulf sturgeon, and one proposed species, red knot (*Calidris canutus rufa*) (USFWS 2013c) (Table 12-30). State-listed threatened species reported to occur in the project area are addressed below, under State-Listed Species.

Sea Turtles and Marine Mammals

There are five species of endangered or threatened sea turtles that may occur or have potential to occur in the project area. These are the green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricate*), Kemp's ridley turtle (*Lepidochelys kempii*), leatherback turtle (*Dermochelys coriacea*), and loggerhead turtle (*Caretta caretta*). Sea turtles forage in the waters of the coastal Florida panhandle region and nest on the beaches. Critical habitat has been proposed for the Loggerhead on beaches adjacent to in-water work areas. PCE's include: 1) Suitable nesting beach habitat that: (a) has relatively unimpeded nearshore access from the ocean to the beach for nesting females and from the beach to the ocean for both post-nesting females and hatchlings and (b) is located above mean high water to avoid being inundated frequently by high tides. 2) Sand that: (a) allows for suitable nest construction, (b) is suitable for facilitating gas diffusion conducive to embryo development, and (c) is able to develop and maintain temperatures and moisture content conducive to embryo development. 3) Suitable nesting beach habitat with sufficient darkness to ensure that nesting turtles are not deterred from emerging onto the beach and hatchlings and post-nesting females orient to the sea.

The endangered West Indian manatee has the potential to occur in project area waters. Manatees typically seek out shallow seagrass areas as preferred feeding habitat (FWC 2007). Additionally, bottlenose dolphins (*Tursiops* spp.) populations are known to migrate into bays, estuaries, and river mouths and could be located in the proposed project area (NMFS 2013a). Bottlenose dolphins have been observed entering and leaving Choctawhatchee Bay and on nearshore coastal waters (NMFS 2012).

Smalltooth Sawfish, Gulf Sturgeon, and Gulf Sturgeon Critical Habitat

Smalltooth sawfish (*Pristis pectinata*) do not typically use northern Gulf of Mexico waters (NMFS 2013b). Gulf sturgeon are restricted to the Gulf of Mexico and its drainages, occurring primarily from thePearl River, Louisiana to the Suwannee River, in Florida (NMFS 2009). Adult fish reside in rivers for 8 to 9 months each year and in estuarine or Gulf of Mexico waters during the 3 to 4 cooler months of each year (NMFS 2009). Important marine habitats include seagrass beds with sand and mud substrates (Mason and Clugston 1993).

Gulf sturgeon critical habitat was jointly designated by the NMFS and the USFWS on April 18, 2003 (50 Code of Federal Regulations [C.F.R.] 226.214). The proposed project site is located within the Florida Nearshore Gulf of Mexico Critical Habitat Unit 10, which contains winter feeding and migration habitat for Gulf sturgeon. See Figure 12-34 for a map of critical habitat in the project area. Critical habitat was designated based on seven primary constituent elements (PCEs) essential for the species' conservation, as defined in the 2003 *Federal Register* and are listed below. PCE's 1, 5, 6, and 7 are present in the project area.

Table 12-30. Threatened, endangered, and candidate wildlife species known or believed to occur in the project vicinity.

RESOURCE CATEGORY	COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Birds	Piping plover	*Charadrius melodus*	T (CH)	T	• Estuarine: exposed unconsolidated substrate; • Marine: exposed unconsolidated substrate; • Terrestrial: dunes, sandy beaches, and inlet areas; mostly wintering and migrants **Potential habitat present**
Birds	Red knot	*Calidris canutus rufa*	P		• Estuarine: exposed unconsolidated substrate; • Marine: exposed unconsolidated substrate; • Terrestrial: dunes, sandy beaches, and inlet areas; mostly wintering and migrants **Potential habitat present**
Fish	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T (CH)	T	• Estuarine: various; • Marine: various; habitats; • Riverine: alluvial and blackwater streams **Habitat present**
Fish	Smalltooth sawfish	*Pristis pectinata*	E	E	• Estuarine: various; • Lacustrine: river mouths and bays **No potential habitat present**
Mammals	West Indian manatee	*Trichechus manatus latirostris*	E	E	• Estuarine: submerged vegetation, open water; • Marine: open water, submerged vegetation; • Riverine: alluvial streams, blackwater streams, spring-run streams **Potential habitat present**
Reptiles	Green sea turtle	*Chelonia mydas*	E	E	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**
Reptiles	Hawksbill sea turtle	*Eretmochelys imbricata*	E	E	• Marine: open water; nesting **Potential marine habitat present**
Reptiles	Kemp's ridley sea turtle	*Lepidochelys kempii*	E	E	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**
Reptiles	Leatherback sea turtle	*Dermochelys coriacea*	E	E	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**
Reptiles	Loggerhead sea turtle	*Caretta caretta*	T	T	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**

E=endangered, T=threatened, P=proposed, C=candidate, SSC=species of special concern, ce=consideration encouraged, CH=critical habitat, BGEPA=Bald and Golden Eagle Protection Act.

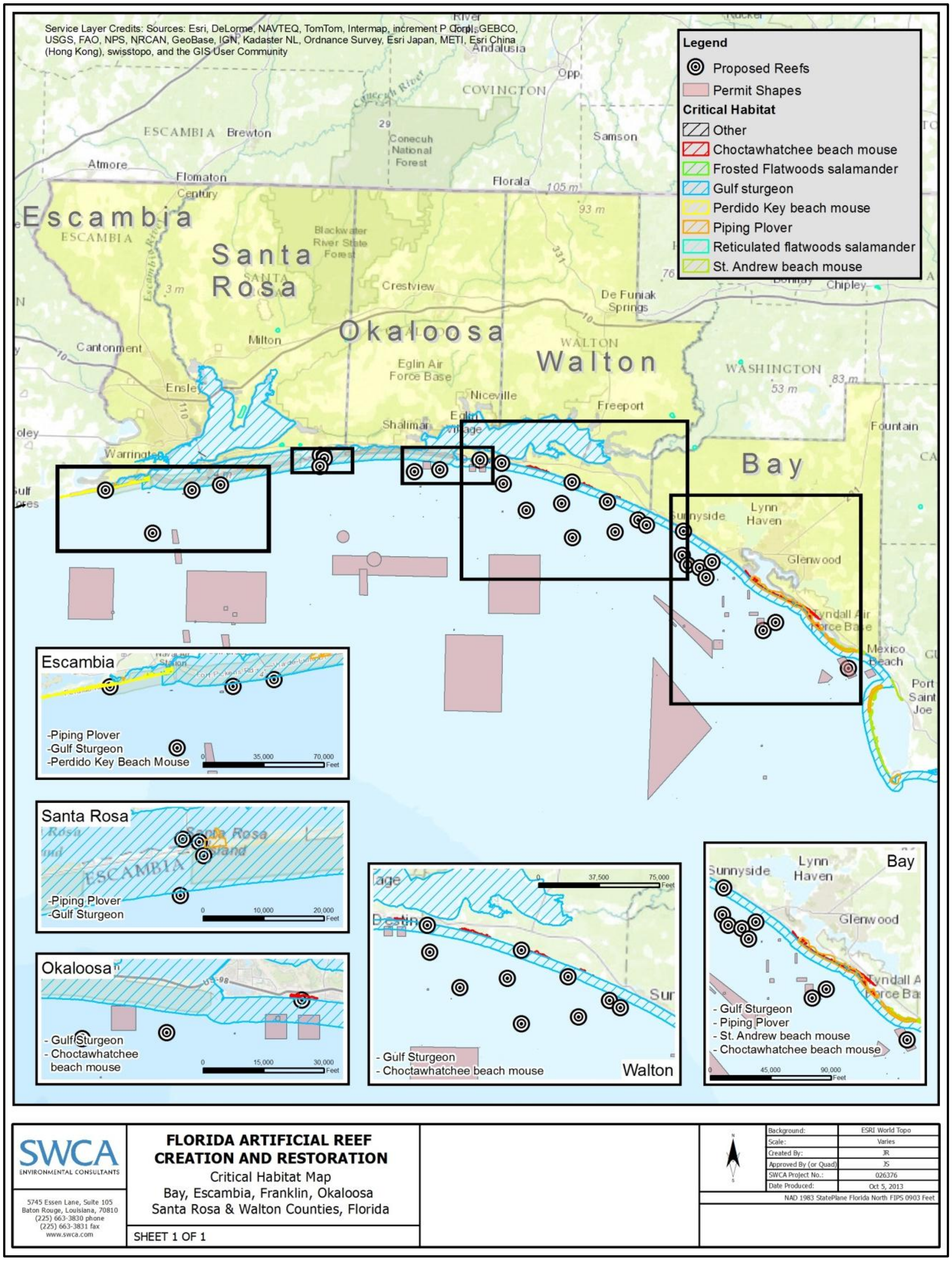

Figure 12-34. Map of critical habitats adjacent to the proposed project area.

1. Abundant food items, such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages, and abundant prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and/or crustaceans, within estuarine and marine habitats and substrates for subadult and adult life stages;
2. Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;
3. Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths; these are believed necessary for minimizing energy expenditure during freshwater residency and possibly for osmoregulatory functions;
4. A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging;
5. Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
6. Sediment quality, including texture and chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and
7. Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage).

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum, brown shrimp, pink shrimp, and white shrimp. There are no marine components of EFH in the vicinity of the project site.

The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. Table 12-31 provides a list of the species that NMFS manages under the federally Implemented Fishery Management Plan in the vicinity of the Florida Artificial Reef project sites which are located in the coastal waters off of Escambia, Santa Rosa, Okaloosa, Walton and Bay counties and the Gulf of Mexico.

Table 12-31. List of species managed by NMFS in vicinity of the project study area (NMFS EFH mapper, 2013).

Management Unit / Species	Lifestage(s) Found at Location	FMP
Red Drum (Sciaenops ocellatus)	ALL	Red Drum
<u>Highly Migratory Species</u>		Highly Migratory Species
Atlantic Sharpnose Shark	All	
Blacknose Shark	All	
Blacktip Shark	All	
Bonnethead Shark	All	
Bull Shark	Juvenile, Adult	
Finetooth Shark	Juvenile, Adult	
Great Hammerhead Shark	All	
Nurse Shark	Juvenile	
Scalloped Hammerhead Shark	Neonate, Juvenile	
Spinner Shark	All	
<u>Shrimp</u>	ALL	Shrimp
Brown shrimp (*Penaeus aztecus*)		
White shrimp (*Penaeus setiferus*)		
Pink shrimp (*Penaeus duararum*)		
Royal red shrimp (*Pleoticus robustus*)		
<u>Coastal Migratory Pelagics</u>	ALL	Coastal Migratory Pelagics
King mackerel (*Scomberomorus cavalla)*		
Spanish mackerel (*Scomberomorus maculatus*)		
Cobia (*Rachycentron canadum*)		
Dolphin (*Coryphaena hippurus*)		
<u>Reef Fish</u>	ALL	Reef Fish
Balistidae - Triggerfishes		
Gray triggerfish (Balistes capriscus)		
Carangidae - Jacks		
Greater amberjack (Seriola dumerili)		
Lesser amberjack (Seriola fasciata)		
Almaco jack (Seriola rivoliana)		
Banded rudderfish (Seriola zonata)		
Labridae - Wrasses		
Hogfish (Lachnolaimus maximus)		
Lutjanidae - Snappers		
Queen snapper (Etelis oculatus)		
Mutton snapper (Lutjanus analis)		
Blackfin snapper (Lutjanus buccanella)		
Red snapper (Lutjanus campechanus)		
Cubera snapper (Lutjanus cyanopterus)		
Gray (mangrove) snapper (Lutjanus griseus)		
Lane snapper (Lutjanus synagris)		
Silk snapper (Lutjanus vivanus)		
Wenchman (Pristipomoides aquilonaris)		
Vermilion snapper (Rhomboplites aurorubens)		
Malacanthidae – Tilefishes		
Goldface tilefish (Caulolatilus chrysops)		
Blueline tilefish (Caulolatilus microps)		
Serranidae – Groupers		

Management Unit / Species	Lifestage(s) Found at Location	FMP
Speckled hind (Epinephelus drummondhayi) Yellowedge grouper (Epinephelus flavolimbatus) Red grouper (Epinephelus morio) Warsaw grouper (Epinephelus nigritus) Snowy grouper (Epinephelus niveatus) Nassau grouper (Epinephelus striatus) Black grouper (Mycteroperca bonaci) Yellowmouth grouper (Mycteroperca interstitialis) Gag (Mycteroperca microlepis) Scamp (Mycteroperca phenax) Yellowfin grouper (Mycteroperca venenosa)		

Piping Plover

The sandy beaches and shorelines adjacent to some of the project area offer suitable foraging and resting habitat for the piping plover during the winter migratory season, and piping plover may forage in the shallow waters of the project area. Natural shorelines in the proposed project vicinity provide suitable winter migration resting habitat for the piping plover. Piping plover wintering habitat includes beaches, mudflats, and sandflats, as well as barrier island beaches and spoil islands (Haig 1992 as cited by USFWS 2013d). On the Gulf Coast, preferred foraging areas are associated with wider beaches, mudflats, and small inlets (USFWS 2013d). Critical habitat is designated on several shorelines along the Florida panhandle adjacent to project areas. PCE's include: 1) Intertidal flats with sand or mud flats (or both) with no or sparse emergent vegetation. 2) Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting piping plovers. Such sites may have debris, detritus, or microtopographic relief (less than 50 cm above substrate surface) offering refuge from high winds and cold weather. 3) Important components of the beach/dune ecosystem include surf-cast algae, sparsely vegetated back beach and salterns, spits, and washover areas. 4) Washover areas are broad, unvegetated zones, with little or no topographic relief, that are formed and maintained by the action of hurricanes, storm surge, or other extreme wave action.

Red Knot

The red knot, a federal proposed species, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate down to specific wintering locations in South America (Niles et al. 2008). Wintering and migrating red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sandflats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

State-Listed Birds, MBTA and BGEPA

There are numerous state of Florida–listed bird species with potential for occurrence in and around the beaches near the artificial reef construction site. These include Arctic peregrine falcon (*Falco peregrinus tundrius*), least tern (*Sterna antillarum*), southeastern American kestrel (*Falco sparverius paulus*), American oystercatcher (*Haematopus palliates*), southeastern/Cuban snowy plover (*Charadrius alexandrinus tenuirostris*), osprey (*Pandion haliaetus*), black skimmer (*Rynchops niger*), white ibis (*Eudocimus albus*), and little blue heron (*Egretta caerulea*. All migratory bird species are protected under MBTA. The nesting season in Florida is from March 1 to August 1.

The bald eagle was delisted by the USFWS and is not listed as threatened or endangered by the FWC. The bald eagle is, however, protected by state law pursuant to 68A-16, Fla. Admin. Code and by the U.S. government under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles feed on fish and other readily available mammalian and avian species and are dependent on large, open expanses of water for foraging habitat. In Florida, conservation measures to protect active nest sites during nesting season must be considered to reduce potential disturbances of certain project activities. If bald eagles are found nesting within 660 feet of a proposed construction area, then activities would need to occur outside of nesting season or coordination with the USFWS would occur to determine if a permit is needed, and Florida's *Bald Eagle Management Plan* guidelines would be followed (FWC 2008). According to the FWC Bald Eagle Nest Locator, there are no bald eagle nests within 5 miles of the project site (FWC 2012).

Environmental Consequences

The proposed project has been evaluated for potential short- and long-term impacts to state and federally listed threatened and endangered species that may occur in and adjacent to the project area based on available suitable habitat and restoration goals. Descriptions of these evaluations are provided below.

Sea Turtles and Marine Mammals

For projects in waters accessible to sea turtles, the NMFS has developed standardized Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006). These conditions are typically applied to projects as part of the Clean Water Act Section 404 permit issued for in-water work. It is unlikely that the area and project site contain SAV, which is the preferred foraging habitat of sea turtles, but it cannot be ruled out entirely.

If sea turtles are present in the in-water work area, short-term disturbances from noise and turbidity would occur. Sea turtles are a highly mobile species and would be expected to move away during in-water activities. Additionally, should a sea turtle be encountered during installation of the project, the crews would allow these species to exit from the project vicinity before commencing activities. Therefore, potential impacts or disturbances to listed sea turtles would be short term and minor. Because all of the work is in water and greater than 500 feet from shore, no impacts to nesting turtles or proposed critical habitat are expected.

Noise and other activity associated with proposed in-water construction may temporarily disturb manatees and dolphin species in the vicinity of the project area through temporary impacts on forage or prey abundance, water quality (turbidity), and underwater noise. These conditions would be implemented and adhered to during project construction. Dolphins are highly mobile species and would be expected to move away from the construction area during in-water activities. The artificial reef project would adhere to all applicable federal, state, and local permit conditions for the protection of marine mammals, including the implementation of the Standard Manatee Conditions for In-Water Work (USFWS 2011). Any impacts would be expected be short term and minor.

Smalltooth Sawfish, Gulf Sturgeon, and Gulf Sturgeon Critical Habitat

The smalltooth sawfish is a mobile species and relatively rare in northern Gulf of Mexico waters and the immediate project area. The Gulf sturgeon uses bays and estuaries in the northern Florida waters as a migratory corridor from breeding grounds to winter foraging grounds. Minor, short-term disturbances may occur as a result of in-water work associated with the proposed project. For projects in waters accessible to the smalltooth sawfish and Gulf sturgeon, the project would comply with NMFS Smalltooth Sawfish Construction Conditions (NMFS 2006).

Disturbances to the water column from in-water work would temporarily affect certain Gulf sturgeon critical habitat PCEs due to turbidity, dispersal of potential prey, and substrate disturbance. These would be limited to the area immediately surrounding the work area and would occur only during construction. Therefore, impacts to Gulf sturgeon critical habitat would be short term and minor.

Essential Fish Habitat

An EFH assessment will be coordinated through the National Marine Fisheries Service Habitat Conservation Division. If necessary, species specific measures would be recommended by NMFS and would be incorporated into the project construction plan. The project would not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of potential effect during the construction process. The project may result in minor, adverse short term impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans.

The proposed work in the EFH area reflects the expansion of the existing Florida Artificial Reef program through the installation of additional structures. These structures vary by county and installation depth but all fall within the guidelines of the regulating program and associated permit regulations. Installation of the artificial reef structures may result in a small area of existing habitat being converted from one EFH habitat to another type; however, habitat changes will be small and are anticipated to have a net beneficial impact to habitat quality and species found in the area. As a result, disturbance to species will be limited in their spatial extent, minor in scope, and brief in duration. Construction activities may have a minor, short term impact on habitat. During construction, all appropriate BMPs will be followed to minimize the potential impacts of construction activities on EFH and species in the area. During construction, adjacent areas with equivalent or better habitat will be available and undisturbed and organisms could move away from disturbed areas. Therefore, the project is not likely to adversely affect EFH.

Piping Plover and Red Knot

The main risk to piping plover and red knot would be from human disturbance during resting and foraging in habitats adjacent to work areas. The proposed project would result in short-term increases in noise, however, impacts are unlikely due to the distance of the project (minimum of 500 feet) from any potential shoreline habitat. No impacts to piping plover critical habitat are expected as the PCE's will not be altered or changed due to the implementation of this project.

State-Listed Birds, MBTA, and BGEPA

All migratory birds are protected under the MBTA. State-listed birds such as American oystercatcher or least tern may nest on beaches or mudflats in the vicinity of the project area. If restoration activities occur during the nesting season (March 1 to August 1), these birds could be disturbed by noise generated by in-water activities. However, all project activities are expected to be at least 500 feet from the shoreline which is expected to avoid any impacts (from noise, human presence, general disturbance, etc.) to nesting birds.

In recent years, the bald eagle has been removed from the endangered species list under the ESA. In Florida, the FWC protects the bald eagle pursuant to 68A-16, Fla. Admin. Code, and conservation measures to protect active nest sites during the nesting season must be considered to reduce potential disturbances of certain project activities.

There are no known bald eagle nests within 5 miles of the project site; therefore no impacts to bald eagles are expected.

Section 7 and Essential Fish Habitat Consultations

Section 7 ESA consultations with the USFWS and NMFS are ongoing for the proposed project. An EFH consultation under the Magnuson-Stevens Fishery Conservation and Management Act also would be completed to address any situations where proposed project activities may affect EFH habitat. The project would incorporate any additional conservation recommendations provided by the NMFS and the USFWS during the consultation to avoid and minimize or otherwise offset the effects of the proposed project on listed species or EFH.

12.18.5.6 Human Uses and Socioeconomics

12.18.5.6.1 Socioeconomics and Environmental Justice

Affected Resources

The populations of Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties equal 853,708 individuals, representing 4.54% of the population of Florida. See Table 12-32 for the populations in each individual county.

This project would have a short-term, minor, direct adverse impact through disruption of localized fishing during construction. Direct, short-term, moderate benefits through local job creation would result from construction activities. Long-term, indirect, moderate benefits would result from increasing fisheries habitat, and recreational and fishing value of the area, since newly created habitat would be able to support a larger, more diverse fish assemblage.

Environmental Consequences
This project is not designed to create a benefit for any group or individual, but rather would provide benefits on a local basis. There are no indications that the proposed artificial reef project would be contrary to the goals of Executive Order 12898 on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, or would create disproportionate, adverse human health or environmental impacts on minority or low-income populations of the surrounding community.

Direct, short and long-term, minor economic benefits across the multi-county area of project implementation may be realized through local job creation and support from construction. Long-term, indirect, minor benefits could result from increasing recreational opportunities in the project area.

12.18.5.6.2 Cultural Resources

Affected Resources
Most of this project work would take place in the water and would not have an upland component. However, there are cultural resources, notably shipwrecks, present in the Gulf of Mexico.

Environmental Consequences
A complete review of this project under Section 106 of the NHPA would be 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.

Table 12-32. Population of Florida and affected counties: Escambia, Santa Rosa, Okaloosa, Walton, and Bay.

TOPIC	FLORIDA[1]		ESCAMBIA		SANTA ROSA		OKALOOSA		WALTON		BAY	
2010 Total Population	18,801,310		297,619		151,372		180,822		55,043		168,852	
White alone	14,721,426	78.3%	212,203	70.1%	18,698	87.5%	156,438	82.3%	51,593	89.6%	142,508	82.9%
Black or African American alone	3,121,017	16.6%	69,322	22.9%	10,303	6.5%	18,628	9.8%	3,455	6.0%	19,081	11.1%
American Indian and Alaska Native alone	94,007	0.5%	2,724	0.9%	1,427	0.9%	1,331	0.7%	518	0.9%	1,203	0.7%
Asian alone	507,635	2.7%	8,779	2.9%	3,170	2.0%	5,893	3.1%	576	1.0%	3,782	2.2%
Native Hawaiian and Other Pacific Islander alone	18,801	0.1%	605	0.2%	317	0.2%	380	0.2%	115	0.2%	172	0.1%
Two or more races	357,225	1.9%	9,081	3.0%	4,597	2.9%	7,223	3.8%	1,324	2.3%	4,985	2.9%
Hispanic or Latino	4,361,904	23.2%	15,438	5.1%	7,767	4.9%	15,397	8.1%	3,397	5.9%	8,939	5.2%
White alone, not Hispanic or Latino	10,716,747	57.0%	199,792	66.0%	132,199	83.4%	143,703	75.6%	48,599	84.4%	135,116	78.6%

[1] U.S. Census Bureau. 2010. Available at: http://quickfacts.census.gov/qfd/index.html. Accessed October 2, 2013.

12.18.5.6.3 Infrastructure

Affected Resources
Artificial reef creation would take place in nearshore and deep, open-water habitats, away from infrastructure. Construction staging areas and access points to Santa Rosa Sound would be located at existing artificial reef structures.

Environmental Consequences
There may be a minor, short-term, temporary increase in traffic and slow-moving construction equipment in the adjacent transportation corridors. The action would affect public services or utilities but the impact would be localized and within operational capacities.

Artificial reef creation would occur in open, nearshore and deep water habitats in in five panhandle counties, so there would be no effect on local infrastructure once equipment and materials reach the construction site. Short-term and long-term impacts to public services would be minor due to the project being located outside any public utilities or traffic areas.

Once construction is complete, there would be no effect to infrastructure.

12.18.5.6.4 Land and Marine Management

Affected Resources

Coastal Zone Consistency
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.

Environmental Consequences
Artificial reef restoration would have a moderate to major beneficial impact on marine management in the Florida panhandle by promoting increased diversity and population sizes of aquatic species as a result of enlarged areas of reef habitat. All project work would be completed consistent with any applicable state and federal management plans.

12.18.5.6.5 Aesthetics and Visual Resources

Affected Resources
Aesthetic and visual resources in artificial reef creation areas are characterized by open-water nearshore habitat.

Environmental Consequences
Short-term, minor impacts to the viewshed may occur during periods when barges and equipment are present to place reef materials. In the long term, there would be no impact to visual resources from the shore or on the water surface.

Artificial reef creation would have a long-term, moderate beneficial impact on underwater aesthetics and visual resources for those who dive or snorkel in the project area following reef emplacement.

12.18.5.6.6 Tourism and Recreational Use

Affected Resources

The primary recreational activities in the Florida panhandle are swimming, boating, fishing, diving, snorkeling, and beach combing. The artificial reefs are intended to attract tourists and other members of the public participating in recreational activities. Locations of the reefs are made publicly available, in part to support increased use.

Environmental Consequences

During the construction, areas may be unavailable to the public, thereby causing minor reduction of the areas available for recreation. After construction, visitor capacity would increase due to the increased habitat available, resulting in a beneficial impact to reef visitation.

12.18.5.6.7 Public Health and Safety and Shoreline Protection

Affected Resources

The project would be conducted at multiple locations throughout the Florida panhandle. The specific public health and safety and shoreline protection conditions at each individual location may vary. Project locations would not be situated in areas with hazardous waste generation or disposal.

Environmental Consequences

Artificial reef creation would have no impact on public health conditions because restoration techniques would follow health and safety guidance and would not take place in areas where public health conditions may be affected. Short-term and long-term impacts would be minor because artificial reef creation would not cause any soil, groundwater, and/or surface water contamination, exposure to contaminated materials, or mobilization and migration of contaminants currently in the soil, groundwater, or surface water that could harm construction workers or the general public. Artificial reefs would be constructed using layered, piling-mounted concrete and stone rubble or prefabricated modular design. All material used in reef creation would be analyzed for presence of contaminants prior to placement.

12.18.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Artificial Reef Creation and Restoration project implements restoration techniques within Alternatives 3 and 4.

The proposed Florida Artificial Reef Creation and Restoration project would place artificial reefs in already permitted areas in Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and/or increase the public's use and/or enjoyment of the natural resources by increasing the number of artificial reefs in state waters. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

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12.19 Florida Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center: Project Description

12.19.1 Project Summary

The proposed Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center project would involve constructing and operating a saltwater sportfish hatchery in Pensacola, Florida. This project would enhance recreational fishing opportunities. The total estimated cost for this project is $18,793,500.

12.19.2 Background and Project Description

The Trustees propose to construct and operate a saltwater sportfish hatchery in Pensacola (Escambia County), Florida (see Figure 12-35 for a conceptual design, Figure 12-36 for facility location). The objective of the proposed Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by producing and releasing highly sought-after sportfish species such as red snapper, red drum, and spotted seatrout. The restoration work proposed includes the construction and operation of a saltwater hatchery. Hatchery production (with a potential for up to 5,000,000 fish released annually) will be based on the use of intensive (i.e., indoor, tank-based) recirculating aquaculture systems that reduce water usage and effluent discharge (i.e., most of the water is re-used). Effluent will flow through a small constructed filtration marsh composed of native coastal wetland plant species to recycle nutrients from the aquaculture facility as plant biomass which can be used to support ongoing regional coastal habitat restoration efforts.

Figure 12-35. Conceptual design for the Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center Project.

Figure 12-36. Location for the Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center Project.

12.19.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The project would enhance and/or increase the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response activities. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results. The State of Florida has constructed a similar style hatchery on a smaller scale and has been operating it successfully for multiple decades. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Furthermore, the cost estimates are based on the similar past project and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. This proposed project is not anticipated to negatively affect regional ecological restoration and is therefore not in consistent with the long-term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

Many recreational use projects, including ones similar to this project, have been submitted as restoration projects on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.19.4 Performance Criteria, Monitoring and Maintenance

As part of the project costs, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or improve the public's use and/or enjoyment of the natural resources by constructing and operating a saltwater sportfish hatchery. Performance monitoring will evaluate the construction and operation of the hatchery. Specific success criteria include: 1) the completion of the construction as designed and permitted; 2) operation of the hatchery as permitted; and 3) enhanced and/or increased public access provided to natural resources, which will be determined by observation that the hatchery is open and operational.

A detailed project timeline and associated monitoring framework will be developed as the first step in the initial project design phase. Overall project quality control and assurance will be overseen by the Florida Fish and Wildlife Conservation Commission and quarterly progress reports will be prepared to help track the successful implementation, performance, and completion of the various goals and objectives outlined in the scope of work. Existing fisheries monitoring programs will be leveraged to provide information on recreational catch and effort, and abundance of select sportfish species. The project proposal provides for five years of Trustee data collection during which detailed data on fisheries abundance, catch, effort and angler preferences will be collected to define the impact of the project on recreational fishing.

The project proposal also provides for five years of Trustee operation and maintenance which will provide for regular facility maintenance and repair (electrical, plumbing, physical facility, etc.) as well as periodic maintenance and repair of aquaculture systems (including tanks, filtration systems, and specialized instrumentation). After five years, upkeep and repair of facility buildings as well as maintenance of stormwater and effluent retention ponds, and filtration marsh will be provided by FWC and its governmental, university, or non-profit partners.

12.19.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $37,587,000 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Florida, which will be determined by the Trustees' assessment of lost recreational use for the Oil Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[20]

12.19.6 Cost

The total estimated cost to implement this project is $18,793,500. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and contingencies.

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[20] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.20 Florida Fish Hatchery: Environmental Review

12.20.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf of Mexico in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not, fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, after public review of a draft, the Trustees released a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the *Federal Register* on behalf of the Trustees, announcing the development of additional future Early Restoration projects for a Draft Phase III ERP (ERP). Construction of the Gulf Coast Marine Fisheries Hatchery and Enhancement Center (the hatchery) in Pensacola Bay was submitted as an Early Restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the state of Florida.

The Florida Fish and Wildlife Conservation Commission (FWC) is proposing to construct a saltwater sport fish hatchery in Pensacola (Escambia County), Florida, to supplement the Port Manatee Stock Enhancement Research Facility (SERF)—the lone State-operated saltwater sportfish hatchery operated in Florida. SERF currently produces juvenile redfish for release statewide. The facility uses mating pairs of redfish, caught in the wild, as brood stock to produce hundreds of thousands of eggs that are incubated until they hatch. The fingerlings are transferred to outdoor ponds or raised in tanks and are tagged and released when they reach the targeted size. Since 1988, six million juvenile redfish have been released, with the majority of them released in Tampa and Biscayne Bays (FWC 2013a). With only one hatchery in the state, it is difficult for the FWC to meet the demand from sport and commercial fishing.

The *Deepwater Horizon* Oil Spill directly affected beaches and estuaries through oil intrusion, which resulted in the closure of state and federal waters for months and had a large impact on Florida's coastal economy.

The proposed hatchery project would fund construction activities to develop a former industrial site into a saltwater sport fish hatchery and support its operation and maintenance activities for a period of 5 years. The proposed hatchery facility would focus on restoring lost recreational fishing use experienced by resident and visiting anglers in Florida. The facility would release up to five million juvenile sportfish such as red snapper (*Lutjanus campechanus*), red drum (*Sciaenops ocellatus*), and spotted sea trout (*Cynoscion nebulosus*) annually into state waters in the Gulf of Mexico.

This hatchery project would be consistent with FWC's efforts over the past 25 years to develop a statewide series of marine hatcheries to enhance fishing and promote marine conservation. The FWC has been actively pursuing this goal since development of SERF in Manatee County as a response, in part, to the declines in the harvest of popular sport fish species, particularly red drum, earlier in the 1980s. This commitment to incorporating marine hatcheries into FWC's fishery management activities was further recognized in 2006 with the implementation of the Florida Marine Fisheries Enhancement Initiative, or FMFEI (FWC 2013a).

The proposed hatchery would draw on lessons the FWC has learned in the 25 years of operation of SERF, and incorporate the latest technological advances in fish culture. The state-of-the-art facility would be designed to incorporate intensive aquaculture techniques and approaches, including the use of an indoor-tank-based rearing system where approximately 80% of the initial saltwater withdrawals from Pensacola Bay would be reused. In addition, the water that is eventually discharged from the facility would go through a treatment process that focuses on the recycling of nutrients. Effluent from the facility would flow through a small filtration marsh composed of native coastal wetland plant species (to be built as part of the hatchery project); the nutrients would provide fertilizer to support an adjoining nursery. Plants produced at the nursery and in the wetland would be used to support ongoing regional coastal habitat restoration efforts.

Developing the hatchery would help satisfy FMFEI's objectives of increasing recreational fishing opportunities and promoting marine conservation, while providing an economic boost to the Pensacola economy.

This proposed project meets the evaluation criteria of the Framework Agreement and the Oil Pollution Act (OPA). As a result of the *Deepwater Horizon* Oil Spill and related response actions, the public's access to and enjoyment of natural resources along Florida's panhandle was denied or severely restricted. The project would enhance and/or increase the public's use and enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response activities.

12.20.2 Project Location

The proposed hatchery project area is located on 10 acres in Escambia County at the southeast corner of Main Street and Clubbs Street in Pensacola, Florida (Figure 12-37 and Figure 12-38). The hatchery facilities and ponds will be constructed on the upland portion of the site. According to the Wetland Sciences, Inc. report (2013), there are three areas immediately adjacent and within the subject property that have been developed as wetland mitigation areas: the Bruce Beach marsh immediately to the south, the City of Pensacola Southern Bulkhead Mitigation Area immediately to the east, and the Community Maritime Park (CMP) wetland mitigation area immediately south of the Bruce Beach marsh (Figure 12-40). Finally, a bulk petroleum storage facility (Transmontaigne Product Services., FDEP Facility ID No. 178508201) is located immediately west of the proposed project site (Figure 12-39).

Records indicate the Bruce Beach marsh was planted in 1991 by the Florida Department of Environmental Protection's Ecosystem Restoration Section. This mitigation area was formed by the construction of an L-shaped breakwater and infill of submerged lands of Pensacola Bay. Originally, smooth cordgrass (Spartina alterniflora) was established on one-meter centers throughout the entire created area. Hydrology within the site was established through tidal ebb and flow whose influences are manifested by a gap in the constructed breakwater which effectively connected the mitigation site to Pensacola Bay (Wetland Sciences, Inc. 2013).

The Southern Bulkhead Mitigation Area site was designed to compensate for wetland losses incurred with the construction of the southern bulkhead along the waterfront of what is now the Community Maritime Park. This mitigation site was once a channelized canal formerly used to discharge treated effluent from a now decommissioned wastewater treatment plant. The mitigation site is comprised of a meandering tidal channel and low/high marsh areas planted with smooth coordgrass and marsh hay (Spartina patens) (Wetland Sciences, Inc. 2013).

The Community Maritime Park (CMP) wetland mitigation area was established in 2012 to compensate for loss of wetland functions that were eliminated by the construction of the Pensacola Community Maritime Park. The wetland mitigation plan included the creation of a salt marsh consisting of 0.86 acres of oyster reef habitat/breakwaters, 1.96 acres of planted salt marsh, and 1.72 acres of tidal creeks and pools which serve as a waterward extension of the existing Bruce Beach mitigation area. The mitigation plan also included modifications to the existing Bruce Beach Mitigation Area. These modifications included the re-grading of adjacent uplands to intertidal elevations for additional marsh creation and opening the southern end of the site to enhance tidal exchange between Bruce Beach and the CMP mitigation areas. This mitigation site is protected via a conservation easement recorded in OR Book 6417 Pages 1666- 1680 in the official records of Escambia County (Figure 12-40) (Wetland Sciences, Inc. 2013).

These three mitigation areas will not be affected by the construction activities and should benefit from the improved quality of the water returned to the bay through the hatchery's treatment processes relative to the uncontrolled nature of the current surface water runoff from the site.

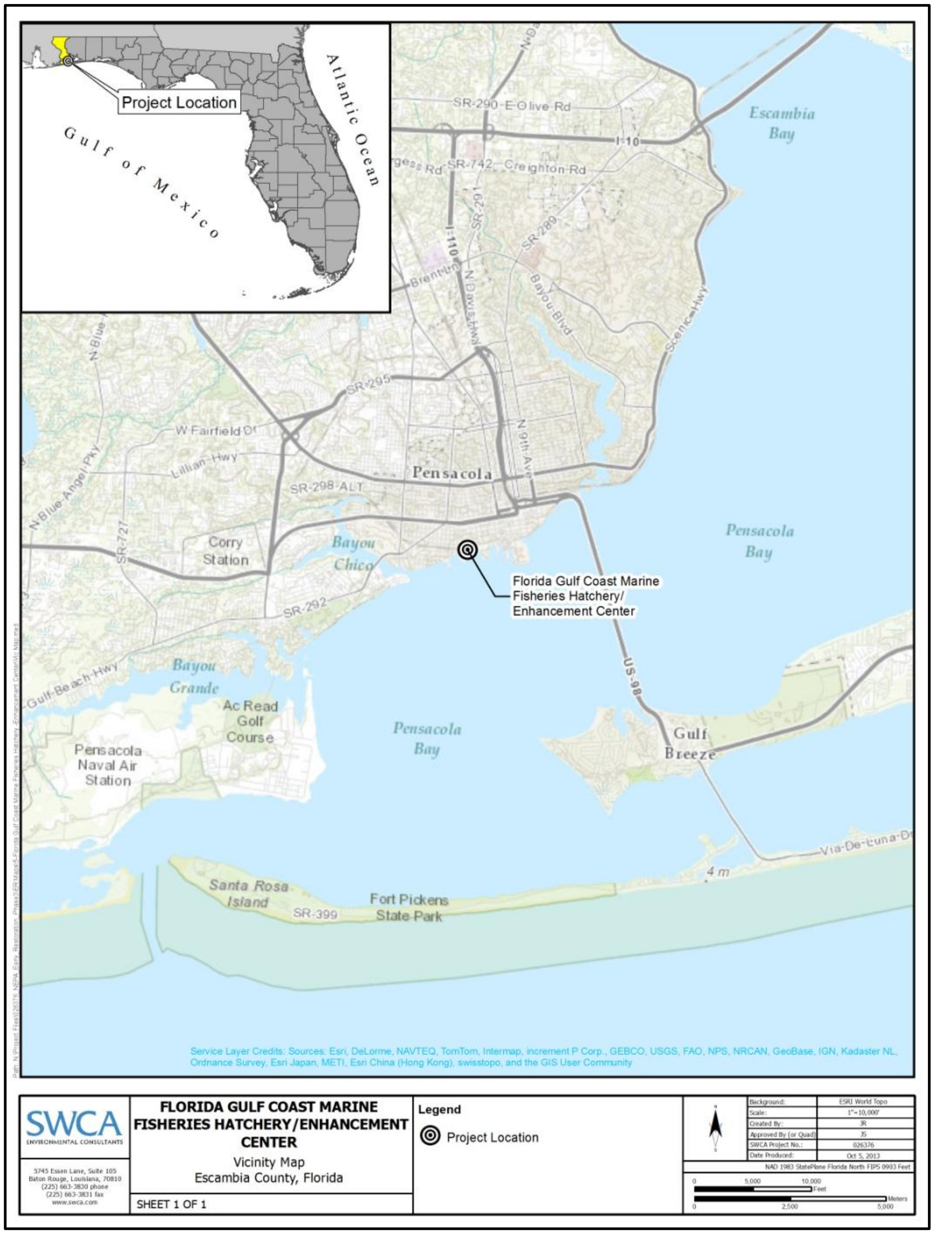

Figure 12-37. Vicinity map of the proposed hatchery project in Pensacola, Florida.

Figure 12-38. Aerial map of proposed hatchery project in Pensacola, Florida.

Figure 12-39. Approximate boundary of the proposed hatchery project location in Pensacola, Florida.

Figure 12-40. Wetland mitigation areas near the proposed hatchery project in Pensacola, Florida.

12.20.3 Construction and Installation

Figure 12-41 provides a conceptual rendering of the proposed hatchery.

Critical indoor project elements identified in Figure 12-41 include:

- Five-Room, Phase 1 Module Building (illustrated in white, adjacent to parking area):
  - **Entrance and offices:** A portion of the main facility building would contain offices for the staff. An entrance located adjacent to the parking lot would be developed for access by staff and visitors. A separate service entrance would be developed for the delivery of hatchery and administrative supplies.
  - **Brood stock rooms (2):** There would be two rooms where adult fish would be held in 115,000-gallon tanks for spawning. These broodstock fish would produce the fertilized eggs that the hatchery would then grow in the phase I tank rooms (see below) until they are large enough for release.
  - **Phase 1 tank rooms (2):** There would be two rooms where hatchery-raised fish would complete their grow-out to the Phase 1 size of approximately 1.25 inches in length, at which point they would be ready for release. The Phase 1 tanks would be 95,000-gallon capacity.

Live feed room (1): This room would contain smaller tanks that would grow the food necessary to feed the cultured sport fish. Depending on the species, this could include various species of phytoplankton and zooplankton.

Figure 12-41. Conceptual rendering of the proposed hatchery project in Pensacola, Florida.

Critical outdoor project elements identified in Figure 12-41 include:

- **Stormwater pond**: A stormwater retention pond would be developed to capture rain water flowing from impervious surfaces on and near the site during storm events. This pond would be used to settle solids and allow for some groundwater recharge. Pond discharge would be integrated into the surface waters being directly returned to Pensacola Bay from the site. The exact size of the pond and conditions and mechanisms of the return flow to Pensacola Bay (e.g., size of pond related to the amount of impervious surface in the final design) would be defined in the final engineering plans.
- **Storage pond:** A lined storage pond up to 1 acre in size would be used to store hatchery fish production effluent. Effluent would be diverted to the pond after initially filtering out solids inside the facility. The pond would allow for additional settling of solids entrained in the hatchery's fish production water, and the liner would facilitate removal of fish waste and other biological material. Water from the storage pond would flow into the plant production pond.
- **Plant production pond/filtration marsh:** This approximately 2-acre pond or marsh would receive discharge from the storage pond and be planted with native wetland species, including

Spartina alterniflora, to uptake nutrients that improve water quality before water would be returned to Pensacola Bay as sheet flow. The wetland plants would be harvested to remove nutrients from the marsh and used to support other coastal restoration projects. To the maximum extent possible, this constructed marsh would be integrated with the existing wetland and marsh mitigation areas that are on and adjacent to the proposed hatchery location.

- **Parking lot:** An on-site lot of approximately 90,000 square feet would be developed to provide parking for hatchery staff and visitors. Access to the lot would be via Clubbs Street, which has minimal traffic and would dead-end at the facility parking lot.

Permitting and construction to complete these hatchery elements would take place over approximately 12 to 18 months. Heavy equipment (e.g., excavators, backhoes, graders) would be needed to clean, excavate, and develop the site. Additional equipment (e.g., lifts, cranes) would be used in the construction of the building and the aquaculture facilities. Assumed equipment use and manpower requirements derived from the conceptual design phase are detailed in Table 12-33.

Table 12-33. Assumed equipment use and worker needs.

EQUIPMENT	NO. USED	NO. OF DAYS USED	NO. OF WORKER DAYS	ASSUMPTIONS
Cranes (pile driving and lifting)	2	180	360	8 hr/day, 5 days/week, 9 months
Front-end loader	2	120	240	8 hr/day, 5 days/week, 6 months
Backhoe	1	60	60	8 hr/day, 5 days/week, 3 months
Triple axel dump trucks	6	75	450	75 trips
Motorgrader	1	20	20	8 hr/day, 5 days/week, 1 month
Bulldozer (D-7)	1	60	60	8 hr/day, 5 days/week, 3 months
Portable pump (dewatering system)	1	56	56	24 hr/day, 7 days/week, 2 months
Tractor trailer (material delivery)	1	104	104	2 trips/week, 12 months (52 weeks)
Concrete trucks	4	128	512	2 trips/week, 4 months (16 weeks)
Generator	2	180	N/A	8 hr/day, 5 days/week, 9 months
Small power tools (saws, drills, nail guns)	26	180	50 skilled/semi-skilled	8 hr/day, 5 days/week, 9 months
Total	-	-	**1,912**	-

At least 26 small tools (e.g., nail guns, saws, drills) would be needed and would be operated approximately 8 hours per day, 5 days per week, for up to 9 months. A generator would be needed to power the small tools, which would operate for about 8 hours per day, 5 days per week, for up to 9 months. In addition, a pumping station would operate intermittently during the final phases of constructing the facility, and once the facility is running would be operating 24 hours a day for the life of the facility, with the exception of maintenance and other potential shutdowns.

Habitat features associated with the treatment of the hatchery's production waters would be first designed based on a maximum possible production level. Once these features were constructed, remaining funding would be evaluated to adjust the initial scale of the operation according to resource availability. This process would ensure the hatchery's environmental features would be capable of meeting their treatment demands. Subsequently, the size and characteristics of the stormwater pond would be scaled according to the amount of impervious surface (e.g., facility roof, parking lot) in the final design for the hatchery.

Construction equipment and activities would be managed to ensure sensitive and regulated resources, including existing wetland mitigation areas, would not be disturbed. The hatchery project would be designed with the intent of saving live oaks and pecan trees protected by city preservation ordinances (Wetland Sciences, Inc. 2013). In addition, FWC would collaborate with the FDEP, a co-Trustee in Florida, to ensure the hatchery project would not affect the existing mitigation areas covered by FDEP permits.

Environmental Protection Agency (EPA) permitting requirements for operating a fish hatchery are detailed in 4 C.F.R. 122, in Sections 1(b)(2)(ii), 24, and Appendix C. Hatcheries producing less than 100,000 pounds of warm-water species per year, as would be the case with the proposed facility, are exempt from obtaining a National Pollutants Discharge Elimination System permit. The hatchery project would be required to obtain an Industrial Wastewater Permit from FDEP. An Aquaculture Certification (Section 597.004, Florida Statute [FS]) would also be required from the Florida Department of Agriculture and Consumer Services (FDACS) Division of Aquaculture. Development of the hatchery project would adhere to the FDACS Aquaculture Best Management Practices Rule (Chapter 5L-3, Fla. Admin. Code). Building construction would use standard methods and follow general state and local permitting requirements regarding hours of activity, noise, site maintenance, and disposal of materials (see Hydrology and Water Quality section for more details).

12.20.4 Operations and Maintenance

The proposed hatchery would be operated and maintained by a team of 9 to 15 staff to support the production and release of up to five million marine sport fish (juvenile red snapper, red drum, and spotted sea trout) annually into Florida waters of the Gulf of Mexico. The production of sport fish would be conducted in a manner consistent with the relevant rules and best management practices (BMPs) that have been developed for the release of marine organisms in the state of Florida (FWC 2009a, 2009b, 2009c). These rules and guidance describe conditions under which marine organisms may be collected, as well as considerations to be addressed prior to the release of any marine organisms into the environment (e.g., genetic risk from the release). FDACS regulates aquaculture operations and enforces compliance with relevant regulations. FWC has had a long-term, productive working relationship with FDACS in regard to operations at the current hatchery at Port Manatee, including permitting of effluent discharge according to state aquaculture guidelines. FWC has authority derived from the state constitution to conduct the types of operations associated with the proposed hatchery.

Production of reared fish would take place indoors at the hatchery, rather than in outdoor holding and rearing ponds common to similar facilities. Hatchery fish production would be based on the use of intensive (i.e., indoor, tank-based) recirculating aquaculture systems that reduce water usage and effluent discharge (i.e., most of the water is reused). Effluent would flow through a small constructed filtration marsh composed of native coastal wetland plant species to recycle nutrients from the aquaculture facility as plant biomass, which can be used to support ongoing regional coastal habitat restoration efforts.

Successful production of fish and hatchery operations would require three general activities:

- Collection of brood stock;
- Rearing of captive spawned sport fish from brood stock eggs; and
- Release of hatchery fish to marine environments.

These steps are further described below.

12.20.4.1 Collection of Brood Stock

Brood stock (adult male and female fish of the targeted species) would be collected from Florida's state waters under existing research and species collection permits held by FWC. Generally, these adult fish would be collected using standard fishing gear (e.g., baited lines, nets). Once collected, the adult fish would be transported to the hatchery and transferred to the brood stock room tanks. Spawning of these fish would be stimulated by adjusting environmental cues (e.g., day length, water temperature) to simulate natural spawning cycles.

12.20.4.2 Rearing of Captive Spawned Sport Fish

Fertilized eggs in the brood stock tank would be buoyant which facilitates collection from the water surface of the tanks. This collection technique has been used successfully for more than 25 years at SERF and would be modified as needed, based on site-specific conditions at the proposed hatchery. The fertilized eggs would be transferred to incubation chambers and maintained until their yolk sacs are absorbed. At that time they would be transferred to phase 1 grow-out tanks.

In the grow-out tanks, the fish would be raised on a diet of live feed, phytoplankton and/or zooplankton, which would be produced on-site in the separate live feed room. Growth of hatchery fish would be monitored and graded by size. Fish would be transferred over time to a series of tanks to minimize cannibalism until they reach the desired size for release. The goal for the phase 1 size is approximately 1.25 inches. When the fish reach this size, they would be collected from the tanks and transported by truck and/or boat to release sites identified by FWC staff. These sites would be located in suitable habitat for juvenile fish such as seagrass beds located throughout the northern Gulf of Mexico.

12.20.4.3 Seawater Management

A critical component of the proposed hatchery is taking in seawater needed for operating the rearing tanks before returning the water to Pensacola Bay. The proposed facility would incorporate intensive aquaculture systems that recirculate the water and minimize withdrawal requirements. The goal would be to reduce the volume of water requiring treatment prior to discharge to Pensacola Bay by reusing 80% of the intake water. Seawater would be supplied to the facility through underground piping from a seawater pump station. A pumping station, preferably land based, would supply power and protect the pump(s). Details of this structure would be addressed in the development of final site plans, but would include an occlusion device at the water intake to prevent harm to or uptake of specific marine organisms. Any proposed structure would comply with relevant city, state, and federal permit requirements. Seawater would be treated prior to use. The seawater treatment may include disinfection, either through chlorine or ozone, a settling tank to remove suspended solids, mechanical filtration, and a water distribution system (valves and plumbing) to direct water to specific areas of the hatchery.

Water that is not reused would be treated in two phases. The first phase would consist of on-site filtration to remove large solids. The solids would be disposed of by Emerald Coast Utilities Authority. Next, the water would flow to the storage pond to allow the settling of additional solids. The remaining effluent would be transported to the plant production pond or filtration marsh where nutrients would be removed by native plants before the water is returned as sheet flow back to Pensacola Bay.

The marsh or wetland would be designed to distribute water equally to the marsh wetland plants to facilitate uniform growth of plants and nutrient uptake by the plants from the waste stream. Several species would be planted in the marsh at strategic elevations to provide the appropriate water inundation or exposure to the plants. The marsh would serve the additional purpose of supplying wetland plants for restoration projects.

12.20.4.4 Additional Operation Considerations

Additional operational guidelines and programs for the facility would be developed, implemented, and refined over time as needed and based on the FWC's more than 25 years of experience operating the SERF hatchery in Port Manatee. For example, SERF has a power outage protocol that could be reviewed for relevance and then adopted or modified as needed for the proposed hatchery.

12.20.4.5 Maintenance

The project proposal provides for 5 years of Trustee operation and maintenance, which would provide for regular facility maintenance and repair (electrical, plumbing, physical facility, etc.) as well as periodic maintenance and repair of aquaculture systems (including tanks, filtration systems, and specialized instrumentation). After 5 years, upkeep and repair of facility buildings as well as maintenance of stormwater and effluent retention ponds and filtration marsh would be provided by FWC and its governmental, university, or non-profit partners.

A hatchery maintenance plan would be developed that provides specific plans for short- and long-term equipment inspection, repair, and replacement. Short-term maintenance would include regular facility upkeep (e.g., cleaning) and periodic inspection and repair of aquaculture systems including tanks, filtration systems, specialized instruments, and basic facility systems (e.g., electrical, plumbing). Long-term maintenance would include provisions for upkeep and repair of facility buildings, stormwater pond, storage pond, and the plant production pond or filtration marsh to ensure effective productivity.

12.20.5 Affected Environment and Environmental Consequences

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 and environmental consequences of the project.

12.20.5.1 No action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected environment subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.20.6 Physical Environment

The proposed location for the hatchery is a roughly 10-acre, human-made parcel that was created in the early 1900s by filling in a portion of Pensacola Bay. Although currently vacant, the site has a history of documented industrial activity since 1910 (Wetland Sciences, Inc. 2013). The site is currently characterized as "highly disturbed" and extensively covered with construction debris. Three remnant patches containing native and exotic vegetation are present in the hatchery project area, which is bordered by wetland mitigation areas (Wetland Sciences, Inc. 2013).

12.20.6.1.1 Geology and Substrates

Affected Resources

The soil and substrate at the proposed hatchery site have not been surveyed. According to the Natural Resources Conservation Service (2013), local soils are characterized as Lakeland-Hurricane Complex. However, the upland hatchery project area was created by filling in historically coastal areas, which may have been altered over time by industrial activity. The following description assumes local soils were used as fill.

The Lakeland-Hurricane Complex are nearly level to moderately sloping, excessively drained, and somewhat poorly drained soils that are sandy throughout on coastal lowlands. This map unit consists of soils on broad, low ridges in the southern part of the county, primarily in and around the city of Pensacola. The landscape consists of long, smooth slopes and has little relief. Slopes range from 0% to 8%.

Environmental Consequences

Development of the hatchery project would significantly disturb the soils where excavation and re-grading for the hatchery building, parking lot, and associated ponds and treatment marsh (see Figure 12-41) is necessary. The hatchery project would result in major, long-term impacts to soils where development occurs. However, since the area was historically filled from off-site soils, it is unclear whether disturbance is occurring to native soils.

12.20.6.1.2 Hydrology and Water Quality

Affected Resources

Northwest Florida has seven major watersheds, all of which have been identified as priorities under the Surface Water Improvement and Management (SWIM) program. Water quality protection is the underlying goal of SWIM, along with the preservation and restoration of natural systems and associated public uses and benefits (Northwest Florida Water Management District [NFWMD] 2011). The hatchery project is located in the Pensacola Bay watershed system, which includes Pensacola, Escambia, Blackwater, and East Bays; the western portion of Santa Rosa Sound; and numerous rivers and bayous. The total drainage area covers nearly 7,000 square miles, about 34% of which is in Florida. The entire system discharges into the Gulf of Mexico, primarily through a narrow pass at the mouth of Pensacola Bay (NFWMD 2013). Broad issues for the Pensacola Bay system include water and sediment quality degradation through point and nonpoint pollution sources; habitat quality, which is threatened by and degraded through sedimentation and deposition; and management and coordination between two states and numerous local governments and agencies (Thorpe et al. 1997).

With regard to groundwater, the principal water-bearing aquifers are the Surficial Aquifer System (which includes the Sand and Gravel Aquifer) and the Floridian Aquifer System. The Sand and Gravel Aquifer supplies most of the public water supply in Escambia County (NFWMD 2011). Based on Federal Emergency Management Agency (FEMA) flood insurance rate maps (see Panel 12033C0390G), the hatchery project is located in the coastal area located in Zone AE. Zone AE has defined base flood elevations and is an area of special flood hazard (FEMA 2006).

The presence of concrete and other debris, combined with an assumption of poorly drained soils, would result in surface water flow across the hatchery project area. It is likely that discharge from the site occurs into the adjacent wetland mitigation sites on the eastern and southwestern boundaries of the property (Wetland Sciences, Inc. 2013). These marshes would improve the quality of surface water runoff from the hatchery project site before flow reaches the bay. The property is surrounded by developed land, including a major road, refinery or storage facility, commercial buildings, a former Emerald Coast Utilities Authority wastewater treatment plant, and a recently built ball field and facility. These impermeable surfaces would not facilitate infiltration and aquifer recharge, but would encourage surface runoff.

Environmental Consequences

Hydrology of the project site would be affected by the development of the hatchery facility. In the short term, particularly during the period of intensive excavation and grading, there is the potential for increased sediment transport off the construction site during storm events. Incorporation of BMPs for construction (e.g., silt fencing, hay baling sensitive areas) would ensure that these potentially adverse water quality impacts are minimized. Current surface water flows and subsequent discharges to Pensacola Bay are not controlled or actively managed. The development of the stormwater retention area in conjunction with the hatchery development would result in implementation of a coordinated, engineered approach for managing the quality of stormwater, or freshwater flows, or both, and prevent discharge of pollutants into Pensacola Bay.

SERF’s success with capturing and controlling surface water flows and improving water quality sets the precedent for the development of a similar system for the proposed hatchery. Monitoring associated with the SERF industrial wastewater permit improved water quality, resulting in a determination letter from FDEP that the permit was no longer required. Based on this experience and the opportunity to incorporate similar methods and technology, the hatchery project should result in no long-term degradation of water quality. Given potential uncontrolled runoff to the bay, the hatchery project is likely to have short- and long-term benefits to water quality by ensuring discharge to the bay meets strict water-quality criteria for nutrients and other impurities as required by an industrial wastewater permit.

Construction of the stormwater system would ensure that the hatchery project would not affect the performance of the existing wetland mitigation areas. Water quality monitoring would be required by the industrial wastewater permit to ensure there is no water quality impairment of discharges into the bay. All permit conditions, including mitigation measures for siltation, erosion, turbidity, and release of chemicals, would be strictly adhered to. During construction, BMPs along with other avoidance and mitigation measures required by state and federal regulatory agencies would be employed to minimize any water quality and sedimentation impacts. FDEP permit conditions require erosion and turbidity mitigation measures, which include:

- Installation of floating turbidity barriers;
- Installation of erosion control measures along the perimeter of all work areas;
- Stabilization of all filled areas with sod, mats, barriers, or a combination; and
- Stoppage of work if turbidity thresholds are exceeded. The soils would then be stabilized, work procedures would be modified, and the FDEP would be notified.

Compliance with the Clean Water Act or Rivers and Harbors Act may be necessary since the hatchery project will have a discharge to Pensacola Bay.

There is the potential for short-term, minor adverse impacts to water quality associated with construction activities but these would be minimized by using BMPs. Over the long term, water quality of flows on the site and the saltwater discharges used in production would likely result in a minor benefit with the development of the hatchery.

12.20.6.1.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

The Clean Air Act (CAA) requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS have been set for six common air pollutants (also known as criteria pollutants)—particle pollution or particulate matter, ozone, carbon monoxide, sulfur dioxide (SO_2), nitrogen dioxide, and lead. Particulate matter is defined as fine particulates with a diameter of 10 micrometers or less (PM_{10}) and fine particulates with a diameter of 2.5 micrometers or less ($PM_{2.5}$). When a designated air quality area or airshed in a state exceeds a NAAQS, that area may be designated as a *nonattainment* area. Areas with levels of pollutants below the health-based standard are designated as *attainment* areas. To determine whether an area meets the NAAQS, air monitoring networks have been established and are used to measure ambient air quality. The EPA also regulates 187 hazardous air pollutants (HAPs) that are known or suspected to cause cancer or other serious health effects.

Air quality in the Florida panhandle is in attainment with the NAAQS (EPA 2013a). The FDEP operates two monitors in Escambia County. The Ellyson Industrial Park monitor in Ferry Pass records ozone, $PM_{2.5}$, and SO_2 concentrations. The Naval Air Station monitor records ozone concentrations. Readings at both monitors for the last 3 years show attainment with the NAAQS for ozone and SO_2 (FDEP 2013b). $PM_{2.5}$ attainment data were not available (EPA 2013a).

Total greenhouse gas (GHG) emissions in the state of Florida from 1990 to 2007 have increased at an average rate of 2.1% per year. Total GHG emissions in 2007 were 290 million metric tons of carbon dioxide (CO_2) equivalent ($MMTCO_2E$). In 2007, 91% of GHG emissions in Florida were CO_2 emissions (FDEP 2010). According to the EPA, the average annual temperature in the southeast portion of the United States has increased by approximately 2.0 degrees Fahrenheit (°F) since 1970. Average annual temperatures in the region are projected to increase from 4°F to 9°F by 2080. Hurricane-related rainfall is projected to continue to increase. Models suggest that rainfall would arrive in heavier downpours with increased dry periods between storms. These changes would increase the risk of both flooding and drought. The coasts would likely experience stronger hurricanes and sea level rise. Storm surge could present problems for coastal communities and ecosystems (EPA 2013b).

Environmental Consequences

Project construction would require the use of heavy mechanized equipment, which would lead to temporary air pollution (e.g., criteria pollutants, HAPs, GHGs) due to emissions from the operation of construction vehicles and equipment. Any air quality impacts that occur would be minor due their localized nature, short-term duration, and the small size of the hatchery project. Available BMPs would be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality–related permits would be required.

Construction of the hatchery would require use of equipment that would contribute to air quality emissions and GHGs such as CO_2. Due to the small area, the exhaust emissions are expected to be minor, with bulldozer, backhoe, and grader being the most likely equipment used to prepare the site to be developed. Any air quality degradation would be very limited to the area immediately around the construction site and would only last during the site preparation period—expected to be less than 6 months. Table 12-34 describes the likely GHG emission scenario for the implementation of this hatchery project.

Table 12-34. Projected greenhouse gas impacts of the proposed project for major construction equipment.

EQUIPMENT DESCRIPTION	TOTAL HOURS USED	CO_2 FACTOR-MT/100 HRS	CO_2 (MT)	CH_4 FACTOR-MT/100 HRS	CH_4 (MT)	N_2O FACTOR-MT/100 HRS	N_2O (MT)	TOTAL CO_2 (MT)
Triple axel dump trucks	300	1.7	5.1	0.5	1.5	7.2	21.6	28.2
Concrete trucks	512	1.7	8.7	0.5	2.6	7.2	36.9	48.1
Tractor trailer	416	1.25	5.2	0.4	1.7	5.5	22.9	29.7
Pickup trucks	7,200	1.1	79.2	0.35	25.2	4.4	316.8	421.2
Motorgrader	160	2.25	3.6	0.65	1.0	1.08	1.7	6.4
Backhoe	480	2.55	12.2	0.85	4.1	10.2	49.0	65.3
Bulldozer	480	2.25	10.8	0.65	3.1	1.08	5.2	19.1
Front-end loader	960	2.25	21.6	0.65	6.2	1.08	10.4	38.2
Cranes	1,440	2.55	36.7	0.85	12.2	10.2	146.9	195.8
Total	**11,948**							**852**

mt = metric tons
Ch_4 = methane
N_2O = nitrogen dioxide

Based on the assumptions detailed in Table 12-33 and calculations shown in Table 12-34, the project would generate approximately 852 metric tons of GHGs over the duration of the project. The following mitigation measures have been identified to reduce or eliminate GHG emissions from the project.

- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.

The project would have short-term, minor impacts but no long-term impacts on GHG emissions. Mitigation measures would minimize GHG emissions.

Air quality in the hatchery project area may also be affected by dust associated with construction. However, incorporating BMPs (e.g., wetting to control fugitive dust, limited idling) during construction would help mitigate these impacts. These BMPs would be incorporated in construction permits. Long-term air quality impacts from the hatchery operation are expected to be minor. The integration of energy efficient equipment and a facility design and construction focused on the use of green technologies (for instance, those incorporated as part of LEED or similar certification) would offset any short-term, minor contributions of GHGs. Energy efficiency would help minimize the hatchery's net electricity consumption and thereby help minimize emissions of GHGs associated with the electricity used to operate the facility. At the same time, the development of vegetated areas, particularly the plant production pond or filtration marsh, would increase on-site vegetative production and act as a potential minor carbon sink.

12.20.6.1.4 Noise

Affected Resources

Noise can be defined as unwanted or nuisance sound. The Noise Control Act of 1972 (42 USC 4901 to 4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. Amplitude is the magnitude of a sound and is usually expressed in decibels (dB), which is a dimensionless ratio of sound pressure to a reference pressure. The A-weighted decibel (dBA) is the adjusted unit of sound used to describe the human response to noise from industrial and transportation sources. The threshold of hearing is 0 dB. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 12-35 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

The hatchery project site is surrounded by a developed, industrial urban environment with a heavily used roadway immediately to the north. A baseball stadium located approximately 0.5 mile west of the project site appears to be the major recreation site in the area. Given the location, the road likely receives considerable industrial traffic including large trucks and periodic heavy pedestrian traffic due to the baseball facility. No residential properties are located in the vicinity. No sensitive wilderness areas or special wildlife use areas are located near the project site.

Table 12-35. Typical noise levels for common sources.

NOISE SOURCE OR EFFECT	SOUND LEVEL (DBA)
Rock-and-roll band	110
Truck at 50 feet	80
Gas lawn mower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Source: Adapted from U.S. Department of Energy and Bonneville Power Administration (1986)

Environmental Consequences

Construction activities, including use of heavy equipment such as graders and backhoes and smaller handheld tools such as saws and nail guns, would cause an increase in noise during the day for the duration of construction. Standard state contract provisions include restricting work to weekdays, normally from 7 a.m. to 7 p.m., unless in a hospital or strictly residential area. Contractors are normally not allowed to work outside these limits unless it is for safety, traffic, or highly restricted schedules, and then it must be by permission. In addition, state contracts require that all equipment used on-site must be properly muffled and in good repair. As a result, short-term noise impacts are expected to be minor, but would impact at least one local business, Nick's Boathouse, a restaurant at the adjacent marina, less than 0.25 mile to the east.

Potentially loud equipment would be during various phases of construction. Noise levels would depend on equipment being used and tasks being performed. Therefore, levels of noise would vary from low to moderate during the 12-month construction period.

In the long term, noise impacts would be minor. The main hatchery operations would occur within the building, so contribution to ambient outdoor noise levels would be negligible. Site maintenance would contribute minor and infrequent noise. Vehicle traffic would be mostly confined to staff and visitors, consisting of passenger vehicles and infrequent deliveries by truck. The building noise would consist of heating, ventilation, and air conditioning (HVAC) systems and noises associated with running the hatchery facilities. These long-term noise impacts are expected to be minor given their anticipated low volume. This minor increase in noise is unlikely to be significant amidst the nearby commercial operations and development in the area.

12.20.6.2 Biological Environment

The Gulf of Mexico is one of the nation's most valuable ecosystems. Florida's barrier islands, estuaries, coral reefs, beaches, seagrass meadows, coastal wetlands, and mangrove forests are world-renowned natural resources and attractions. These habitats provide a range of ecosystem services including fisheries, wildlife-related activities, food production, energy production, infrastructure protection, and recreational opportunities (Gulf Coast Ecosystem Restoration Task Force [GCERTF] 2011). According to the GCERTF (2012), continued coastal habitat loss and degradation in Gulf and estuarine environments along with overfishing has resulted in a declining trend in fish populations, which can threaten ecosystem diversity and stability through food web disruptions.

12.20.6.2.1 Living Coastal and Marine Resources

12.20.6.3 Vegetation

Affected Resources

A biological survey for the proposed hatchery property was completed in August 2013 (Wetland Sciences Inc., 2013). The survey report confirmed that the site was on human-made land, created in the early 1900s by placing fill in the bay. The 10-acre site is highly disturbed, and is currently covered with excess material including earth fill and limestone riprap that are stockpiled within the property. Additionally, the site is strewn with other historic debris from previous industrial land uses including creosote-treated timber, concrete pilings, concrete culverts, bricks, abandoned rail spur, and other miscellaneous debris. Three patches of semi-native habitat still existed. These areas constitute only about 1 acre and contain canopies of live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), and cabbage palm (*Sabal palmetto*), with a shrub canopy of wax myrtle (*Myrica cerifera*) and yaupon holly (*Ilex vomitoria*). A number of invasive species were also present, including Chinese tallow (*Triadica sebifera*) and chinaberry (*Melia azedarach*). In addition, the landward side of the mean high water line in the southeast portion of the site contains a fringe wetland consisting of marsh hay (*Spartina patens*).

The remainder of the site is dominated by species typical of disturbed landscape in Florida such as lantana (*Lantana camara*), wetland nightshade (*Solanum tampicense*), and, in the wetter zones near the shoreline, torpedo grass (*Panicum repens*), a Category I exotic species. Also located in the project area, adjacent to the proposed construction footprint, is a human-made tidal marsh created for mitigation services.

No federally listed plant species occur in the project area and due to the disturbed nature of the proposed hatchery site and their habitat requirements, it is unlikely that any state-listed plants would occur at the site. No state-listed plant species were observed during the 2013 surveys (Wetland Sciences Inc., 2013).

Environmental Consequences
Most of the project area is highly disturbed; therefore, the proposed project would have no negative impacts to vegetation in this area. Construction activities would cause some disturbance to vegetation in the site's upland habitat. This small area contains remnant native vegetative communities and would be avoided to adhere to city ordinances regarding tree protection. Using construction BMPs to prevent erosion and sediment runoff, disturbance or degradation to these areas would be minimized. Any impacts to native vegetative communities would be short term and minor.

Hatchery development would include a 2-acre plant production and filtration marsh that would enhance the site's vegetation by planting native wetland species, thus producing more habitat diversity than currently exists at the site. In addition, the project would have beneficial impacts to existing upland native vegetation and newly planted wetland species as a result of the removal of exotic plants at the site. The proposed project would, therefore, have a minor, long-term benefit on vegetation resources at the proposed site.

12.20.6.4 Wildlife Habitat

Affected Resources
The proposed project site is significantly disturbed, having been used as a disposal site for solid waste debris such as concrete pilings, bricks, culverts, creosote logs, and abandoned rail spur. Three small wooded areas are located on the eastern portions of the site that may provide habitat for small urban mammals and birds. Human-made tidal marshes to the south and east of the construction footprint provide habitat for marsh birds, wading birds, and possibly wintering waterfowl. In the southeast portion of the site, a small natural beachfront provides habitat to foraging shorebirds and wading birds. No bird rookeries or other nests were observed during surveys of the site.

Environmental Consequences
Common urban wildlife of the site and their respective habitat would face a short-term, minor impact during construction from noise produced by construction equipment, as well as minor, long-term impacts due to habitat loss where the hatchery facility footprint would be placed. There would be a short-term, minor impact to nearby human-made tidal marshes and beachfront habitat because wildlife using these habitats could experience disturbance during construction due to noise. The proposed

project’s plant production and filtration marsh would enhance the site by producing 2 additional acres of marsh habitat in the area, resulting in a long-term, moderate beneficial impact to species that use this type of habitat.

12.20.6.5 Marine and Estuarine Fauna

Affected Resources

More than 200 species of fish and shellfish have been identified in the Pensacola Bay estuary. Common fish and shellfish species are spot (*Leiostomus xanthurus*), bay anchovy (*Anchoa mitchilli*), Atlantic croaker (*Micropogonias undulates*), spotted seatrout, Gulf menhaden (*Brevoortia patronus*), striped mullet (*Mugil cephalus*), blue crab *(Callinectes sapidus)*, American oyster (*Crassotrea virginica*), and Penaeid shrimp *(Penaeus* spp.). Freshwater fish species that are tolerant of low salinities use embayments and marshes. These include largemouth bass (*Micropterus salmoides*) and redear sunfish (*Lepomis microlophus*). Four anadromous fish—gulf sturgeon, Alabama shad (*Alosa alabamae*), skipjack herring (*Alosa hrysochloris*), and striped bass (*Morone saxatilis*)—use the bay and its tributaries (FDEP 2004).

Environmental Consequences

No negative impacts to coastal and marine resources are expected from the development of the proposed hatchery. Assuming accurate analysis of the genetic risks (FWC 2009a), the release of Phase I hatchery fish would have a long-term benefit on estuarine and marine resources by supplementing native populations of three fish species. The success of the hatchery releases would be determined by an ongoing comprehensive monitoring program. Specific objectives of this monitoring program would be to estimate the short- and long-term survival of stocked fish; the potential long-term impact on wild sport fish populations; and the respective contributions of hatchery fish to local fish populations and recreational catches. Methods that may be implemented as part of a multidisciplinary and integrative monitoring program to evaluate hatchery program success are described below:

1. **Hatchery Production.** Staff at the hatchery would collect and maintain a captive sport fish brood stock; produce hatchling sport fish and rear them to the appropriate size for release; mark larger fish with coded wire tags (CWT); and participate in fish releases.
2. **Fish Health.** Staff would work with a suite of qualified partners to evaluate the health of all hatchery-reared offspring before release. Post-release surveys would also be used assess the survival and health status of hatchery-reared sport fish.
3. **Fisheries-Dependent Monitoring (FDM).** Recreational anglers would be surveyed to monitor fishing effort, catch and other variables such as targeted species. Fin clips from harvested sport fish would also be obtained for genetic testing.
4. **Fisheries-Independent Monitoring (FIM).** Staff would systematically collect sport fish of all sizes from estuarine and coastal waters via stratified random sampling and directed fishing using small mesh seines, trammel nets, and hook-and-line. Fish would be scanned by an onboard detector for the presence of CWTs and fin clips, or other tissue would be collected for genetic testing. Fish collected with CWT would be retained. Other fish would be measured and released; those greater 100 millimeters (standard length) would be fin-clipped.

5. **Angler-based Fin Clip Program (FCP).** Staff would develop a volunteer-based fin-clip program to identify hatchery-released fish. Recreational anglers would be provided with kits to collect fin clips and record collection data.
6. **Radio Telemetry.** A number of larger fish would be tagged with transmitters to identify patterns of movement and habitat preferences of released fish.

12.20.6.6 Protected Species

Affected Resources

The Wetland Sciences, Inc. biological survey report (2013) concluded that no state or federally listed species or critical habitatare present in the terrestrial habitats of the project area. A number of federally listed wildlife species occur in Escambia County (Figure 12-42). Threatened and endangered species with potential to occur in Escambia County include five species of sea turtles, the West Indian manatee (*Trichechus manatus)*, piping plover (*Charadrius melodus*), wood stork (*Mycteria americana),* and gulf sturgeon. One federally listed proposed species, red knot (*Calidris canutus rufa*), has potential to occur in the county (USFWS 2013b). The hatchery project site is located in waters of Pensacola Bay designated as Critical Habitat Unit 9 by the USFWS for the gulf sturgeon (*Acipenser oxyrinchus desotoi*), a species federally listed as threatened and state-listed as a species of concern. The project area does not overlap Unit 9, but rather is adjacent to it as it borders the shoreline's mean high water line (*Federal Register* 2003).

Sea Turtles and Marine Mammals

There are five species of endangered or threatened sea turtles that may occur or have the potential to occur in the project area. These include green turtle, hawksbill turtle, Kemp's ridley turtle, leatherback turtle, and loggerhead turtle. Sea turtles forage in the waters of the coastal Florida panhandle region and have the potential to occur in the waters where in-water work is proposed. The project site does not contain potentially suitable sea turtle nesting habitat.

The endangered West Indian manatee has the potential to occur in the project area waters. Manatees typically seek out shallow seagrass areas as preferred feeding habitat (USFWS 2010). Additionally, bottlenose dolphin (*Tursiops* spp.) populations are known to migrate into bays, estuaries, and river mouths and could be located in the proposed project area (NMFS 2013b).

Gulf Sturgeon and Gulf Sturgeon Critical Habitat

Gulf sturgeon are restricted to the Gulf of Mexico and its drainages, occurring primarily from the Pearl River in Louisiana to the Suwannee River, in Florida (NMFS 2009). Adult fish reside in rivers for 8 to 9 months each year and in estuarine or Gulf of Mexico waters during the 3 to 4 cooler months of each year (NMFS 2009). Important marine habitats include seagrass beds with sand and mud substrates (Mason and Clugston 1993).

Gulf sturgeon critical habitat was jointly designated by the NMFS and USFWS on April 18, 2003 (50 C.F.R. 226.214). The proposed project site is located within the Florida Nearshore Gulf of Mexico Critical Habitat Unit 99, which contains winter feeding and migration habitat for Gulf sturgeon. Critical habitat was designated based on seven primary constituent elements (PCEs) essential for its conservation, as defined in the 2003 *Federal Register*.The seven elements of critical habitat are listed below. Within the project site PCE's 1, 5, 6, and 7.

1. Abundant food items, such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages; and abundant prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and/or crustaceans, within estuarine and marine habitats and substrates for subadult and adult life stages;
2. Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;
3. Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths; these are believed necessary for minimizing energy expenditure during freshwater residency and possibly for osmoregulatory functions;
4. A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging;
5. Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages;
6. Sediment quality, including texture and chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and
7. Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage).

Figure 12-42. Gulf Sturgeon critical habitat in the project area vicinity.

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum, brown shrimp, pink shrimp, and white shrimp. There are no marine components of EFH in the vicinity of the project site.

The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. Table 12-36 provides a list of the species that NMFS manages under the federally Implemented Fishery Management Plan in the vicinity of the Florida Gulf Coast Marine Fish Hatcheries/Enhancement Center site and Pensacola Bay.

Table 12-36. List of species managed by NMFS in vicinity of the project study area (NMFS EFH mapper, 2013).

Management Unit / Species	Lifestage(s) Found at Location	FMP
Red Drum (*Sciaenops ocellatus*)	ALL	Red Drum
Highly Migratory Species Scalloped Hammerhead Shark Sandbar Shark Tiger Shark Atlantic Sharpnose Shark	 Neonate, Juvenile Neonate Neonate, Juvenile Neonate	Highly Migratory Species
Shrimp Brown shrimp (*Penaeus aztecus*) White shrimp (*Penaeus setiferus*) Pink shrimp (*Penaeus duararum*) Royal red shrimp (*Pleoticus robustus*) Rock Shrimp (*Sicyonia brevirostris*) Seabob Shrimp (*Xiphopenaeus kroyeri*)	ALL	Shrimp
Coastal Migratory Pelagics King mackerel (*Scomberomorus cavalla)* Spanish mackerel (*Scomberomorus maculatus*) Cobia (*Rachycentron canadum*) Dolphin (*Coryphaena hippurus*)	ALL	Coastal Migratory Pelagics
Reef Fish **Balistidae - Triggerfishes** Gray triggerfish (Balistes capriscus) **Carangidae - Jacks**		

Management Unit / Species	Lifestage(s) Found at Location	FMP
Greater amberjack (Seriola dumerili) Lesser amberjack (Seriola fasciata) Almaco jack (Seriola rivoliana) Banded rudderfish (Seriola zonata) **Labridae - Wrasses** Hogfish (Lachnolaimus maximus) **Lutjanidae - Snappers** Queen snapper (Etelis oculatus) Mutton snapper (Lutjanus analis) Schoolmaster (Lutjanus apodus) Blackfin snapper (Lutjanus buccanella) Red snapper (Lutjanus campechanus) Cubera snapper (Lutjanus cyanopterus) Gray (mangrove) snapper (Lutjanus griseus) Lane snapper (Lutjanus synagris) Wenchman (Pristipomoides aquilonaris) Vermilion snapper (Rhomboplites aurorubens) **Malacanthidae – Tilefishes** Goldface tilefish (Caulolatilus chrysops) Blackline tilefish (Caulolatilus cyanops) Blueline tilefish (Caulolatilus microps) **Serranidae – Groupers** Speckled hind (Epinephelus drummondhayi) Yellowedge grouper (Epinephelus flavolimbatus) Red grouper (Epinephelus morio) Warsaw grouper (Epinephelus nigritus) Snowy grouper (Epinephelus niveatus) Nassau grouper (Epinephelus striatus) Marbled grouper (Epinephelus inermis) Black grouper (Mycteroperca bonaci) Yellowmouth grouper (Mycteroperca interstitialis) Gag (Mycteroperca microlepis) Scamp (Mycteroperca phenax) Yellowfin grouper (Mycteroperca venenosa)	ALL	Reef Fish

State-Listed Birds, MBTA and BGEPA

There are more than 400 species of migratory birds, and hundreds of thousands of individuals reside along the Gulf Coast during the winter to forage and rest, while others are present during the summer to breed. All migratory bird species are protected under the MBTA. There are numerous state of Florida–listed bird species with potential for occurrence in and around the proposed hatchery site. These include Arctic peregrine falcon (*Falco peregrinus tundrius*), least tern (*Sterna antillarum*), southeastern American kestrel (*Falco sparverius paulus*), American oystercatcher (*Haematopus palliates*), and southeastern/Cuban snowy plover (*Charadrius alexandrinus tenuirostris*). The nesting season in Florida is from March 1 to August 1. Migratory birds may be foraging and resting in terrestrial or aquatic habitats on site. However nesting is only likely by songbirds in the large trees on site (USFWS 2013a).

The annual statewide survey of known bald eagle nesting territories in Florida conducted between November and March by the FWC indicates that there are 3 eagle nests within Escambia County. Of these, one is approximately 5 miles west of the site and the other two are more than 5 miles from the site (FWC 2013c).

Environmental Consequences

The proposed project has been evaluated for potential short- and long-term impacts to state and federally protectedspecies that may occur in and adjacent to the project area based on available suitable habitat and restoration goals. Descriptions of these evaluations are provided below.

Sea Turtles and Marine Mammals

For projects in waters accessible to sea turtles, NMFS has developed standardized *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS 2006). These conditions are typically applied to projects as part of the Clean Water Act Section 404 permit issued for in-water work. It is unlikely that the project site contains submerged aquatic vegetation, which is the preferred foraging habitat of sea turtles, but it cannot be ruled out entirely.

Minor, short-term disturbances may occur as a result of in-water work associated with the construction of the hatchery, ponds, and marsh. Construction of the intake would temporarily increase noise disturbance due to the presence of boats and construction equipment. If sea turtles are present in the in-water work area, short-term disturbances from noise and turbidity would occur. Sea turtles are a highly mobile species and would be expected to move away during in-water activities. An occlusion device at the water intake would be installed and would be designed to prevent harm to sea turtles and prevent pump malfunction or damage. Additionally, should a sea turtle be encountered during installation of the project, the crews would allow these species to exit from the project vicinity before commencing with work activities. No impacts to nesting turtles are expected since there is no nesting in or near the project area. Therefore, potential impacts or disturbances to listed sea turtles would be short term and minor.

Noise and other activity associated with proposed in-water construction may temporarily disturb manatees and dolphin species in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise. Dolphins are highly mobile species and would be expected to move away from the construction area during in-water activities. The main risk to manatees during implementation of this project would come from construction and operation of an intake pipe for seawater withdrawal. Operation of the proposed sea water withdrawal device would not be expected to pose a risk to manatees and dolphins as it would be designed to avoid entrapment or entrainment of these marine mammals (USFWS 2013a). Standard Manatee Conditions for In-Water Work (USFWS 2011) will be implemented to avoid impacts to manatees during construction. It is anticipated that implementation of these conservation measures would reduce any potential effects to manatees and dolphins from the proposed project to only short term minor impacts

Gulf Sturgeon and Gulf Sturgeon Critical Habitat

The gulf sturgeon uses Pensacola Bay as a migratory corridor from breeding grounds to winter foraging grounds. Minor, short-term disturbances may occur as a result of in-water work associated with the construction of the hatchery, ponds, and marsh. Construction of the intake would temporarily increase noise disturbance due to the presence of boats and construction equipment. An occlusion device at the water intake would be installed and would be designed to prevent harm to gulf sturgeon and prevent pump malfunction or damage. Disturbances to the water column from in-water work would temporarily affect certain gulf sturgeon critical habitat PCEs due to turbidity, dispersal of potential prey, and substrate disturbance. These would be limited to the area immediately surrounding the work area and would occur only during construction. Therefore, impacts to gulf sturgeon critical habitat would be short term and minor.

Essential Fish Habitat

An EFH assessment will be coordinated with the NMFS Habitat Conservation Division. If necessary, species specific measures would be recommended by NMFS and would be incorporated into the project construction plan. The project would not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of potential effect during the construction process. Following construction, there is expected to be increased habitat utilization of the breakwaters and near-shore environment by these species and a beneficial, long-term impact is anticipated. The project may result in minor, adverse short term impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans.

Minor and temporally limited impacts to EFH components are expected to soft bottom substrates, since the Fish Hatchery project will be constructed primarily on land. Construction of the intakefor seawater withdrawal may lead to minimal adverse physical impacts and habitat conversion of EFH on a limited scale. The hatchery development would likely improve water quality returning to Pensacola Bay relative to current conditions, thereby benefiting EFH. The combination of a very limited potentiall adverse impact caused by pier construction and the beneficial impacts of stormwater management and treatment, the proposed project is not likely to adversely affect EFH in the project area.

State-Listed Birds, MBTA and BGEPA

Migratory birds are protected under the MBTA. If restoration activities occur during the nesting season (March 1 to August 1), nesting songbirds, wading birds, and marsh birds could be disturbed by noise generated by construction activities. In such circumstances, FWC nesting shorebird avoidance measures will be followed. These measures generally call for surveys within 300 feet and an avoidance buffer of 300 feet for nesting birds.

In recent years, the bald eagle has been removed from the endangered species list under ESA, though it is still protected under the BGEPA. In Florida, FWC protects the bald eagle pursuant to 68A-16, Fla.

Admin. Code, and conservation measures to protect active nest sites during the nesting season must be considered to reduce potential disturbances of certain project activities. The closest known bald eagle nest is approximately 5 miles from the project site. Based on the distance from proposed project activities, nesting of the known bald eagles would not be impacted. Consultation with FWC concerning the proposed project and anticipated construction schedule relative to known bald eagle nest sites in the project vicinity and the nesting season in Florida (October 1 to May 15) would be required prior to commencement of project activities. To minimize potential for impacts to nesting bald eagles, the consultation protection measures may include: 1) addressing prescribed nest tree protection zones and 2) preparation of a bald eagle nest protection plan (including nesting behavior disturbance monitoring). Bald eagles have been known to tolerate certain potential disturbances in their breeding territories. Should these conservation measures be implemented for active nest sites adjacent to activities in the project area, potential impacts to the bald eagle would be short term and minor.

Section 7 and Essential Fish Habitat Consultations

Section 7 ESA consultations with the USFWS and NMFS will be initated for the proposed project. An EFH consultation under the Magnuson-Stevens Fishery Conservation and Management Act also would be completed to address any situations where proposed project activities may affect EFH. The project would incorporate any additional conservation recommendations provided by the USFWS and NMFS during the consultation to avoid, minimize, mitigate, or otherwise offset the impacts of the proposed project on listed species or EFH.

12.20.6.7 Human Uses and Socioeconomics

12.20.6.7.1 Socioeconomics and Environmental Justice

Affected Resources

The hatchery would be developed in an urban industrial area within the city of Pensacola, Florida. The proposed hatchery project site is currently undeveloped and does not support any economic activity or human use. The area surrounding the site is industrial. No residential areas that might contain low-income or minority communities are present.

Florida is America's most popular sport fishing destination, contributing $5 billion annually to the state's economy (FMFEI 2013). The closures of beaches and fishing access points following the oil spill resulted in declining revenues from license and tackle sales and tourism associated with recreational fishing. Revenue from commercial fishing also declined following the Spill. According to USFWS's Wildlife & Sport Fish Restoration Program estimates, in 2006 the recreational saltwater fisheries industry in Florida supported an estimated 54,000 jobs with an overall economic impact estimated at $5.7 billion.

Table 12-37 provides a summary of population data and characteristics of the population of Escambia County and compares it to those same measures for the population of the state as a whole.

Table 12-37. Population characteristics for Escambia County and the State of Florida.

PEOPLE QUICKFACTS	ESCAMBIA COUNTY	FLORIDA
Population, 2012 estimate	302,715	19,317,568
Persons under 5 years, percent, 2012	6.20%	5.50%
Persons under 18 years, percent, 2012	21.10%	20.70%
Persons 65 years and over, percent, 2012	15.20%	18.20%
Female persons, percent, 2012	50.50%	51.10%
White alone, percent, 2012 (a)	70.10%	78.30%
Black or African American alone, percent, 2012 (a)	22.90%	16.60%
American Indian and Alaska Native alone, percent, 2012 (a)	0.90%	0.50%
Asian alone, percent, 2012 (a)	2.90%	2.70%
Native Hawaiian and Other Pacific Islander alone, percent, 2012 (a)	0.20%	0.10%
Two or more races, percent, 2012	3.00%	1.90%
Hispanic or Latino, percent, 2012 (b)	5.10%	23.20%
White alone, not Hispanic or Latino, percent, 2012	66.00%	57.00%
Homeownership rate, 2007–2011	67.30%	69.00%
Median household income, 2007–2011	$43,707	$47,827
Persons below poverty level, percent, 2007–2011	16.90%	14.70%
Manufacturer's shipments, 2007 ($1,000)	2,117,030	104,832,907
Merchant wholesaler sales, 2007 ($1,000)	1,838,916	221,641,518

Source: U.S. Census Bureau State & County QuickFacts (U.S. Census Bureau 2013)
(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

Environmental justice refers to the fair and equitable treatment of individuals regardless of race, ethnicity, or income level, in the development and implementation of environmental management policies and actions. In February 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low Income Populations. The objective of this executive order is to require each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations."

Environmental Consequences

The hatchery project would have no negative impacts on the socioeconomic status of the city and Escambia County. The proposed project would not adversely affect any low-income or minority populations.

The proposed project would create approximately 1,912 worker days of employment during construction (Table 12-34). Engineering and design work could employ 20 to 30 federal and state employees and consultants for up to 2 years. The construction crew could consist of 20 to 30 people who would be employed for a period of 9 to 18 months. Maintenance activities may employ up to 10 people for less than 6 months. Minor, short-term, beneficial effects would occur from increased employment during project construction.

Minor, beneficial economic effects would accrue to local restaurants and hospitality providers. Operation of the hatchery would result in the hiring of 9 to 15 additional FWC staff. Additional benefits to the local economy would occur from the purchase of local goods and services through the estimated $1 million envisioned for supporting the facility's annual operations and maintenance budget. Local businesses would benefit from 9 to 15 additional employees and an unknown number of hatchery visitors as potential customers.

Operation of the hatchery would produce nearly 5 million juvenile fish for release in the bay. These fish would contribute to restoring a vibrant saltwater fishery to support expanded fishing interests. The resulting increase in license and tackle sales and tourism dollars would have a long-term, moderate, beneficial effect on the local and statewide economy.

The project would not create a benefit for any specific group or individual, but rather would produce benefits realized by the local community and visitors. There are no indications that the public improvements would be contrary to the goals of Executive Order 12898 or would create disproportionate, adverse human health or environmental impacts on minority or low-income populations of the surrounding community. Therefore no environmental justice issues would be anticipated in the short term or long term.

12.20.6.7.2 Cultural Resources

Affected Resources

A review of the Florida Master Site files indicates that there are at least 14 previously recorded archaeological sites or historic standing structures located within 1 mile of the project area. These include prehistoric and historic-era sites as well as at least three shipwrecks/ballast dumps in the water surrounding the project area. Sites 8ES1963 (a nineteenth to twentieth century scatter) and 8ES2384 (a Spanish-era fort) are located in the immediate vicinity of the project area. Site 8ES1963 has no determination of eligibility for the National Register of Historic Places (NRHP); site 8ES2384 was recommended as potentially eligible for listing on the NRHP.

In addition, a beach and associated bathhouse were formally located on the site and used by African Americans during segregation in the first part of the 20th century. No existing infrastructure associated with this use remains on the site, however, the project proponents have had extensive discussion with community leaders and plan to develop educational signage documenting this historical use.

Environmental Consequences

Based on the presence of numerous cultural resources in both upland and offshore contexts immediately adjacent to the project area, it is likely that additional resources would be encountered in the project area.

A complete review of this project under Section 106 of the NHPA would be 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.

12.20.6.7.3 Infrastructure

Affected Resources
The proposed hatchery site is currently a vacant lot zoned for commercial use within the city of Pensacola. The site is surrounded by commercial and industrial facilities. There are no active utility connections present.

Environmental Consequences
Site development would require utility connections. Permits would be obtained and all associated use conditions would be adhered to. Utility connections are consistent with the nature of the surrounding area and would not be expected to pose service problems for the relevant utilities (e.g., electricity, wastewater, refuse). Specifically, the low volume of biological waste (i.e., fish feces, undigested food) that would be generated from the hatchery operations would be disposed of through a permitted wastewater service provided by Emerald Coast Utilities Authority. As a result, no adverse impact to infrastructure would be expected from the development of the hatchery.

12.20.6.7.4 Land and Marine Management

Affected Resources
The proposed hatchery project site is a vacant lot in an urban, industrial area zoned for commercial use in the city of Pensacola. The surrounding properties support industrial and commercial buildings.

Environmental Consequences
The hatchery project would not adversely affect land and marine management in the short or long term and is consistent with existing land use and regional resource management plans. Development of the hatchery would be consistent with the FWC's existing marine fishery support goals as expressed in the FMFEI and the development of an operation supporting economic activity based on the commercial zoning of the lot.

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.

12.20.6.7.5 Aesthetics and Visual Resources

Affected Resources
The proposed site is currently a vacant lot in a developed urban area that is filled with debris. Small patches of trees provide some aesthetic value. The lot is located on Main Street and is visible to local motorists. One commercial establishment, Nick's Boathouse, has outdoor seating, some of which may be oriented toward the project site. However, most of the tables are situated to provide customers with a view of the bay.

Environmental Consequences
Development of the hatchery would have a minor, short-term impact on aesthetics and visual resources during construction when equipment and activity may be seen by passing motorists. A minor, long-term reduction in visual and aesthetic resources is likely for motorists or customers at Nick's Boathouse with the construction of the hatchery building. However, given the industrial atmosphere surrounding the site, it is unlikely that the aesthetic resources of motorists passing by on Main Street would be affected by the hatchery building. A minor, long-term improvement of visual resources would occur as a result of the removal of the debris currently on-site and the development of additional ponds and wetlands.

12.20.6.7.6 Tourism and Recreational Use

Affected Resources
The site does not currently support any official tourism or recreational use. The adjacent mitigation wetlands may provide bird-watching opportunities.

Environmental Consequences
The development of the hatchery would not negatively affect tourism and recreational use in the area. Some minor long-term benefit would occur through visitation to the facility. In the long term, the ultimate goal of the hatchery project is to release fish that would support recreational fishing activity in Florida. Should the hatchery be successful in supplementing saltwater fish populations, the result would be a long-term, beneficial impact to tourism by anglers who are attracted to Florida by the fishing opportunities.

FWC does not include an evaluation of how the development of the hatchery and subsequent release of hatchery fish affects recreational angling in the state as part of their monitoring program. Anecdotal evidence from the Tampa Bay fishery, which receives fish from SERF's operations, suggests recreational anglers are aware of hatchery releases and may target their recreation to receiving waters. If the hatchery operations result in maintaining or increasing fish stocks, recreational fishing would receive a minor, long-term benefit.

12.20.6.7.7 Public Health and Safety and Shoreline Protection

Affected Resources
The site is on vacant land in a developed urban and industrial area of Pensacola, Florida. The shoreline in this section of the bay has been extensively modified by past human activity, including armoring, to protect local habitat restoration. The project would be separated from the current shoreline by existing wetland mitigation areas and future stormwater and filtration ponds.

Environmental Consequences
Project development would require use of mechanical equipment that uses oil, lubricants, and fuels. The contractor would be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids and to avoid releases and spills. If a release should occur, such releases would be

contained and cleaned up promptly in accordance with all applicable regulations. As a result, no impacts associated with construction-related hazardous materials would be anticipated.

The hatchery would not affect public health as long as relevant waste disposal guidelines and regulations are followed. The hatchery would be built in an upland area away from the shoreline and would not require any modifications to the shoreline. It is not clear exactly what the debris currently on the site consists of, but the presence of metals, railway timbers, and concrete could pose a health risk to the local public. Removal of this debris would have a minor, short-term beneficial effect on public health and safety. No short- or long-term negative impacts to public health and safety or shoreline protection would be expected.

12.20.7 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center project implements restoration techniques within Alternatives 3 and 4.

The proposed Florida Gulf Coast Marine Fisheries Hatchery/Enhancement Center project would involve constructing and operating a saltwater sportfish hatchery in Pensacola, Florida. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and/or increase the public's use and/or enjoyment of the natural resources by producing and releasing highly sought-after sportfish species such as red snapper, red drum, and spotted seatrout. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

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12.21 Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle: Project Description

12.21.1 Project Summary

The proposed Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle project would involve enhancing local scallop populations in targeted areas in the Florida Panhandle. The proposed improvements include the harvesting and redistribution of naturally-occurring juvenile scallops supplemented with stocking from a commercial scallop hatchery. The total estimated cost for this project is $2,890,250.

12.21.2 Background and Project Description

The Trustees propose to use restoration methods previously developed and implemented by the Florida Fish and Wildlife Conservation Commission to enhance bay scallop (*Argopecten irradians*) populations in the bays of Florida's Panhandle (see Figure 12-43 for potential project locations)).

In Florida, recreational scalloping has a long cultural heritage that particularly encourages multigenerational family interaction. Recreational harvest is currently legal in the waters of the eastern panhandle through the Big Bend region (from Gulf County through Hernando County). Harvest has been closed in the western Florida Panhandle (Bay County west of the Mexico Beach Canal through Escambia County) since 2002 (commercial harvest has also been prohibited statewide since 1994).

The objective of the proposed Scallop Enhancement project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by increasing scallop populations. The restoration work proposed includes enhancing local scallop populations in targeted areas through a combination of the harvest and redistribution of naturally-occurring juvenile scallops supplemented with stocking from a commercial scallop hatchery. Implementing this project would increase scallop populations in the targeted locations to self-sustaining levels that would support recreational harvests within 3-5 years in Bay County (St. Andrew Bay system) and within 10 years in Escambia and Santa Rosa Counties (Pensacola Bay / Santa Rosa Sound) and possibly Okaloosa and Walton Counties. Scallop populations in Gulf and Franklin Counties may also be targeted for enhancement if it is deemed appropriate in order to reduce the risk of population collapses in current recreationally harvested areas.

12.21.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The project would enhance and/or increase the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response activities. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

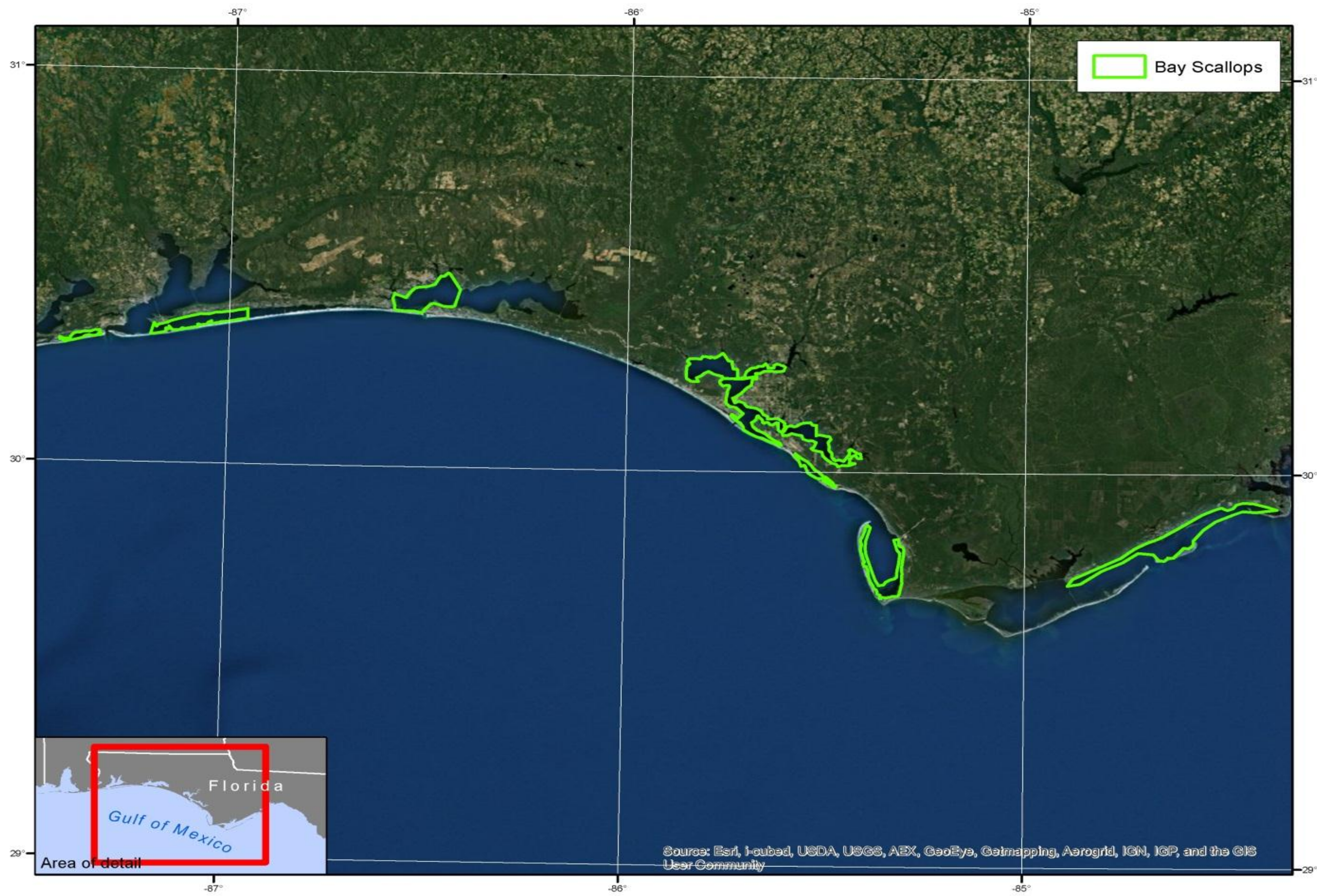

Figure 12-43. Location of Potential Locations for Activity as part of the Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle Project.

The project is technically feasible and utilizes proven techniques with established methods and documented results and can be implemented with minimal delay. Government agencies have successfully implemented similar projects in the region. The State of Florida has successfully enhanced scallop populations in other bays in the state. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Furthermore, the cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. This proposed project is not anticipated to negatively affect regional ecological restoration and is therefore not inconsistent with the long-term restoration needs of the State of Florida. See Sections 6d of the Framework Agreement.

Many recreational use projects, including ones similar to this project, have been submitted as restoration projects on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com).

In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.21.4 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or improve the public's use and/or enjoyment of the natural resources by increasing the local scallop populations in targeted areas. Performance monitoring will evaluate the number of spat per unit area in newly stocked regions of Wakulla, Gulf, Franklin, Walton, Okaloosa, Santa Rosa, and Escambia counties. Specific success criteria include: increased likelihood that the scallop population density is increased to and sustained at recreational harvesting levels.

The monitoring will occur for the life of the project, which is ten years. These assessments will be conducted by FWC under established protocols. Long term maintenance activities include annual procurement of larvae and spat from a commercial shellfish hatchery and monthly harvest and rearing of naturally occurring scallop spat to supplement collapsed or transitional populations.

Recreational use on scallop areas open to harvest will be assessed using both boat counts (aerial or boat-based) and a shore-based survey of scallopers currently used by FWC. This assessment will occur at least once during the three month recreational harvesting season. The recreational use numbers will be provided to the Florida Department of Environmental Protection.

12.21.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $5,780,500 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Florida, which will be determined by the Trustees' assessment of lost recreational use for the Oil Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[21]

12.21.6 Cost

The total estimated cost to implement this project is $2,890,250. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for construction, monitoring, and contingencies.

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[21] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.22 Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle: Environmental Review

The purpose of this project is to enhance local bay scallop (*Argopecten irradians*) populations in targeted bays of Florida's panhandle. As part of the project, scallops could be released to enhance the natural populations in Bay, Escambia, Gulf, Franklin, Okaloosa, Santa Rosa, and Walton Counties. The proposed improvements include the harvesting and redistribution of naturally occurring juvenile scallops supplemented with stocking from a commercial scallop hatchery.

12.22.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf Coast in advance of the completion of the injury assessment process. Early Restoration is not intended to and does not fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, the Trustees released, after public review of a draft, a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the *Federal Register* on behalf of the Trustees announcing the development of additional future Early Restoration projects for a Draft Phase III Early Restoration Plan (ERP). This scallop enhancement project was submitted as an Early Restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and the requirements of the Oil Pollution Act (OPA), the project meets Florida criteria that Early Restoration projects occur in the eight-county panhandle area that deployed boom and was impacted by the Spill.

The Trustees propose to use restoration methods previously developed and implemented by the Florida Fish and Wildlife Conservation Commission (FWC) to enhance bay scallop populations in the bays of Florida's panhandle.

In Florida, recreational scalloping has a long cultural heritage that particularly encourages multigenerational family interaction. Recreational harvest is currently legal in the waters of the eastern panhandle through the Big Bend region (from Gulf County through Hernando County). Harvest has been closed in the western Florida panhandle (Bay County west of the Mexico Beach Canal through Escambia County) since 2002 (commercial harvest has also been prohibited statewide since 1994).

The objective of the proposed Scallop Enhancement project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by increasing scallop populations.

Implementing this project would increase scallop populations in the targeted locations to self-sustaining levels that would support recreational harvests within 3–5 years in Bay County (St. Andrew Bay system) and within 10 years in Escambia and Santa Rosa Counties (Pensacola Bay/Santa Rosa Sound) and possibly Okaloosa and Walton Counties. Scallop populations in Gulf and Franklin Counties may also be targeted for enhancement if such is deemed appropriate to reduce the risk of population collapses in current recreationally harvested areas.

12.22.2 Project Location

Scallop enhancement actions would be completed in state waters of Escambia, Santa Rosa, Okaloosa, Bay, Gulf, and Franklin Counties. Waterbodies where scallop enhancement activities are planned include Big Lagoon; Santa Rosa Sound, including portions of Fort Pickens Aquatic Preserve; Choctawhatchee Sound (if appropriate habitat can be located); St. Andrews Bay system, including portions of St. Andrews Aquatic Preserve; St. Joseph Bay, including portions of St. Joseph Bay Aquatic Preserve; and coastal Gulf of Mexico, including a portion of Alligator Harbor Aquatic Preserve. The scallop enhancement activities would target any appropriate seagrass habitat where the population does not appear to be self-sustaining, as determined through monitoring activities. Figure 12-44 illustrates the areas where scallop enhancement activities are planned.

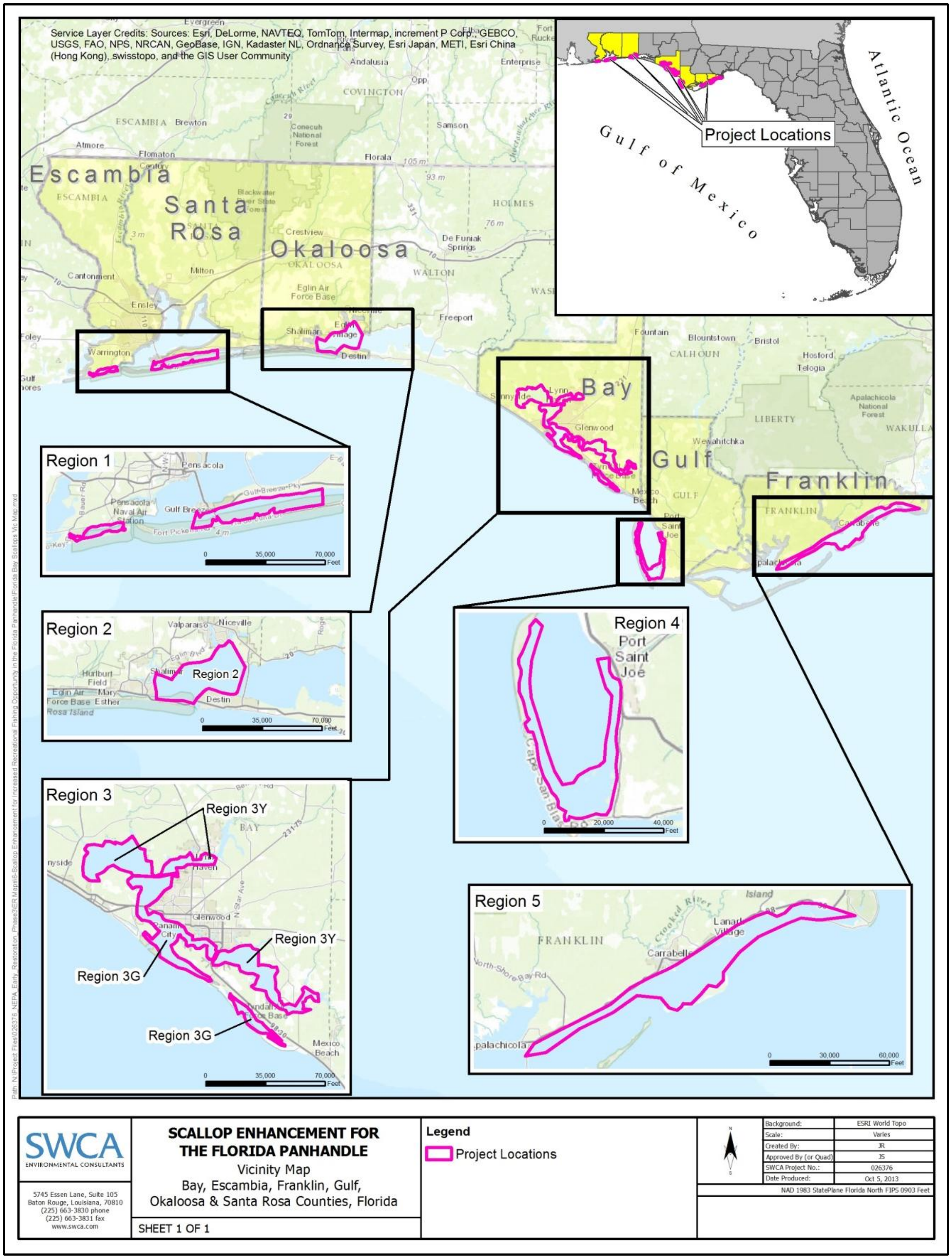

Figure 12-44. Areas where bay scallop enhancement actions are planned.

12.22.3 Construction and Installation

The restoration work proposed includes enhancing local scallop populations in targeted areas through a combination of the harvest and redistribution of naturally occurring juvenile scallops supplemented with stocking from a commercial scallop hatchery, if needed, to supplement collapsed or transitional scallop populations. Spat that are collected would subsequently be directly released in the targeted bays from small workboats by pouring a mixture of the spat and seawater into the receiving bay. In some cases, scallops may be attached to a brick or other structure to help facilitate establishment. Techniques used would be specific to the age of scallops to be released and the location targeted for enhancement. All methods would be based on those proven with past restoration work completed in Florida. Figure 12-45 provides an example of a typical spat collection device being deployed.

Figure 12-45. A typical spat collection device being deployed.

Enhancement would occur through three activities: larval release, spat release, and, if possible, volunteer-monitored cages.

1. Larval release involves working with a commercial hatchery to spawn adult scallops, collect the larvae, and release larvae immediately prior to settlement. This method greatly increases the fertilization rate (almost all of the eggs released by a female would be fertilized, as opposed to wild spawning, where as few as no eggs may be fertilized under conditions of very low density). Rearing in a hatchery also reduces loss from predation, starvation, dilution, and advection of the larvae (all the larvae are well fed and are released in optimal habitats near the time of settlement).

2. Release of either hatchery-reared or naturally harvested spat can eliminate some of the predation pressure on the smallest scallops. Predation pressure is thought to be intense on very small scallops, and declines exponentially until a size of ~25 mm is achieved, at which point few predators—stone crabs, stingray, and octopus—can still prey on the scallops.
3. The third method involves using use willing homeowners, schools, and other organizations with waterfront property to monitor cages. In this method, a small cage (~0.5 meter [m] × 0.5 m × 20 centimeters [cm]) is suspended off-bottom, below private the participants' docks or available municipal docks (opportunistically). Private citizens would then monitor a group of 20–25 scallops for growth and mortality. Ideally, when growth is good and mortality low, the scallops would mature and spawn on the natural local cycle. The scallops can either be held to maturity and released into seagrass beds or can be left to spawn in the cage. This produces additional larval supply for the local area and combines outreach with active restoration. This model has been used in Panama City (by the Gulf Coast State College in cooperation with NOAA staff.

Restoration activities would be ongoing more than 10 years. The amount of time spent at each individual project location would be relatively brief—lasting as long as required to release bay scallop spat and collect any necessary monitoring data—but each site would be visited regularly throughout the 10-year project period. Snorkelers and/or scuba divers would swim transects at each site to monitor scallop reestablishment.

12.22.4 Operations and Maintenance

As part of the project, monitoring would be conducted to ensure project plans and designs are correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or improve the public's use and/or enjoyment of the natural resources by increasing the local scallop populations in targeted areas. Performance monitoring would evaluate the number of spat per unit area in newly stocked regions of the project areas. Specific success criteria include greater likelihood that the scallop population density is increased to and sustained at recreational harvesting levels.

The monitoring would occur for the life of the project, which is 10 years. These assessments would be conducted by the FWC under established protocols. Long-term maintenance activities include annual procurement of larvae and spat from a commercial shellfish hatchery, and monthly harvest and rearing of naturally occurring scallop spat to supplement collapsed or transitional populations.

Recreational use on scallop areas open to harvest would be assessed using both boat counts (aerial or boat-based) and a shore-based survey of scallopers currently used by FWC. This assessment would occur at least once during the 3-month recreational harvesting season. The recreational use numbers would be provided to the Florida Department of Environmental Protection (FDEP).

12.22.5 Affected Environment and Environmental Consequences

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 and environmental consequences of the project.

12.22.5.1 No action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected environment subsection would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.22.5.2 Physical Environment

12.22.5.2.1 Geology and Substrates

Affected Resources

The existing geology and substrates in bay scallop enhancement areas are generally flat or gently sloping sandy/silty beaches in an estuarine system. The estuarine embayments are within the Gulf Coastal Lowlands subdivision. The lowlands are a series of parallel terraces rising from the coast in successively higher levels (Scott 2001). They formed during the Pleistocene Epoch (Great Ice Age) when fluctuating sea levels were associated with the growth and melting of ice caps. Dunes, barrier islands, beach ridges, and other topographical features were stranded inland as seas receded. Currently, land surfaces of the lowlands are generally level and less than 100 feet above sea level. Substantial areas are less than 30 feet above sea level and are characterized by extensive wetlands.

The project area has been sculptured from an alluvial plain underlain by sand, gravel, silt, and clay. Soil surveys for the project area identified the areas for placement of the scallops as "Waters of the Gulf of Mexico," and no soils data are provided (NRCS 2004). The natural bay shoreline is fringed by wide, shallow sand flats between 3 and 5 feet deep.

Environmental Consequences

Bay scallop enhancement would have no effect on geology or substrates in the proposed project areas because there would be no construction activities that would disturb geology or substrate. Bay scallops would be placed in areas where existing habitat conditions, including naturally occurring geologic features and substrate, are appropriate for bay scallops.

12.22.5.2.2 Hydrology and Water Quality

Affected Resources

Northwest Florida has seven major watersheds, all of which have been identified as priorities under the Surface Water Improvement and Management (SWIM) program. Water quality protection is the underlying goal of SWIM, along with the preservation and restoration of natural systems and associated public uses and benefits (Northwest Florida Water Management District [NWFWMD] 2011). The project areas are located in the following watersheds: Pensacola Bay watershed, Choctawhatchee River and Bay watershed, and St. Andrew Bay watershed.

Big Lagoon, Pensacola Bay, and western and central Santa Rosa Sound are part of the Pensacola Bay watershed system. The waterways in this system are primarily used for transportation, seafood harvesting, recreation, and waste disposal. The total drainage area covers nearly 7,000 square miles, approximately 34% of which is in Florida. The entire system discharges into the Gulf of Mexico, primarily through a narrow pass at the mouth of Pensacola Bay (NWFWMD 2013). Broad issues for the Pensacola Bay system include water and sediment quality degradation through point and nonpoint pollution sources; habitat quality, which is threatened by and degraded through sedimentation and deposition; management and coordination between two states and numerous local governments and agencies; and public education and awareness (Thorpe 1997).

Choctawhatchee Sound and eastern Santa Rosa Sound are part of the Choctawhatchee River and Bay watershed system. The total drainage area of the Choctawhatchee River and Bay watershed system covers nearly 5,350 square miles, approximately 42% of which is in Florida. East Pass, located immediately west of Destin, provides the only direct opening to the Gulf of Mexico. The bay also opens up to Santa Rosa Sound in the west and the Intracoastal Waterway in the east. The Choctawhatchee River and Bay system has long been known for its rich, diverse ecology; economic benefits; and numerous recreational opportunities. Over recent decades, however, many of the area's water resources have been impacted by population growth, development, and wastewater disposal. Increased coastal development, in particular, has contributed to displaced habitats; loss of wetlands; and greater amounts of stormwater runoff entering the river, bay, and their tributaries. Stormwater carries contaminants such as dirt, heavy metals, bacteria, nutrients from fertilizer and other sources, and various chemicals.

St. Andrew Bay and St. Joseph Bay are part of the St. Andrew Bay watershed system. The total drainage area of this watershed covers nearly 749,663 acres. The waterways are primarily used for transportation, seafood harvesting, recreation, and waste disposal. Broad issues for the St. Andrew Bay system include degradation through point and nonpoint pollution sources, habitat quality that is threatened by and degraded through sedimentation and deposition, and public education and awareness (Thorpe 2000).

The aquatic preserves in the project area are classified as an Outstanding Florida Water (OFW) by the State of Florida (62-302.700, Fla. Admin. Code). An OFW is a water designated worthy of special protection because of its natural attributes (e.g., excellent water quality or exceptional ecological, social, educational, or recreational value). OFWs are protected through more stringent requirements for activities requiring a permit from the FDEP or a water management district. Waters are designated OFWs to prevent the lowering of existing water quality and to preserve the exceptional features of the waterbody.

Surface waters in the project area are classified as Class II and III waters by the FDEP (FDEP 2013). Class II waters have designated uses of shellfish propagation or harvesting. Class III waters have the designated uses of fish consumption; recreation; and propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

Impaired waters are waters that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes. Big Lagoon and St. Joseph Bay have been listed as an impaired waterbodies for mercury in fish tissue; however, total maximum daily loads (TMDLs) have not yet been adopted. Pensacola Bay has been listed as an impaired waterbody for mercury in fish tissue, dissolved oxygen, and fecal coliform; however, TMDLs have not yet been adopted. Santa Rosa Sound, Choctawhatchee Bay, and St. Andrew Bay have been listed as an impaired waterbodies for mercury in fish tissue and fecal coliform; however, TMDLs have not yet been adopted (Environmental Protection Agency [EPA] 2010).

Wetlands
The proposed project would take place in open water. Based on the National Wetland Inventory data, there are no wetlands identified in the project areas (USFWS 2013b).

Floodplains
The proposed project would take place in open-water, and therefore would not be located in a floodplain.

Environmental Consequences
Although unlikely, water quality would be potentially impacted during placement of the scallops from equipment leaks or spills or disturbance of sediments that result in siltation, turbidity, and the release of chemicals from sediments. If the disturbed sediments are anoxic, the biological oxygen demand in the water column could temporarily increase. With required mitigation in place, the effect on hydrology and water quality would be measurable or detectable but small, short term, and localized. Water quality impacts would quickly become undetectable, and the area's hydrology would be only temporarily altered during construction.

This project would not impact groundwater, wetlands, or floodplains. Should wetlands be impacted, a wetlands permit that stipulates appropriate BMPs and mitigation requirements would be necessary.

12.22.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources
The Clean Air Act (CAA) requires that the Environmental Protection Agency (EPA) set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS have been set for six common air pollutants (also known as criteria pollutants)—particle pollution or particulate matter, ozone, carbon monoxide, sulfur dioxide (SO_2), nitrogen dioxide, and lead. Particulate matter is defined as fine particulates with a diameter of 10 micrometers or less (PM_{10}) and fine particulates with a diameter of 2.5 micrometers or less ($PM_{2.5}$). When a designated air quality area or airshed in a state exceeds the NAAQS, that area may be designated as a "nonattainment" area. Areas with levels of pollutants below the health-based standard are designated as "attainment" areas. To determine whether an area meets the NAAQS, air monitoring networks have been established and

are used to measure ambient air quality. The EPA also regulates 187 hazardous air pollutants (HAPs) that are known or suspected to cause cancer or have other serious health effects. Air quality in the Florida panhandle is in attainment with the NAAQs (EPA 2013a).

Greenhouse Gases

Gases that trap heat in the air are called greenhouse gases (GHGs). The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_x), and fluorinated gases. Over the past century, human activities have released large amounts of GHGs into the atmosphere, which are contributing to global warming. Global warming is defined as the ongoing rise in global average temperatures near the Earth's surface and is known to cause changes in climate patterns.

According to the EPA, the average annual temperature in the southeast portion of the United States has increased by approximately 2.0°F (degrees Fahrenheit) since 1970. Winters, in particular, are getting warmer, and the average number of freezing days has decreased by 4 to 7 days per year since the mid-1970s. Most areas are getting wetter; autumn precipitation has increased by 30% since 1901 (EPA 2013b). In many parts of the region, the number of heavy downpours has increased. Despite the increases in fall precipitation, the area affected by moderate and severe drought has increased since the mid-1970s (EPA 2013b).

Average annual temperatures in the region are projected to increase from 4°F to 9°F by 2080. Hurricane-related rainfall is projected to continue to increase. Models suggest that rainfall would arrive in heavier downpours, with increased dry periods between storms. These changes would increase the risk of both flooding and drought. The coasts would likely experience stronger hurricanes and sea level rise. Storm surge could present problems for coastal communities and ecosystems (EPA 2013b).

Total GHG emissions in Florida from 1990 to 2007 have increased at an average rate of 2.1% per year. Total GHG emissions in 2007 were 290 million metric tons of CO_2 equivalent ($MMTCO_2E$). In 2007, 91% of GHG emissions in Florida were CO_2 emissions (FDEP 2010).

Environmental Consequences

Project implementation would require the use of outboard motors and tow vehicles, which would lead to temporary air pollution (e.g., criteria pollutants, HAPs, GHGs) due to emissions. Any air quality impacts that occur would be minor due to their localized nature, short-term duration, and the small size of the project. Available BMPs would be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality–related permits would be required. The project area is currently in attainment with NAAQS. The proposed action would not affect the attainment status of the project area or region. A State Implementation Plan conformity determination (42 United States Code [USC] 7506 (c)) is not required because the project area is in attainment for all criteria pollutants.

Project plans have not been finalized for this project. While outboard motors and tow vehicles would be used, it is unclear what the duration of use for each type of equipment would be. The following table provides GHG emissions estimates for a variety of construction and transportation equipment types that may be used for the scallop enhancement project. Each of these emissions estimates is based on use of the heavy equipment for an 8-hour day (Table 12-38).

Table 12-38. Greenhouse gas emissions for various types of mechanized equipment.

EQUIPMENT DESCRIPTION[1]	TOTAL HOURS USED	CO_2 FACTOR-mt/100 hrs*	CO_2 (mt)[2]	CH_4 FACTOR-mt/100 hrs	CH_4 (mt)	N_2O FACTOR-mt/100 hrs	N_2O (mt)	TOTAL CO_2 (mt)
Boat (single outboard motor)	3,000	0.65	19.5	0.02	0.6	0.26	7.8	27.9
Pickup truck[4]	320	1.1	3.52	0.35	1.12	4.4	14.08	18.72
Total	**3,320**							**46.62**

*mt = metric tons

[1] Emissions assumptions for all equipment are based on 8 hours of operation.

[2] CO_2 emissions assumptions for diesel and gasoline engines are based on EPA 2009.

[3] CH_4 and NO_X emissions assumptions and CO_2e calculations are based on EPA 2011.

[4] Emissions assumptions for an 8-cylinder, 6.2-liter gasoline engine Ford F150 pickup are based on Department of Energy 2013 and 18 gallon (half-tank) daily fuel consumption.

Based on the assumptions described in Table 12-38 above, GHG emissions would not exceed 25,000 metric tons per year. Given the projected construction-phase GHG emissions, predicted impacts on air quality from GHG emissions would be anticipated to be minor in both the short term and the long term.

12.22.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted sound and noise levels, and its effects are interpreted in relation to effects on nearby visitors to the recreational areas and wildlife in the project vicinity. The Noise Control Act of 1972 (42 USC 4901–4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. The standard measurement unit of noise is the decibel (dB), which represents the acoustical energy present. Noise levels are measured in A-weighted decibels (dBA), a logarithmic scale that approaches the sensitivity of the human ear across the frequency spectrum. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear. Table 12-39 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Table 12-39. Common noise levels.

NOISE SOURCE OR EFFECT	SOUND LEVEL (dBA)
Rock-and-roll band	110
Truck at 50 feet	80
Gas lawnmower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Source: Adapted from U.S. Department of Energy and Bonneville Power Administration (1986).

Noise levels in the project area vary depending on the season, time of day, number and types of noise sources, and distance from noise sources. Existing noise in the project area is mainly from recreational boating, with occasional overhead aircraft or commercial traffic. Ambient natural sounds such as wind, waves, and wildlife also contribute to existing noise levels. Existing ambient noise levels in the project area would be generally low and predominantly result from daily boating activities.

Noise-sensitive receptors include sensitive land uses as well as individuals and/or wildlife that could be affected by changes in noise sources or levels due to the proposed project. Noise-sensitive receptors in the project vicinity include beach and park recreational use and wildlife. The shoreline of the project area supports a variety of residential and industrial developed areas, and the Gulf of Mexico supports commercial and recreational boat traffic.

Environmental Consequences

Instances of increased noise would occur during the project. Equipment and vehicles used during the implementation of the project would generate noise. Equipment noise is known to disturb fish, marine mammals, and nesting shorebirds. The noise would be temporary, and would only occur during the placement of the scallops. Because of the temporary nature of the noise, negative impacts to the soundscape would be short term and of a level not likely to affect current user activities.

After completion of the project, the soundscape would return to pre-project levels. The potential for increased boat traffic exists in the scallop enhancement areas, which would result in a slight increase in noise levels in the vicinity. Overall, long-term noise effects from boating and other recreational activities would remain minor.

12.22.5.3 Biological Environment

12.22.5.3.1 Living Coastal and Marine Resources

Vegetation

Affected Resources
Portions of the project areas are designated by the State of Florida as aquatic preserves for their known natural resource occurrences and regional ecological significance. Seagrass communities characterize the submerged aquatic vegetation of the three projects in aquatic preserves. In addition, the adjacent shorelines in potential project locations include a mix of saltmarsh and sandy beach habitat.

The seagrass communities of St. Joseph Bay, St. Andrew Bay, and Alligator Harbor are dominated by turtlegrass (*Thalassia testudinum*). Shoal grass (*Halodule wrightii*) and manatee grass (*Syringodium filiforme*) are interspersed in the seagrass communities, depending on the project area.

Seagrass communities are essential breeding, rearing, and feeding grounds for many important recreational and commercial fisheries as well as wildlife including the endangered West Indian manatee (*Trichechus manatus)* and various species of sea turtles.

Environmental Consequences
Project installation activities would use BMPs, including impact avoidance of existing seagrass habitat through the use of small vessels for placement of scallops. Every effort would be made to access the scallop placement sites during periods of high tide using shallow draft vessels to minimize potential adverse impacts to seagrass habitat as a result of navigation. Therefore, impacts to seagrass would be short term and minor. The project would result in minor short-term impacts to vegetation. Impacts may be detectable, but would not alter natural conditions and would be limited to localized areas.

Wildlife Habitat

Affected Resources
The aquatic preserves in the project area provide crucial nursery and forage habitat for many commercial and recreational fisheries and wildlife such as marine and estuarine invertebrates, seabirds, wading birds (herons and egrets), swimmers (cormorants and anhingas), and birds of prey that feed on juvenile and adult fish (FDEP 2008). Common seabirds include terns, gulls, skimmers, double-crested cormorant, American white pelican (*Pelecanus erythrorhynchos*), and brown pelican (*Pelecanus occidentalis*). The most common resident marsh and wading birds are great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), tricolored egret (*Egretta tricolor)*, yellow-crowned night heron (*Nyctanassa violacea*), and black-crowned night heron (*Nycticorax nycticorax*). Urban and open vacant land adjacent to the project area may serve as a refuge and staging area for many passerine birds during migration, and large concentrations of shorebirds are sometimes observed feeding in the mudflats. Protected wildlife (such as sea turtles, porpoises, and manatee, discussed in detail below) also forage on or within seagrass communities at the project sites.

Environmental Consequences
The proposed project would take place in open water. Open-water scallop enhancement activities would include in-water work that could disturb foraging, feeding or resting birds or other wildlife due to project activities. This would be a short-term, minor impact, and wildlife or birds would be expected to move away during the disturbance. Additionally, foraging habitat is abundant in the project areas, and the scallop enhancement activities would take place in only a small portion of these areas. Therefore, foraging birds or other wildlife would not be impacted as a result of scallop enhancement activities.

Marine and Estuarine Fauna (fish, shell beds, and benthic organisms)

Affected Resources
The project area provides habitat for numerous fish and other marine species. The value of marine habitats at the project site has been affected by population growth, development, and wastewater disposal. Increased coastal development, in particular, has contributed to displaced habitats, loss of wetlands, and greater amounts of stormwater runoff entering the river, bay, and their tributaries (NWFWMD 2011). Nonetheless, the marine environment at the project site provides habitat to an array of aquatic species, including ladyfish (*Elops saurus*), hardhead catfish (*Arius felis*), gafftopsail catfish (*Bagre marinus*), and pigfish (*Orthopristis chrysoptera*), among others. Benthic organisms such as bivalves, gastropods, and other mollusks; anemones; amphipods; annelids; crustaceans; and echinoderms are also abundant in these waters (FWC 2001).

Environmental Consequences
The proposed project would likely result in short-term, minor impacts to fish that may be present during the in-water construction as a result of turbidity and noise disturbance during placement of the scallops. Benthic organisms that may be present in the substrate may also be impacted during scallop placement. However, these effects would be short term and minor and would not result in a measurable impact to these species. The proposed project would result in long-term benefits to marine and estuarine fauna by providing additional fish habitat, increased benthic productivity, and enhanced recruitment and production of fish and crustaceans. Over the life of the project, the quality of the aquatic habitat would increase.

Protected Species

Affected Resources
Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA).

The federally listed threatened and endangered species reported for the project areas in Bay, Escambia, Gulf, Franklin, Okaloosa, Santa Rosa, and Walton Counties include five species of sea turtles, West Indian manatee (*Trichechus manatus latirostris)*, piping plover (*Charadrius melodus*), and Gulf sturgeon

(*Acipenser oxyrinchus desotoi*), as well as one candidate species, the red knot (*Calidris canutus)* (USFWS 2013c) Table 12-40. State-listed threatened species reported to occur in the project area are addressed below.

Sea Turtles and Marine Mammals

There are five species of endangered or threatened sea turtles that may occur or have potential to occur in the project area. These include green turtle (*Chelonia mydas)*, hawksbill turtle (*Eretmochelys imbricata)*, Kemp's ridley turtle (*Lepidochelys kempii)*, leatherback turtle (*Dermochelys coriacea)*, and loggerhead turtle (*Caretta caretta)*. Sea turtles forage in the waters of the coastal Florida panhandle region and have potential to occur in the waters where in-water work is proposed. The project site would be located in open water and therefore does not contain sea turtle nesting habitat.

Manatees could be present in project area waters and would potentially seek out shallow seagrass areas because those are preferred feeding habitat (U.S. Department of the Interior 2011). Additionally, bottlenose dolphin (*Tursiops*) populations are known to migrate into bays, estuaries, and river mouths, and could be located in the proposed project area (NMFS 2013a). Bottlenose dolphins have been observed entering and leaving Choctawhatchee Bay and in nearshore coastal waters (NMFS 2012).

Table 12-40. Protectedspecies known or believed to occur in the project area.

RESOURCE CATEGORY	COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Birds	Piping plover	*Charadrius melodus*	T (CH)	T	• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants. **Potential habitat present**
Birds	Red knot	*Calidris canutusrufa*	P		• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants. **Potential habitat present**
Birds	Southeastern snowy plover	*Charadrius alexandrines tenuirostris*	MBTA	T	• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas **Potential habitat present**

RESOURCE CATEGORY	COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Birds	Wood stork	*Mycteria americana*	E	E	• Estuarine: marshes • Lacustrine: floodplain lakes, marshes (feeding), various • Palustrine: marshes, swamps, various **Potential habitat present**
Fish	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T (CH)	T	• Estuarine: various • Marine: various habitats • Riverine: alluvial and blackwater streams **Habitat present and critical habitat present**
Mammals	West Indian manatee	*Trichechus manatus latirostris*	E	E	• Estuarine: submerged vegetation, open water • Marine: open water, submerged vegetation • Riverine: alluvial stream, blackwater stream, spring-run stream **Potential habitat present**
Reptiles	Green turtle	*Chelonia mydas*	E	E	• Terrestrial: sandy beaches, nesting **Potential marine habitat present**
Reptiles	Hawksbill turtle	*Eretmochelys imbricata*	E	E	• Marine: open water, no nesting **Potential marine habitat present**
Reptiles	Kemp's ridley turtle	*Lepidochelys kempii*	E	E	• Terrestrial: sandy beaches, nesting **Potential marine habitat present**
Reptiles	Leatherback turtle	*Dermochelys coriacea*	E	E	• Terrestrial: sandy beaches; nesting **Potential marine habitat present**
Reptiles	Loggerhead turtle	*Caretta caretta*	T	T	• Terrestrial: sandy beaches, nesting **Potential marine habitat present**

BGEPA = Bald and Golden Eagle Protection Act;; CH = critical habitat; E = endangered; P = proposed; T = threatened; USFWS = U.S. Fish and Wildlife Service.

Smalltooth Sawfish, Gulf Sturgeon, and Gulf Sturgeon Critical Habitat

Smalltooth sawfish (*Pristis pectinata*) do not typically use northern Gulf of Mexico waters (NMFS 2013b). Gulf sturgeon are restricted to the Gulf of Mexico and its drainages, occurring primarily from the Pearl River in Louisiana to the Suwannee River, in Florida (NMFS 2009). Adult fish reside in rivers for 8 to 9 months each year and in estuarine or Gulf of Mexico waters during the 3 to 4 cooler months of each year (NMFS 2009). Important marine habitats include seagrass beds with sand and mud substrates (Mason and Clugston 1993).

Gulf sturgeon critical habitat was jointly designated by the NMFS and USFWS on April 18, 2003 (50 Code of Federal Regulations [C.F.R.] 226.214). The proposed project site is located within winter feeding and migration critical habitat for Gulf sturgeon. See Figure 12-46 for a map of critical habitat in the project area. Critical habitat was designated based on seven primary constituent elements (PCEs) essential for the species' conservation, as defined in the 2003 *Federal Register*. The seven elements of PCEs are listed below. Critical habitat within the project area contains PCE's 1, 5, 6, and 7.

1. Abundant food items such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages, and abundant prey items such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and/or crustaceans within estuarine and marine habitats and substrates for subadult and adult life stages.
2. Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay.
3. Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, and generally but not always located in holes below normal riverbed depths; these are believed necessary for minimizing energy expenditure during freshwater residency and possibly for osmoregulatory functions.
4. A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-of-change of freshwater discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding site selection, courtship, egg fertilization, resting, and staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging.
5. Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics necessary for normal behavior, growth, and viability of all life stages.
6. Sediment quality, including texture and chemical characteristics, necessary for normal behavior, growth, and viability of all life stages.
7. Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage).

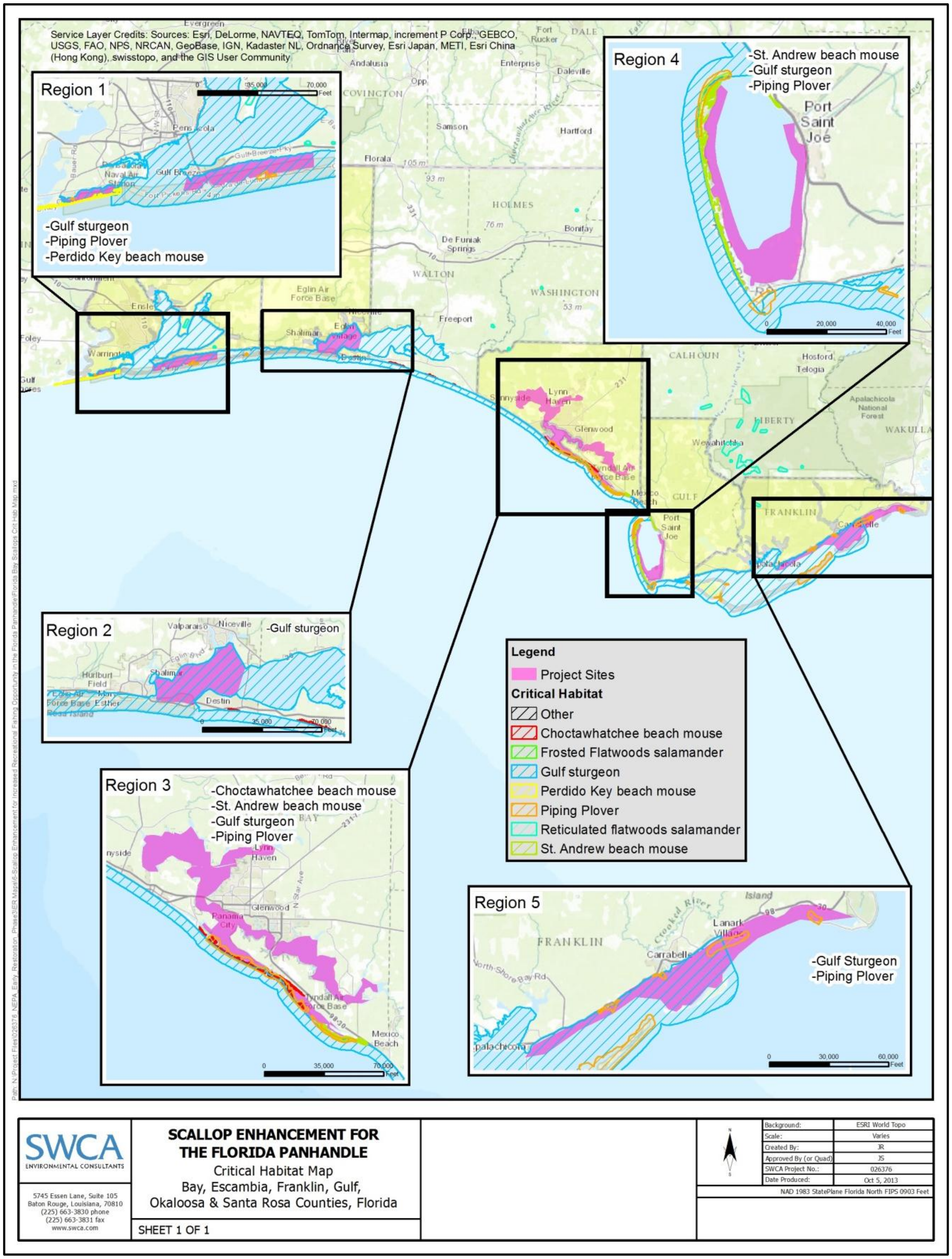

Figure 12-46. Critical habitat map.

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum, brown shrimp, pink shrimp, and white shrimp. There are no marine components of EFH in the vicinity of the project site.

The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. Table 12-41 provides a list of the species that NMFS manages under the federally implemented fishery management plans in the vicinity of the in St. Joseph Bay Aquatic Preserve in Gulf County, and additional potential sites in Alligator Harbor Aquatic Preserve in Franklin County, and St. Andrews Aquatic Preserve, in Bay County.

Table 12-41. List of species managed by NMFS in vicinity of the project study area (NMFS EFH mapper, 2013).

Management Unit / Species	Lifestage(s) Found at Location	FMP
Red Drum (*Sciaenops ocellatus*)	ALL	Red Drum
Highly Migratory Species		
Atlantic Sharpnose Shark	All	
Blacknose Shark	All	Highly Migratory Species
Blacktip Shark	All	
Bonhead Shark	All	
Bull Shark	Juvenile	
Finetooth Shark	Juvenile, Adult	
Great Hammerhead Shark	All	
Nurse Shark	Juvenile	
Finetooth Shark (St. Joe and St. Andrew ONLY)	Neonate	
Nurse Shark (St. Joe and St. Andrew ONLY)	Adult	
Sandbar Shark (St. Joe and St. Andrew ONLY)	Adult	
Scalloped Hammerhead Shark (St. Joe and St. Andrew ONLY)	Adult	
Spinner Shark (St. Joe and St. Andrew ONLY)	Neonate, Juvenile	
Lemon Shark (St. Joe and Alligator Harbor ONLY)	Adult	
Lemon Shark (St. Joe ONLY)	Neonate, Juvenile	
Spinner Shark (St. Joe ONLY)	Adult	
Sail Fish (St. Andrews ONLY)	Juvenile	
Tiger Shark (St. Andrews ONLY)	Neonate	
Bull Shark (Alligator Harbor ONLY)	Adult	
Shrimp		
Brown shrimp (*Penaeus aztecus*)		
White shrimp (*Penaeus setiferus*)	ALL	Shrimp

Management Unit / Species	Lifestage(s) Found at Location	FMP
Pink shrimp (*Penaeus duorarum*) Royal red shrimp (*Pleoticus robustus*)		
<u>Coastal Migratory Pelagics</u> King mackerel (*Scomberomorus cavalla)* Spanish mackerel (*Scomberomorus maculatus*) Cobia (*Rachycentron canadum*) Dolphin (*Coryphaena hippurus*)	ALL	Coastal Migratory Pelagics
<u>Reef Fish</u> **Balistidae - Triggerfishes** Gray triggerfish (Balistes capriscus) **Carangidae - Jacks** Greater amberjack (Seriola dumerili) Lesser amberjack (Seriola fasciata) Almaco jack (Seriola rivoliana) Banded rudderfish (Seriola zonata) **Labridae - Wrasses** Hogfish (Lachnolaimus maximus) **Lutjanidae - Snappers** Queen snapper (Etelis oculatus) Mutton snapper (Lutjanus analis) Schoolmaster (Lutjanus apodus) Blackfin snapper (Lutjanus buccanella) Red snapper (Lutjanus campechanus) Cubera snapper (Lutjanus cyanopterus) Gray (mangrove) snapper (Lutjanus griseus) Lane snapper (Lutjanus synagris) Wenchman (Pristipomoides aquilonaris) Vermilion snapper (Rhomboplites aurorubens) **Malacanthidae – Tilefishes** Goldface tilefish (Caulolatilus chrysops) Blackline tilefish (Caulolatilus cyanops) Blueline tilefish (Caulolatilus microps) **Serranidae – Groupers** Speckled hind (Epinephelus drummondhayi) Yellowedge grouper (Epinephelus flavolimbatus) Red grouper (Epinephelus morio) Warsaw grouper (Epinephelus nigritus) Snowy grouper (Epinephelus niveatus) Nassau grouper (Epinephelus striatus) Marbled grouper (Epinephelus inermis) Black grouper (Mycteroperca bonaci) Yellowmouth grouper (Mycteroperca interstitialis) Gag (Mycteroperca microlepis) Scamp (Mycteroperca phenax) Yellowfin grouper (Mycteroperca venenosa)	ALL	Reef Fish

Piping Plover

The sandy beaches and shorelines adjacent to the project area offer suitable foraging and resting habitat for the piping plover during the winter migratory season, and piping plover may forage in the shallow waters of the project area. Natural shorelines in the proposed project vicinity provide suitable winter migration resting habitat for the piping plover. Piping plover wintering habitat includes beaches, mudflats, and sandflats, as well as barrier island beaches and spoil islands (Haig 1992, as cited by USFWS 2013d). On the Gulf Coast, preferred foraging areas are associated with wider beaches, mudflats, and small inlets (USFWS 2013d).

Red Knot

The red knot, a federal proposed species, uses Florida both for wintering habitat and as a stopover habitat for those migrating down to specific wintering locations in South America (Niles et al. 2008). Wintering and migrating red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sandflats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

State-Listed Birds, MBTA and BGEPA

Migratory bird species are protected under the MBTA. There are also numerous State of Florida–listed bird species with potential to occur in and around the scallop enhancement sites. These include, but are not limited to, the Arctic peregrine falcon (*Falco peregrinus tundrius*), least tern (*Sterna antillarum*), southeastern American kestrel (*Falco sparverius paulus*), Florida sandhill crane (*Grus canadensis pratensis*), American oystercatcher (*Haematopus palliates*), and southeastern/Cuban snowy plover (*Charadrius alexandrinus tenuirostris*). The nesting season in Florida is from March 1 to August 1.

The bald eagle was delisted by the USFWS and is not listed as threatened or endangered by the FWC. The bald eagle is, however, protected by state law pursuant to 68A-16, Fla. Admin. Code and by the U.S. government under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Bald eagles feed on fish and other readily available mammalian and avian species and are dependent on large, open expanses of water for foraging habitat. According to the FWC Bald Eagle Nest Locator, bald eagles are known to nest on the shorelines surrounding some of the project sites (FWC 2012). In Florida, conservation measures to protect active nest sites during nesting season must be considered to reduce potential disturbances of certain project activities.

Environmental Consequences

The proposed project has been evaluated for potential short- and long-term impacts to state and federally listed threatened and endangered species that may occur in and adjacent to the project area based on available suitable habitat and restoration goals. Descriptions of these evaluations are provided below.

Sea Turtles and Marine Mammals

The main risk to sea turtles during proposed project implementation would come from boat collisions that could result in harm or mortality. If sea turtles were present in the in-water work area, short-term disturbances from noise and turbidity would occur due to project activities. Sea turtles are a highly mobile species and would be expected to move away during in-water activities. Additionally, should a sea turtle be encountered during the project, crews would allow these species to exit the project vicinity before commencing with scallop enhancement activities.

For projects in waters accessible to sea turtles, the NMFS developed its standardized *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS 2006) and would be implemented during this project. Therefore, potential impacts or disturbances to listed sea turtles would be short term and minor.

No work would occur in the terrestrial environment; therefore, no impacts would occur to sea turtle species in the terrestrial environment. Consultation would be initiated with the NMFS because this agency has jurisdiction to review impacts to sea turtles in the estuarine and marine environments.

The main risk to manatees during proposed project implementation would come from boat collisions that could result in harm or mortality. Noise and other activity associated with proposed in-water work may temporarily disturb manatees and dolphin species in the vicinity of the project area through temporary impacts on prey abundance, water quality (turbidity), and underwater noise. Manatees and dolphins are mobile species and would be expected to move away from the construction area during in-water activities. All conditions identified in the *Standard Manatee Conditions for In-water Work* (USFWS 2011) would be implemented an adhered to during project implementation. These conservation measures would reduce any potential impacts to manatees and dolphins such that impacts would be short-term and minor.

Smalltooth Sawfish, Gulf Sturgeon, and Gulf Sturgeon Critical Habitat

Smalltooth sawfish are not expected to be present in any of the project locations and would not be impacted. Minor, short-term disturbances to Gulf sturgeon may occur as a result of in-water work associated with the proposed project. For projects in waters accessible to the smalltooth sawfish and Gulf sturgeon, the project would comply with the NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS 2006) which are protective of Gulf sturgeon.

Disturbances to the water column from in-water work would temporarily affect certain Gulf sturgeon critical habitat primary constituent elements (PCEs) due to turbidity, dispersal of potential prey, and substrate disturbance. These would be limited to area immediately surrounding the work area and would occur only during construction. Therefore, impacts to Gulf sturgeon critical habitat would be short term and minor.

Essential Fish Habitat

An EFH assessment will be coordinated with the NMFS Habitat Conservation Division. If necessary, species specific measures would be recommended by NMFS and would be incorporated into the project construction plan. The project would not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of potential effect during the construction process. The project may result in minor, adverse short term impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans.

Potential impacts to EFH in the proposed locations for the Seagrass restoration project have been assessed. Implementing the project would not result in the creation or conversion of one EFH habitat type to another type, as Seagrass planting is proposed to occur in areas that supported Seagrass prior to propeller scarring. Disturbance to any EFH and species using the Seagrass habitat in areas adjacent to locations where scars would be restored would be minor and short in duration, with risks further mitigated by following identified best management practices during construction. No adverse impacts to other EFH types will result from the proposed restoration techniques. Therefore, the project is not likely to adversely affect EFH.

Piping Plover and Red Knot

The main risk to piping plover and red knot would be from human disturbance during resting and foraging in habitats adjacent to work areas. The proposed project would result in short-term increases in noise, which could startle individuals, though normal activity is expected to resume within minutes; alternatively, the noise would likely cause plovers or red knots to move to nearby areas; alternate available habitat is abundant. Because other foraging/resting habitats are nearby (less than 2 miles), this temporary displacement would be within normal movement patterns, and therefore this effect would be short term and minor. The proposed project would not result in any changes to shoreline habitats where piping plover or red knot could be feeding or resting, and would not be expected to increase visitor use; therefore, no indirect effects would be expected. No impacts to piping plover critical habitat are expected from the proposed project as none of the actions would alter or change the PCE's.

State-Listed Birds, MBTA, BGEPA

State-listed birds such as oystercatchers (*Haematopus* sp*.)* or least terns may nest on beaches or mudflats in the vicinity of the project area.. If project activities occur during the nesting season (March 1 to August 1), these birds could be disturbed by noise generated by in-water activities. In such circumstances, FWC nesting shorebird avoidance measures will be followed. These measures generally call for surveys within 300 feet and an avoidance buffer of 300 feet for nesting birds.

In recent years, the bald eagle has been removed from the endangered species list under the ESA, though they are protected by the BGEPA. In Florida, the FWC protects the bald eagle pursuant to 68A-16, Fla. Admin. Code, and conservation measures to protect active nest sites during the nesting season must be considered to reduce potential disturbances from certain project activities.

Multiple bald eagles nests are known to occur near the shorelines of the project area (FWC 2012). Based on the distance from proposed project activities (greater than 660 feet), nesting of the known occurrence of bald eagle would not be impacted. Consultation with the FWC concerning the proposed project and anticipated implementation schedule relative to known bald eagle nest sites in the project vicinity and the nesting season in Florida (October 1 to May 15) would be required prior to commencement of restoration activities. To minimize potential for impacts to nesting bald eagles, the consultation protection measures may include 1) addressing prescribed nest tree protection zones, and 2) preparation of a bald eagle nest protection plan (including nesting behavior disturbance monitoring). Bald eagles have been known to tolerate certain potential disturbances in their breeding territories. Should these conservation measures be implemented for active nest sites adjacent to enhancement activities in the project area, potential impacts to the bald eagle would be short term and minor.

Section 7 and Essential Fish Habitat Consultations

Section 7 ESA consultations with the USFWS and NMFS are ongoing for the proposed project. An EFH consultation under the Magnuson-Stevens Fishery Conservation and Management Act also would be completed to address any situations where proposed project activities may affect EFH habitat. The projects would incorporate any additional conservation recommendations provided by the NMFS and USFWS during the consultation to avoid, minimize, mitigate, or otherwise offset the impacts of the proposed project on listed species or EFH.

Invasive Species

Affected Resources

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences

Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.22.5.4 Human Uses and Socioeconomics

12.22.5.4.1 Socioeconomics and Environmental Justice

Affected Resources

The following table (Table 12-42) contains population/minority data for Bay, Escambia, Santa Rosa, Okaloosa, Walton, Gulf, and Franklin Counties and Florida (U.S. Bureau of the Census 2010).

Table 12-42. Populations of Florida and Project Area Counties.

TOPIC	FLORIDA	BAY COUNTY	ESCAMBIA COUNTY	SANTA ROSA COUNTY	OKALOOSA COUNTY	WALTON COUNTY	GULF COUNTY	FRANKLIN COUNTY
2010 total population	18,801,310	168,852	297,619	151,372	180,822	55,043	15,863	11,549
White alone	14,109,162 (75.0%)	138,731 (82.2%)	204,993 (68.9%)	132,920 (87.8%)	146,582 (81.1%)	48,351 (87.8%)	12,578 (78.1%)	9,540 (82.6%)
Black or African American alone	2,999,862 (16.0%)	18,180 (10.8%)	68,282 (22.9%)	8,205 (5.4%)	16,797 (9.3%)	3,178 (5.8%)	2,962 (18.7%)	1,589 (13.8%)
American Indian and Alaska Native alone	71,458 (0.4%)	1,153 (0.7%)	2,623 (0.9%)	1,306 (0.9%)	1,068 (0.6%)	488 (0.9%)	63 (0.4%)	58 (0.5%)
Asian alone	454,821 (2.4%)	3,353 (2.0%)	8,174 (2.7%)	2,759 (1.8%)	5,328 (2.9%)	499 (0.9%)	46 (0.3%)	26 (0.2%)
Native Hawaiian and other Pacific Islander alone	12,286 (0.1%)	161 (0.1%)	430 (0.1%)	217 (0.1%)	354 (0.2%)	58 (0.1%)	4 (0.0%)	7 (0.1%)
Some other race alone	681,144 (3.6%)	2,039 (1.2%)	3,740 (1.3%)	1,463 (1.0%)	3,592 (2.0%)	1,169 (2.1%)	119 (0.8%)	133 (1.2%)
Two or more races	472,577 (2.5%)	5,235 (3.1%)	9,377 (3.2%)	4,502 (3.0%)	7,101 (3.9%)	1,300 (2.4%)	285 (1.8%)	196 (1.7%)
Median household income, 2007–2011	$47,827	$48,225	$43,707	$55,913	$54,140	$46,926	$41,291	$37,017
Persons below poverty level, percent, 2007–2011	14.7%	12.4%	16.9%	10.8%	11.7%	14.9%	17.5%	24.0%

Environmental Consequences

The proposed action would not result in short-term impacts during placement of the scallops. Long-term, indirect, moderate benefits would result from increasing fisheries habitat and recreational and fishing value of the area due to the increased availability of scallop populations.

This project is not designed to create a benefit for any group or individual, but rather would provide benefits on a local and regional basis. Because the project occurs in an area that is not disproportionately minority or low income (see Table 12-42), there are no indications that the proposed project would be contrary to the goals of Executive Order 12898, or would create disproportionate, adverse human health or environmental impacts on minority or low-income populations of the surrounding community.

12.22.5.4.2 Cultural Resources

Affected Resources

Most of the proposed project work would take place in the water and would not have an upland component. However, there are cultural resources, notably shipwrecks, present in the Gulf of Mexico.

Environmental Consequences
A complete review of this project under Section 106 of the NHPA would be 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.

12.22.5.4.3 Land and Marine Management

Affected Resources
Bay scallop population enhancement would take place in open-water habitat in bays and nearshore Gulf of Mexico in Florida.

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.

Environmental Consequences
The project would not require a variance, zoning change, or amendment to a land-use area or comprehensive management plan. The project's long-term impact would be minor because it would not affect overall use and management beyond the local project area. It would be consistent with current land use.

12.22.5.4.4 Tourism and Recreational Use

Tourism and recreation are common activities throughout the Florida panhandle region. Bay scallop enhancement would be completed at open-water locations throughout the panhandle, and may take place in some areas where tourism and recreation are common.

Environmental Consequences
Bay scallop population enhancement activities would have either no impact or a minor, long-term beneficial impact on tourism and recreational use. If successful, the project may provide increased opportunities for bay scallop harvesting, a popular recreational activity in Florida.

12.22.5.4.5 Aesthetics and Visual Resources

Affected Resources
Aesthetic and visual resources in bay scallop population enhancement areas are characterized by open-water nearshore habitat.

Environmental Consequences
Bay scallop population enhancement activities would have no impact on surface aesthetics, and visual resources and would not affect the viewscape or aesthetics of the surface environment because project areas are all underwater.

Bay scallop population enhancement may have a minor, long-term beneficial impact on underwater aesthetics and visual resources, particularly for snorkelers or scuba divers in or near restored areas.

12.22.5.4.6 Infrastructure

Affected Resources
Bay scallop enhancement actions would take place in open-water habitats, away from infrastructure, and would not include any activities that could affect infrastructure if it were present.

Environmental Consequences
Bay scallop population enhancement would not affect infrastructure because project work would take place in open-water habitat, away from existing infrastructure.

12.22.5.4.7 Public Health and Safety and Shoreline Protection

Affected Resources
The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Emergency Planning and Community Right-to-Know Act; and the Hazardous Materials Transportation Act. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of hazardous materials. Some of these laws provide for the investigation and cleanup of sites that have already been contaminated by releases of hazardous materials, wastes, or substances.

The project would be conducted at multiple open-water locations throughout the Florida panhandle. Project locations would not be situated in areas with hazardous waste generation or disposal. A review of the Environmental Protection Agency's EnviroMapper revealed several sites located on the shorelines of the project areas (EPA 2013c).

Environmental Consequences
The project would require mechanical equipment that uses oil, lubricants, and fuels. The contractor would be required to take appropriate actions to prevent, minimize, and control the spill of construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills.

12.22.6 Summary and Next Steps
Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle project implements restoration techniques within Alternatives 3 and 4.

The proposed Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle project would involve enhancing local scallop populations in targeted areas in the Florida

Panhandle. The proposed improvements include the harvesting and redistribution of naturally-occurring juvenile scallops supplemented with stocking from a commercial scallop hatchery. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and/or increase the public's use and/or enjoyment of the natural resources by increasing the local scallop populations in targeted areas. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.22.7 References

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12.23 Shell Point Beach Nourishment: Project Description

12.23.1 Project Summary

The proposed Shell Point Beach Nourishment project would involve the renourishment of Shell Point Beach in Wakulla County. The proposed improvements include the placement of approximately 15,000 cubic yards of sand on the beach from an approved upland borrow area to restore the width and historic slope/profile of this beach. The total estimated cost for this project is $882,750.

12.23.2 Background and Project Description

The Trustees propose to improve and enhance the beach at Shell Point in Wakulla County (see Figure 12-47 for proposed project nourishment area). The State Legislature adopted the Florida Beach and Shore Preservation Act in 2003 (section 161.011-161.242 and section 161.25-161.45, Florida Statutes) to preserve and manage Florida's valuable beach system. Beach nourishment, the placing of dredged sand from approved borrow areas, is one important management technique for maintaining these beach systems that is specifically endorsed as part of the suite of management actions identified in this act (section 161.091, Florida Statutes).

The objective of the proposed project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by improving the beach. The restoration work proposed involves the placement of approximately 15,000 cubic yards of sand on the beach from an approved upland borrow area to restore the width and historic slope/profile of this beach. The length of beach is approximately 1 mile, with an approximate project area of about 4.5 acres.

Figure 12-47. Proposed Location for the Shell Point Beach Nourishment Project.

12.23.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response actions, the public's access to and enjoyment of their natural resources along Florida's Panhandle was denied or severely restricted. The project would enhance and/or increase the public's use and/or enjoyment of natural resources, helping to offset adverse impacts to such uses caused by the Spill and related response actions. Thus, the nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results and can be implemented with minimal delay. Florida agencies have successfully completed projects of similar scope throughout Florida over many years. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Furthermore, the cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. This proposed project is not anticipated to negatively affect regional ecological restoration and is therefore not inconsistent with the long-term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

Many recreational use projects, including ones similar to this project, have been submitted as restoration projects on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Shell Point Beach Nourishment project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.23.4 Performance Criteria, Monitoring and Maintenance

As part of the project cost, monitoring will be conducted to ensure project plans and designs were correctly implemented. Monitoring has been designed around the project goals and objectives. The project objective is to enhance and/or improve the public's use and/or enjoyment of the natural resources by improving the beach. Performance monitoring will evaluate the renourishment of the beach. Specific success criteria include: 1) the completion of the renourishment as designed and permitted, and 2) enhanced and/or increased access is provided to natural resources, which will be determined by observation that the beach is open and available.

Long-term monitoring will be completed by Wakulla County. Funding for monitoring is not included in the previously provided value for the project cost and will be accomplished by Wakulla County.

Wakulla County will monitor the recreational use activity at the site. Wakulla County will visit the site twice a year to count the number of users at the beach. The visitation numbers will then be provided to the Florida Department of Environmental Protection.

12.23.5 Offsets

The Trustees and BP negotiated a BCR of 2.0 for the proposed recreational use project. NRD Offsets are $1,765,500 expressed in present value 2013 dollars to be applied against the monetized value of lost recreational use provided by natural resources injured in Florida, which will be determined by the Trustees' assessment of lost recreational use for the Oil Spill. Please see Chapter 7 of this document (Section 7.2.2) for a description of the methodology used to develop monetized Offsets.[22]

12.23.6 Cost

The total estimated cost to implement this project is $882,750. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and contingencies.

[22] For the purposes of applying the NRD 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 NRD 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 NRD Offsets will be the same as that used to express the present value of the damages.

12.24 Shell Point Beach Nourishment: Environmental Review

The proposed Shell Point Beach nourishment project includes the placement of approximately 15,000 cubic yards of sand on the beach from an approved upland borrow area to restore the width and historic slope/profile of this beach.

12.24.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the Deepwater Horizon Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement for Early Restoration Addressing Injuries Resulting from the Deepwater Horizon Oil Spill (Framework Agreement), the Trustees released, after public review of a draft, a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the Federal Register on behalf of the Trustees announcing the development of additional future Early Restoration projects for a Draft Phase III Early Restoration Plan (ERP). This boat ramp project was submitted as an Early Restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and the Oil Pollution Act (OPA), the project meets Florida's criteria that Early Restoration projects occur in the eight-county Florida panhandle area that deployed boom and was impacted by the Spill.

The Trustees propose to improve and enhance the beach at Shell Point in Wakulla County. The Florida State legislature adopted the Florida Beach and Shore Preservation Act in 2003 (section 161.011-161.242 and section 161.25-161.45, Florida Statutes) to preserve and manage Florida's valuable beach system. Beach nourishment, the placing of dredged sand from approved borrow areas, is one important management technique for maintaining these beach systems that is specifically endorsed as part of the suite of management actions identified in this act (section 161.091, Florida Statutes). The objective of the proposed project is to enhance and/or increase the public's use and/or enjoyment of the natural resources by improving the beach. The restoration work proposed involves the placement of approximately 15,000 cubic yards of sand on the beach from an approved upland borrow area to restore the width and historic slope/profile of this beach.

The proposed project would enhance people's beach visits, the quality and quantity of which were diminished during the Deepwater Horizon (DWH) oil spill and response operations. The project would enhance the quality of human recreational activity in the restored areas. Benefits to recreational activity would commence immediately following construction and slowly diminish over the life of the project, concurrent with expected levels of beach erosion. The proposed project is expected to cost $882,750. This cost reflects current cost estimates developed from information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and contingencies.

12.24.2 Project Location

The proposed project area is identified in Figure 12-48. The project area is located at Shell Point in Wakulla County. The length of beach is approximately 1 mile, with an approximate project area of about 4.5 acres.

Figure 12-48. Location of the Shell Point Beach project area.

12.24.3 Construction and Installation

Restoration would include placement of sand along approximately 1 mile of Shell Point Beach. Sand would be removed from existing permitted and licensed commercial upland borrow site(s) in Gadsden County, Florida, using appropriate heavy equipment (e.g., dump trucks). The borrow sites are located approximately 45 miles northwest of Shell Point Beach project site. The proposed borrow sources are currently owned and operated by Roberts Sand Company and Anderson-Columbia Construction. Figure

12-49 shows the location of the borrow pits, the proposed transport route, and the location of the project site. The sand mines or borrow pits are permitted by the Florida Department of Environmental Protection (FDEP) Bureau of Mines and licensed by the Florida Department of Business and Professional Regulation.

The sand would be transported by tri-axle dump trucks with a carrying capacity of 18 to 19 cubic yards. All of the trucks would transport the sand along existing paved State or County maintained highways (Figure 12-49). All roadways and bridges traversed are permitted for the weight loads of the full trucks. The majority of the route is through rural lightly populated areas of Gadsden, Leon, and Wakulla counties and the Apalachicola National Forest (Leon and Wakulla County). Total number of trips is estimated at 790, and estimated average round trip time from loading, travel, discharge, and return is 2.5 hours. All transport of materials would be during normal daylight hours.

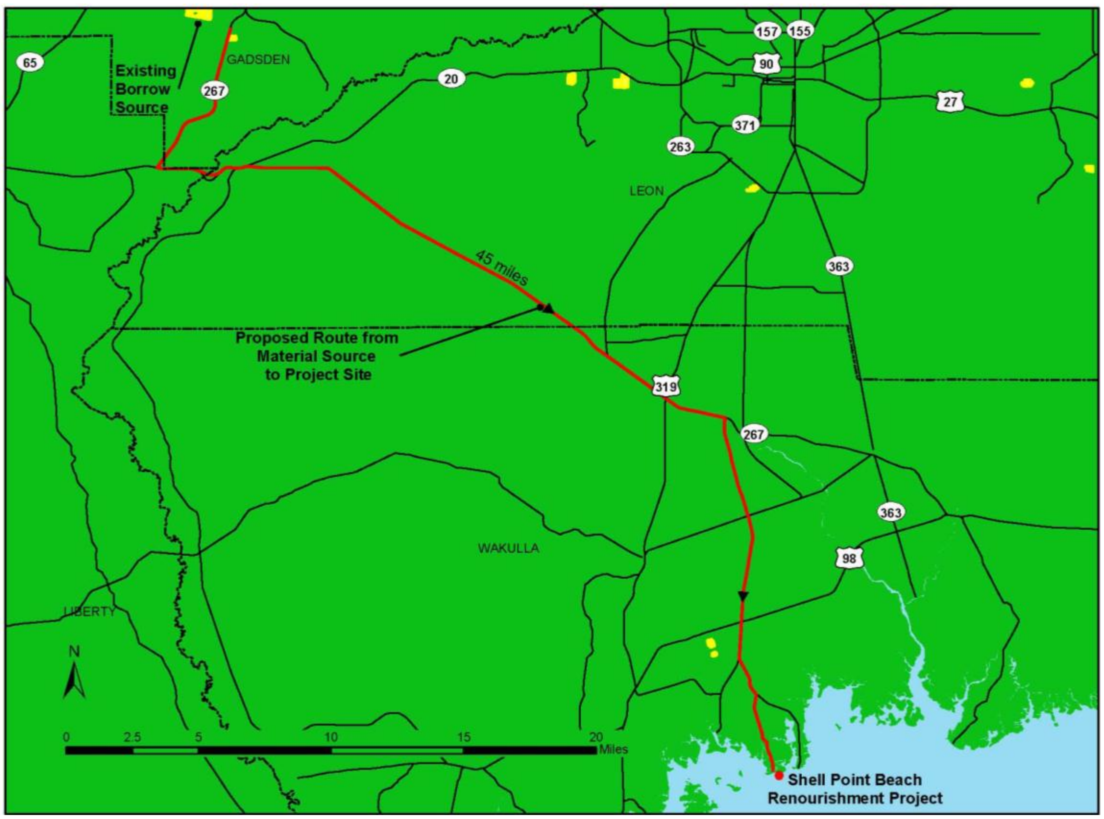

Figure 12-49. Location of Upland Borrow Site(s).

Once the sand has been transported to the project site, the sand would then be placed on Shell Point Beach using bulldozers and/or frontend loaders. Best management practices (BMPs) for shoreline and beach work would be employed to ensure that natural resources are minimally disturbed during restoration activities. The berm width would range between 25 and 50 feet at a constant elevation of +4.0 feet, NAVD 1988 and be graded to the landward edge of the mean high water line at varying slopes (Figure 12-50). Based on this beach fill shape, the potential for the direct impact of sea grasses would be avoided.

After appropriate permits are issued, restoration actions would be completed within approximately 18 months (Spring 2015).

Sand used as part of this project would comply with requirements set forth in FDEP (DEP Rule 62B-41.007). The rule requires that any material placed on a Florida beach "maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system" (62B-41.007(2)(j). Sand placed at Shell Point would comply with all FDEP regulations, and FDEP would be consulted to ensure that the sand source is acceptable and all guidelines are properly adhered to.

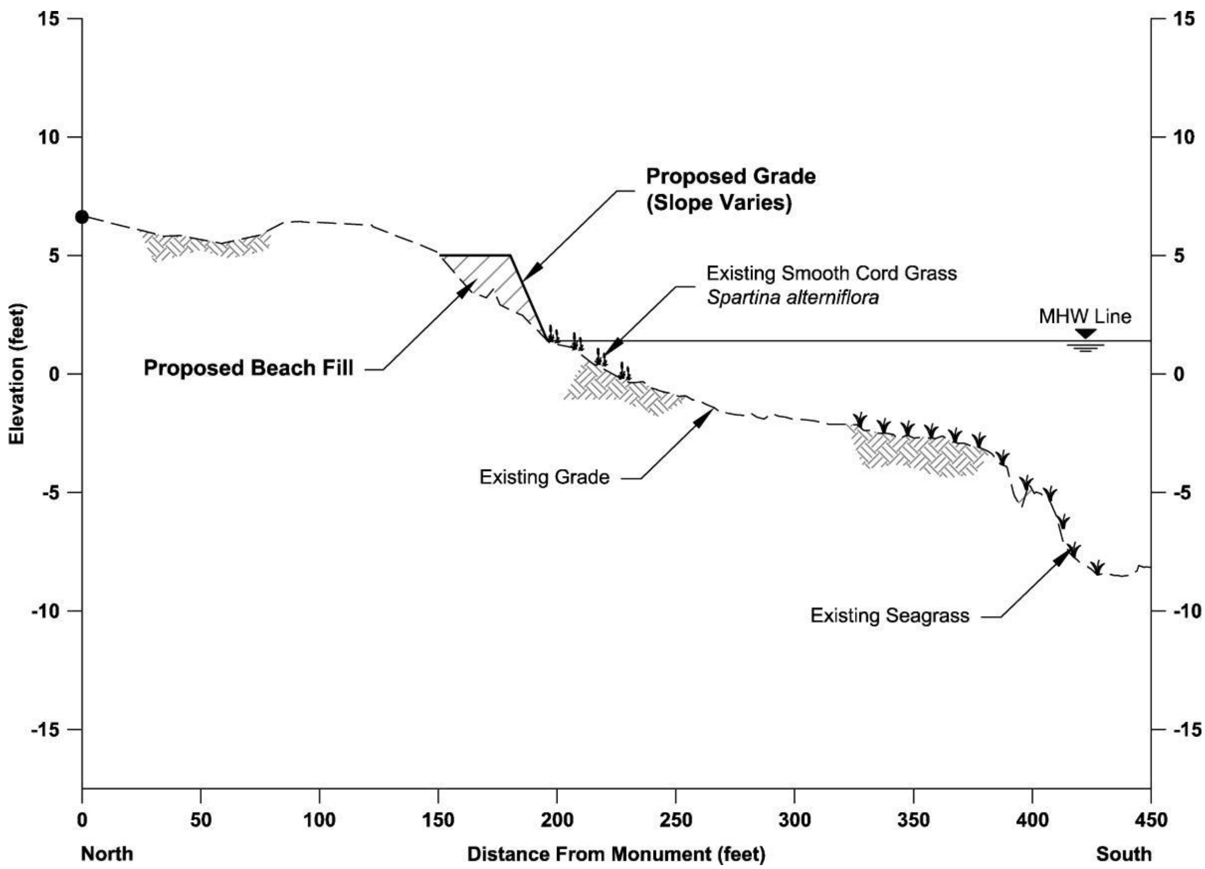

Figure 12-50. Typical cross section of proposed beach nourishment.

12.24.4 Operations and Maintenance

Operation and maintenance for this project would include pre- and post-restoration monitoring and long- and short-term maintenance. Pre-restoration monitoring would focus on reconnaissance to identify tar balls at the proposed project area. Pre-restoration monitoring would also include monitoring for threatened, endangered, and special status species, both floral and faunal.

Post-restoration monitoring would evaluate renourishment of the beach. Specific success criteria include: 1) the completion of renourishment as designed and permitted; and 2) enhanced and/or increased access to natural resources, which would be determined by observation that the beach is open and available.

Long-term monitoring would be completed by Wakulla County. Funding for monitoring would not be included in the previously provided value for the project cost and would be accomplished by Wakulla County. Wakulla County would monitor the recreational use activity at the site. Wakulla County would visit the site twice a year to count the number of users at the beach. The visitation numbers would be provided to the FDEP.

Short-term maintenance activities would be conducted as required by permits (which have not yet been pursued because design plans have not been finalized).

Long-term maintenance would include adding more sand to the site as necessary.

12.24.5 Affected Environment and Environmental Consequences

12.24.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.24.5.2 Physical Environment

12.24.5.2.1 Geology and Substrates

Affected Resources

The Apalachee Bay coastal area is characterized by an irregular shoreline surrounded by low intertidal wetlands overlain on sand and mud substrate, and bisected by a number of tidal creeks (USACE 1965). Shell Point is a southward projecting peninsula located along the center portion of the Wakulla County and Apalachee Bay shoreline (DEP 2006), and is surrounded by an extensive wetland system. The southern gulf front is fronted by a narrow sandy beach. A number of coastal protection structures have been constructed along the Shell Point shoreline over the recent years to slow erosion and provide a level of storm protection. A shallow broad shoal is present to the south of Shell Point with elevations of less than -3 feet, NAVD 1988.

Environmental Consequences

The proposed project provides a cleaner and more attractive shoreline for beach users and visitors. However, this alternative does not increase the beach’s ability to reduce storm damage, mitigate for current erosion trends, or provide upland protection from storm induced tidal surge. The storm surge elevation for the project area for a 10-year return interval is +8.6 feet, NAVD 1988. The typical berm elevation along this shoreline is less than +5 feet, NAVD 1988 and therefore the beach would be typically over-topped by a 10-year or greater storm event potentially causing sediment to be overwashed into upland areas. As a result, local, long-term, beneficial impacts are expected, even though a 10-year or greater storm event could potentially cause sediment to be overwashed into upland areas.

12.24.5.2.2 Hydrology and Water Quality

Affected Resources

Hydrology at Shell Point Beach is characterized by the natural beach habitat and residential development present in the uplands immediately adjacent to the beach. Water quality is similarly influenced by the adjacent residential development. Water quality may still be compromised as a result of tar that is occasionally deposited on the beach.

The Florida Department of Health's (FDOH's) "Florida Healthy Beaches Program" is responsible for conducting beach water sampling for enterococci and fecal coliform bacteria for 34 coastal Florida counties, including Wakulla County, and reporting the results to the public every week. Based on data collected by the Healthy Beaches Program, Shell Point Beach has experienced "good" water quality from September 2012 through September 2013 (FDOH 2013). "Good" water quality is defined as water that has between 0 and 35 colony-forming units of Enterococcus per 100 ml of water.

Environmental Consequences

Restoration of Shell Point Beach would have minimal beneficial impacts on hydrology and water quality. The project would be designed to restore natural beach habitat, reversing the effects of erosion. All appropriate permits would be obtained and work would adhere to conditions, permit requirements, and BMPs to ensure that any potential adverse effects are minimized. The project would not be expected to have an adverse impact on water quality because work would take place in the uplands, and no in-water work is planned.

12.24.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

Air quality at Shell Point Beach is characterized by the adjacent residential development and boat traffic in Apalachee Bay and the Gulf of Mexico. Generally, air quality in the area is good and is consistent with that developed residential area. Air quality within the Florida panhandle is in attainment with the National Ambient Air Quality Standards (USEPA 2013). To determine if an area meets the ozone standard in 2012, data from 2009, 2010 and 2011 are needed to determine an area's attainment status with the 8-hr ozone standard. If the average is higher than 75 parts per billion, the area would not meet the ozone standard. In Wakulla County, Florida, the 2012 year-to-date 3 year average is 65 parts per billion, thus meeting attainment status (FDEP 2013).

Greenhouse gases (GHGs) are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. The principal GHGs emitted into the atmosphere through human activities are CO2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (USEPA 2010). CO2 is the major GHG emitted, and the burning of fossil fuels accounts for 81 percent of all U.S. GHG emissions (USEPA 2010). Source of GHG are typical for this part of Florida with emissions from vehicles, construction, and industrial activities, in addition to natural sources.

Environmental Consequences

Restoration of Shell Point Beach would have a short-term, minor adverse impact on air quality and GHG emissions during construction activities. Use of heavy equipment (dump trucks and bulldozers) to place sand on the beach would result in a temporary increase in emissions contributing to the areas air quality. However, the project would not result in a change in air quality status or exceed air quality criteria pollutant levels thereby resulting in a short term adverse impact.

The total number of trips used by dump trucks to transport the sand from the upland borrow area is estimated at 790 trips, and estimated average round trip time from loading, travel, discharge and return is 2.5 hours (resulting in 1,975 total hours). The following table (Table 12-43) provides GHG emissions estimates for dump trucks and bulldozers, which would likely be the only heavy equipment used for this project. The dump truck emission total is based on an estimated 1,975 hours of operation over the life of the project. The bulldozer emission total is based on 640 hours of operation (based on the estimation that it would take up to 4 months with a 5-day work week). A “minor impact” on air quality can be determined if the contributions to GHGs of this project are measurable, but fall below 25,000 metric ton/year of CO2 or its equivalent.

Table 12-43. Estimated greenhouse gas emissions for equipment to be used.

EQUIPMENT[23]	CO2 (METRIC TONS)[24]	CH4 (CO2E) (METRIC TONS)[25]	NOX (CO2E) (METRIC TONS)	TOTAL CO2E (METRIC TONS)
Dump Truck	83.94[26]	0.05	0.50	83.94
Bulldozer	30.4	0.02	0.16	30.4
TOTAL	114.34	0.07	0.66	114.34

[23] Emissions assumptions for all equipment based on 8 hours of operation.

[24] CO_2 emissions assumptions for diesel and gasoline engines based on USEPA 2009.

[25] CH_4 and NOx emissions assumptions and CO_2e calculations based on USEPA 2011.

[26] Construction equipment emission factors based on USEPA NONROAD emission factors for 250hp pieces of equipment. Data were accessed through the California Environmental Quality Act Roadway Construction Emissions Model.

Based on the assumptions described in Table 12-43 above, and the small scale and short duration of the construction portion of the project, predicted GHG emissions would be short-term and minor and would not exceed 25,000 metric tons per year. The impacts would be lessened over the long term as maintenance activities would be limited.

12.24.5.2.4 Noise

Affected Resources
The natural ambient noise level is the aggregate of all the natural sounds that occur in the Shell Point Beach area. The natural sounds occurring in the Shell Point Beach area include those generated by wind, waves, and the residential community. Noise in the Shell Point Beach area also includes the sound generated by barge and boat traffic, and vehicles in the area. Overall, the existing ambient noise in the project area is consistent with a coastal residential area.

Environmental Consequences
Restoration of Shell Point Beach would have short-term, minor adverse impacts on noise during construction. Placing sand would require the use of heavy trucks and equipment, which would increase the amount of noise at and near the beach for the duration of restoration work. The noise associated with construction equipment would attract attention but would not dominate adjacent areas, though some user activities could be affected as a result of increased noise. Shell Point is predominantly a residential area, with some vehicle traffic noise caused by both cars and boats. The beach nourishment project would make use of heavy equipment, such as dump trucks and bulldozers, which would be nosier than vehicles that typically frequent the area. Thus, the noise caused by construction may be somewhat disruptive to beach users and nearby residents. BMPs would be followed to ensure that noise disturbance is minimized, such as only performing nourishment activities during normal daylight hours.

The project would not have long-term adverse impacts to noise because the project scope is limited to placing new sand on the beach area. Noise impacts related to maintenance would be minimal.

12.24.5.3 Biological Environment

12.24.5.3.1 Living Coastal and Marine Resources

Affected Resources
Shell Point Beach is a sandy beach on Apalachee Bay on the Gulf of Mexico. The upland area immediately adjacent to the beach is a residential development. The project area includes some areas of fairly common vegetation such as smooth cord grass. There are no nesting bird colonies at the site; nor are solitary birds known to nest in the area.However, wintering piping plovers, red knots and and migratory birds may occasionally visit the site to rest and forage. Additional state-listed species may also occur in the area. Sea turtles are not known to nest on this beach.

Environmental Consequences
During construction activities, work at Shell Point Beach would have a short-term, minor impacts on terrestrial biological resources. No in-water work would be conducted; therefore no impacts to

marine/esturine wildlife are anticipated. While placing sand at the beach would bury small organisms that live in the beach and vegetation and serve as prey items for migratory birds. This loss is anticipated as part of the state's Florida Beach and Shore Preservation Act. Construction would cause a temporary disturbance to wildlife that could be using the Shell Point area, ESA and MBTA protect bird species that may be temporarily resting or foraging in the location. Other foraging and resting habitats are near the project location and birds that would be disturbed could move to these nearby habitats. This movement should be localized and within normal behavioral patterns for these species.

Section 7 consultationwill be initiated with the USFWS and a review will be conducted to determine if Bald eagles would be nesting on or near the project site. Other permits that would be required for the project include Clean Water Act 404 permit, state permits, a FDEP Coastal Construction Control Line permit, and a U.S. Army Corps of Engineers permits. In addition, this work has already been evaluated as part of the Florida Beach and Shore Preservation Act. The Trustees will implement any conservation measures that are recommended during theses consultations to avoid and minimize impacts to biological resources such that they are short term and minor.

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The project is located in uplands above the mean high- tide line, therefore no EFH is located within the project footprint.

Invasive Species

Affected Resources

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences

Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.24.5.4 Human Uses and Socioeconomics

12.24.5.4.1 Socioeconomics and Environmental Justice

Affected Resources

Wakulla County is the fourth fastest growing county in the state of Florida. Wakulla County has experienced a 60% increase in population over the past decade compared to the state's average growth rate of 24%. In 1990, the population of Wakulla County was approximately 14,000. The estimated population in 2002 was 24,338 and in 2004 it is estimated to be over 26,000 (Wakulla County Health Department 2004).

U.S. Census data from 2000 estimates reported 11,035 Wakulla County residents over the age of 16 employed in the labor force with 5,839 being males and 5,196 females. It is estimated that nearly two-thirds of all parents work outside the home. In 2000, Wakulla County's unemployment rate was 3.9%, below both the state and national rate. The unemployment rate in the late 1990s was lower at 2.9%. Wakulla's current unemployment rate is 3.4% while the national unemployment rate is 5.5% (Wakulla County Health Department 2004).

Environmental Consequences

The proposed project would be expected to have short-term, beneficial impact on socioeconomics for the project area and adjacent areas, based on a slight increase in the workforce required to perform the beach nourishment project. The exact number of persons to be employed by this project is undetermined, but would be expected to be low. Additionally, the project would be expected to have long-term beneficial impacts to socioeconomics in the region, due to expected increases in tourism to the area. With the improvements made by the proposed project, it is expected that more people will visit the area, thus directly benefiting the local economy. The proposed project would not adversely affect any low income or minority populations.

12.24.5.4.2 Cultural Resources

Affected Resources

At this time there are no known cultural resources at the site.

Environmental Consequences

Nourishment at Shell Point Beach would not impact cultural resources because none are known to exist at the site. Nonetheless, 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.

12.24.5.4.3 Infrastructure

Affected Resources

No infrastructure is present at Shell Point Beach. The upland area is a residential development with paved roads and defined lots. The total number of trips used by dump trucks to transport the sand from the upland borrow area is estimated at 790 trips. The dump trucks would travel primarily through rural lightly populated areas of Gadsden, Leon, and Wakulla counties and the Apalachicola National Forest.

Environmental Consequences

Renourishment of Shell Point Beach would not impact infrastructure associated with the project area, only natural beach areas would be restored and equipment used to complete restoration would access the site via existing roadways. There would likely be short-term minor adverse impacts related to the transport of sands to the project site, as traffic would increase, though no additional traffic delays would occur. These impacts would cease after all materials are delivered to the project area.

12.24.5.4.4 Land and Marine Management

Affected Resources

Shell Point Beach is managed by the Wakulla County Department of Parks and Recreation. The project area is zoned as a "public beach area." Upland of the project area is a residential community, zoned as R1 – Single family residential. In addition, the Florida Beach and Shore Preservation Act guides beach management activities.

Environmental Consequences

Renourishment of Shell Point Beach is consistent with local zoning and the Florida Beach and Shore Preservation Act and would result in long-term beneficial impacts on land and marine management. Beach restoration is designed to improve the ecologic condition of the beach habitat, which would benefit biota and resource managed by public agencies. Further, the improvements to the beach are expected to improve the recreational value of the site, which would benefit Wakulla County's management of the site.

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.

12.24.5.4.5 Aesthetics and Visual Resources

Affected Resources

The existing aesthetic and visual resources include the natural beach and Gulf of Mexico habitat. These resources are enjoyed by residents in the adjacent community and tourists or recreationists who visit the beach.

Environmental Consequences

Project construction activities would have short term moderate adverse impacts on associated visual resources as the presence of bulldozers and dump trucks would attract attention and would detract the experience of current users, especially those residents accustomed to the views. Nourishment of Shell Point Beach would have a long-term beneficial impact on aesthetic and visual resources at the project area. The project is designed to restore the beach habitat and would reverse damage done by erosion and sand removal following the DWH oil spill.

12.24.5.4.6 Tourism and Recreational Use

The site is currently used by local residents and tourists for recreation. Many residents access the beach from their property, and other users may access the beach from public areas. The main access to the project area is via Shell Point Road, which runs North/South perpendicular to the beach.

Environmental Consequences6

Nourishment of Shell Point Beach would have a long-term beneficial impact on tourism and recreational use. Restoration of the beach would improve the recreational experience by restoring the beach to its historic condition. Users would experience short-term minor to moderate adverse impacts during the construction period, as visitors would be prohibited from entering certain areas or the project area in its entirety. However, beach nourishment would result in long-term enhanced opportunities for future use.

12.24.5.4.7 Public Health and Safety and Shoreline Protection

Affected Resources

There are no existing hazardous waste or disposal facilities at or near Shell Point Beach. The beach has been affected by the DWH oil spill, and occasionally tar balls are observed on the beach.

Environmental Consequences

Nourishment of Shell Point Beach would have no impact on public health and safety or shoreline protection. The project would replace sand that has been lost over time but cannot prevent the occurrence of tar balls that reach the beach from the Gulf of Mexico and would not otherwise change the site in a way that affects public health and safety or shoreline protection activities.

Sediment would be evaluated prior to placement. Excavation is not involved so no new contaminated areas should be uncovered during work. If areas of concern are identified during the construction they would be evaluated and the response will be determined based on any testing results and the options those results define. Once permits are issued, specific permit conditions should be included that set the sediment controls for each project such as geotechnical parameters of the sand, grain size, color spectrum, silt content.

Standard conditions in state contracts for addressing hazardous and toxic materials include:

1. All paints, solvents, chemicals and petroleum products used stored on site would be contained so that any leakage or spills that may occur do not run off into surrounding properties or waterways. All leaks or spills would be promptly cleaned up, and all absorbent materials used

would be promptly removed from the site and properly disposed to an appropriate facility. Any spills would be reported to the FDEP.

2. The contractor would have sufficient number and size of waste container(s) on site for the proper disposal of all waste material generated during construction activities. The contractor would remove or have waste containers emptied and waste material disposed to a properly licensed facility when full and all containers must be removed at the conclusion of construction.
3. If during the course of performing the work the Contractor uncovers unsuitable or contaminated material he shall cease work in that area and notify the FDEP. A site assessment report and remedial action plan would be prepared and approved by the FDEP before any further activity or construction in the affected area is resumed.

Temporary signage and other access controls may be placed to indicate the beach is effectively the site of an active construction project where heavy equipment is being operated, which would mitigate risks to human safety during construction.

12.24.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Shell Point Beach Nourishment project implements restoration techniques within Alternatives 3 and 4.

The proposed Florida Shell Point Beach Nourishment project would involve the renourishment of Shell Point Beach in Wakulla County. The proposed improvements include the placement of approximately 15,000 cubic yards of sand on the beach from an approved upland borrow area to restore the width and historic slope/profile of this beach. The project is consistent with Alternative 3 (Contribute to Providing and Enhancing Recreational Opportunities) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would enhance and/or increase the public's use and/or enjoyment of natural resources by improving the beach. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.24.7 References

Florida Department of Environmental Protection (FDEP)

2006 *2005 Hurricane Dennis and Hurricane Katrina Final Report on 2005 Hurricane Season Impacts to Northwest Florida.*. Division of Water Resource Management, Bureau of Beaches and Coastal Systems, 166p.

2013 Air Quality Monitoring for Wakulla County, Florida. Accessed online at: http://appprod.dep.state.fl.us/air/flaqs/selectreport.asp

Florida Department of Health (FDOH)

2013 Florida Healthy Beach Program. Water quality monitoring for Shell Point Beach, FL. Accessed online at: http://www.myfloridaeh.com/beach_sampling/dpBeach_Data_Summary_Detail_MashUp7.html?County=Wakulla&SPLocation=SHELL%20POINT&SPNo=&SPLat=30.05765875&SPLong=-84.29045457&appSession=675276987600166&RecordID=&PageID=2&PrevPageID=&cpipage=1&CPISortType=&CPIorderBy=

U.S. Army Corps of Engineers (USACE)

1965 *Appraisal Report on Beach Conditions in Florida*.

United States Environmental Protection Agency (USEPA)

2013 Status of SIP Requirements for Designated Areas. Accessed online at: http://www.epa.gov/airquality/urbanair/sipstatus/reports/fl_areabypoll.html

Wakulla County Health Department

2004 Wakulla County Profile. Healthy People 2010 Report Card and County Health Department Strategic Plan. Accessed online at: http://www.doh.state.fl.us/compass/countyassessment/countycontent/Wakulla/Wakulla_Assessment_2004.pdf

12.25 Perdido Key Dune Restoration Project: Project Description

12.25.1 Summary Project Information

The proposed Perdido Key Dune Restoration project will restore appropriate dune vegetation to approximately 20 acres of degraded beach dune habitat in Perdido Key, Florida, including habitat used by the federally endangered Perdido Key Beach Mouse. The project will consist of planting appropriate dune vegetation (e.g., sea oats, panic grasses, cord grasses, sea purslane, beach elder) approximately 20 – 60' seaward of the existing primary dune to provide a buffer to the primary dune and enhance dune habitats. In addition, gaps in existing dunes within the project area will be re-vegetated to provide a continuous dune structure. The total estimated cost for this project is $611,234.

12.25.2 Background and Project Description

The Trustees propose to restore dune habitat in Perdido Key in an area that begins approximately 2.2 miles east of Perdido Pass at the Florida/Alabama state line and extends approximately 6 miles to the east (see Figure 12-51 for additional detail). Perdido Key is located primarily in Escambia County, is approximately 15 miles long, and extends from Pensacola Pass in the east to Perdido Pass in the west.

The objective of the Perdido Key Dune Restoration project is to restore and enhance dune habitat by planting dune vegetation. The restoration work proposed includes planting appropriate dune vegetation (e.g., sea oats, panic grasses, cord grasses, sea purslane, beach elder) approximately 20 – 60' seaward of the existing primary dune to provide a buffer to the primary dune and enhance dune habitats. In addition, gaps in existing dunes within the project area would be re-vegetated to provide a continuous dune structure. All plants would be grown from seeds or cuttings from the Alabama or North Florida coast to ensure appropriate genetic stocks are used in the project. Ultimately, the project would restore appropriate dune vegetation to approximately 20 acres of degraded beach dune habitat including some habitat used by the federally endangered Perdido Key Beach Mouse. Remaining habitat utilized in this area by the beach mouse is typically within areas that are undeveloped or in public ownership. The restoration methods proposed here are established methods for this type of restoration activity.

12.25.3 Selection Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and related response activities, dune habitat in Florida's Panhandle was adversely impacted. This proposed project seeks to restore injured dune habitat by planting new dune vegetation. The ecological benefits that would be gained by this restoration project are anticipated to help compensate the public for Spill-related injuries and losses to the dune habitat. Thus, nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

Figure 12-51. Location of envisioned Perdido Key Dune Restoration Project.

The project is technically feasible and utilizes proven techniques with established methods and documented results. Florida agencies have successfully implemented similar projects in the region, including a project in the first phase of Early Restoration (Pensacola Beach Dune Restoration). For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement. Additionally, the cost estimates are based on similar past projects and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. This project came from a list of beach re-nourishment and dune re-vegetation projects put together by the Florida Beaches and Coastal Systems program, which is part of the Florida Department of Environmental Protection. Therefore, this project is consistent with the long term restoration needs of the State of Florida. See Section 6d of the Framework Agreement.

Many ecological projects, including ones similar to this project, were submitted as a restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Perdido Key Dune Restoration Project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.25.4 Performance Criteria, Monitoring and Maintenance

As part of the project costs, monitoring will be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria will be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objective, which is to restore and enhance injured dune habitat. Specific success criteria include: the construction of dune habitat that meet project design criteria, achieves the designed percent cover by native vegetation, and is sustained for the expected life of the project.

Post construction performance monitoring will initially focus on plant survival. Plants that do not survive to 90 days post-planting will be replaced. At least 80% of plants must survive after 6 months or replanting will occur. There is almost $30,000 in funds set aside for monitoring of the results of the project and plant survival. No movement of sand is envisioned for the project, but sand fencing will be installed to protect the plants. The sand fencing will have a one year warranty period. Topographic surveys will not be necessary due to the lack of physical movement of sand, but species survival and cover will be monitored as part of this project.

Escambia County will take over maintenance of the project once survival of the plants is accomplished. Additional performance monitoring may include collection of information such as the utilization of the habitat by the Perdido Key Beach Mouse to assist with future habitat enhancement and restoration efforts focused on benefitting this species.

12.25.5 Offsets

For the purposes of negotiations of Offsets with BP in accordance with the Framework Agreement, the Trustees used Habitat Equivalency Analysis to estimate appropriate habitat Offsets for the Perdido Key Dune Restoration Project. Habitat Offsets (expressed in DSAYs) were estimated for primary vegetated dune habitat enhanced by this restoration, based on the expected spatial extent, duration and degree of improvements attributable to the project in estimating DSAYs, the Trustees considered a number of factors, including, but not limited to, benefits of re-vegetating primary dune habitat, the time period that it would take for re-vegetated habitat to provide different levels of ecological benefits, estimated project life span and the potential impact of hurricanes and drought. The Trustees and BP agreed that if this restoration is selected for implementation, BP would receive Offsets of 34.9 DSAYs of Primary Vegetated Dune Habitat A[27] in Florida, applicable to injuries to Primary Vegetated Dune Habitat A in Florida, as determined by the Trustees' total assessment of injury for the Spill and 67.3 DSAYs of Primary Vegetated Dune Habitat B[28] in Florida, applicable to injuries to Primary Vegetated Dune Habitat B in Florida, as determined by the Trustees' total assessment of injury for the Spill.

[27] Primary Vegetated Dune Habitat "A" is utilized by the Perdido Key Beach Mouse, a federally listed endangered species.

[28] Primary Vegetated Dune Habitat "B" is not utilized by the Perdido Key Beach Mouse.

Further, in the event that the injury determination for Primary Vegetated Dune Habitat A in Florida and/or Primary Vegetated Dune Habitat B in Florida is quantified in the Natural Resource Damages Assessment using a metric other than DSAYs of Primary Vegetated Dune Habitat A in Florida and/or Primary Vegetated Dune Habitat B in Florida, the Trustees agree to translate the agreed upon NRD Offsets into a currency consistent with the metric used to characterize the injury to Primary Vegetated Dune Habitat A in Florida and/or Primary Vegetated Dune Habitat B in Florida. Any necessary translation of the Offsets will rely on the data and methods developed for the assessment and authorized in 15 C.F.R. Sections 990, *et seq.*

These Offsets are reasonable for this resource and project.

12.25.6 Cost

The total estimated cost to implement this project is $611,234. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

12.26 Perdido Key Dune Restoration Project: Environmental Review

The proposed project would restore approximately 20 acres of degraded vegetated dune habitat to its natural state along Perdido Key, Florida. The project would consist of planting appropriate dune vegetation (e.g., sea oats, panic grasses, cord grasses, sea purslane, and beach elder) and installing sand fencing to enhance dune establishment.

12.26.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP) entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is under way. The Framework Agreement is intended to expedite the start of restoration in the Gulf of Mexico in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, after public review of a draft, the Trustees released a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, NOAA issued a public notice in the Federal Register on behalf of the Trustees, announcing the development of additional future Early Restoration projects for a Draft Phase III Early Restoration Plan (ERP).

The Trustees propose to restore dune habitat in Perdido Key in an area that begins 2.2 miles east of Perdido Pass at the Florida/Alabama state line and extends approximately 6 miles to the east (Figure 12-52 for additional detail). Perdido Key is located primarily in Escambia County, is approximately 15 miles long, and extends from Pensacola Pass in the east to Perdido Pass in the west.

The objective of the Perdido Key Dune Restoration project is to restore and enhance dune habitat by planting dune vegetation. The restoration work proposed includes planting appropriate dune vegetation (e.g., sea oats, panic grasses, cord grasses, sea purslane, beach elder) approximately 20 – 60' seaward of the existing primary dune to provide a buffer to the primary dune and enhance dune habitats. In addition, gaps in existing dunes within the project area would be re-vegetated to provide a continuous dune structure. All plants would be grown from seeds or cuttings from the Alabama or North Florida coast to ensure appropriate genetic stocks are used in the project. Ultimately, the project would restore appropriate dune vegetation to approximately 20 acres of degraded beach dune habitat including some habitat used by the federally endangered Perdido Key Beach Mouse. Remaining habitat utilized in this area by the beach mouse is typically within areas that are undeveloped or in public ownership. The restoration methods proposed here are established methods for this type of restoration activity.

Figure 12-52. Perdido Key Dune Restoration Project Area.

There is a long history of state-supported actions to restore dunes in this area (including another Early Restoration approved Phase I project, nearby at Pensacola Beach to the east). Dune restoration in Perdido Key was suggested as a restoration measure during NOAA's public scoping meetings for the Deepwater Horizon Programmatic EIS in Florida and was submitted as a restoration project to the State of Florida. In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Perdido Key Dune Restoration Project meets Florida's additional criteria that Early Restoration projects occur in the eight-county Panhandle area that deployed boom and was impacted by response and SCAT activities for the Deepwater Horizon oil spill.

The total estimated cost to implement this project is $611,234. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

12.26.2 Project Location

The proposed project is located in the Gulf of Mexico, in Perdido Key, Florida (Figure 12-52). Perdido Key is located primarily in Escambia County and extends approximately 15 miles from Pensacola Pass in the east to Perdido Pass in the west. The project would restore dune habitat in Perdido Key in an area that begins approximately 2.2 miles east of Perdido Pass at the Florida/Alabama state line and extends approximately 6 miles to the east (see Figure 12-52 for additional detail).

12.26.3 Construction and Installation

The restoration project would consist of planting appropriate dune vegetation (e.g., sea oats, panic grasses, cord grasses, sea purslane, beach elder) approximately 20 to 60 feet seaward of the existing primary dune to provide a buffer to the primary dune and enhance dune habitats. Gaps in existing dunes within the project area will be revegetated to provide a continuous dune structure. Sand fencing would be installed to trap and retain wind-blown sediments and help foster dune development.

The proposed restoration activities are minimally disruptive and would occur over a relatively limited time period (2 months). Construction is planned during the summer of 2014. To protect the dune habitat, most of the proposed work would be done by hand with ATVs potentially used to shuttle plants and other materials to sites of active replanting.

Access to the dunes would be established through existing emergency vehicle paths and rights-of-way. Staging areas would be established in existing parking lots. The project would be constructed over a maximum 2 month period and would operate 7 days a week for 8 to 10 hours a day.

To complete the project, depressions of approximately 6 inches deep and 2 to 4 inches wide would be required for each of the vegetation units being planted over the approximately 20 acre project site. No material is planned for removal. Sand/soil removed for plantings would be packed around the planted unit to support regrowth. Only the excavated sand/soil removed to make room for the plantings would be placed on the site and it would be used to anchor the planted vegetation. Incidental trash encountered during project activities will be removed.

In accordance with Rule 62B-41.007(2)(l), Fla. Admin. Code, all vegetation used for the restoration would be native salt-resistant vegetation suitable for beach and dune stabilization, and grown from seeds or cuttings from the Alabama coast or North Florida to ensure appropriate genetic stocks are used in the project. The planting shall be patterned after the species composition in native communities adjacent to a project site, if possible. This vegetation would be planted using hand tools to excavate cavities where the root ball from the planting container can be placed and secured with the excavated sand/soil.

Fencing would be employed with dune planting to encourage long-term dune development. The posts used to hold the fencing at each end of the sections are 2 inches x 4 inches x 6 feet and would be placed with a mechanical auger or posthole digger 2 feet 6 inches into the sand. The wooden pickets holding the wire in between the end posts are 0.25-inches thick by 1-inch to 1.5-inches wide and are placed into the sand approximately 6 inches.

The exact area of construction footprint has not been determined but would effectively be in the area of the existing footprint of the current degraded dunes that need restoration. Access to the areas would be primarily through continuous beach access along Perdido Key Drive (Rt 292), which runs adjacent to the length of the project area to the northThis form of construction equipment would have minimal impact on dune resources.

12.26.4 Operations and Maintenance

State Park staff and Escambia County staff would perform operation and maintenance of the dunes, which includes keeping the area clean of debris, routine inspection and repair of sand fencing, and similar tasks.

This project would incorporate a mix of monitoring efforts to ensure project designs are correctly implemented during construction and in a subsequent period, defined by contract, where corrective actions could be taken. Monitoring would include construction monitoring and restoration success.

Thenumber of acres restored, number of dune plants installed, and survivorship of installed dune plants would be reported. Short-term maintenance activities would include periodic watering of dune plants by selected contractor, if needed, and replanting where dune plants have not survived. Specific criteria for evaluating revegetation success would be accomplished through implementation of standard state guidelines.

Post construction performance monitoring would initially focus on plant survival. Plants that do not survive to 90 days post-planting would be replaced. At least 80 percent of plants must survive after 6 months or replanting would occur. Approximately $30,000 in funding has been set aside for monitoring the results of the project and plant survival. No movement of sand would be envisioned for the project, but sand fencing would be installed to protect the plants. The sand fencing would have a one year warranty period. Topographic surveys would not be necessary due to the lack of physical movement of sand, but species survival and cover would be monitored as part of this project.

Escambia County would take over maintenance of the project once survival of the plants is accomplished. Additional performance monitoring could include collection of information such as the utilization of the habitat by the endangered Perdido Key beach mouse to assist with future habitat enhancement and restoration efforts focused on benefitting this species. This information collected as part of this monitoring effort would help evaluate the project’s performance over time with respect to the proposed project Offsets.

12.26.5 Affected Environment and Environmental Consequences

12.26.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.26.5.2 Physical Environment

The physical environment describes the geology and substrate, hydrology and water quality, air quality and noise characteristics of the Gulf of Mexico, including the upland, nearshore, and offshore environments, both freshwater and saltwater. The nearshore environment comprises the coastline and the inner continental shelf. Specifically, nearshore environments extend from inland tidally influenced freshwater ecosystems, including coastal sand dune habitats, to 600 feet in depth off the Gulf Coast.

12.26.5.2.1 Geology and Substrates

Affected Resources

The existing geology and substrates of Perdido Key consist of gently sloping sandy beaches along a barrier island shoreline. The geologic setting of Perdido Key is more similar to the coastal areas of neighboring Alabama and Mississippi to the west rather than the majority of the Florida carbonate platform to the east (Olsen 2006). Perdido Key lies within the East Gulf Coastal Plain physiographic region (USGS 2008) and is within the Florida Coastal Lowlands ecoregion (USFS 2008). The predominant landform is a flat, weakly dissected alluvial plain formed by deposition of continental sediments onto a submerged, shallow continental shelf. This shelf was later exposed by sea level subsidence. Along the coast, fluvial deposition and shore zone processes are active in developing and maintaining beaches, swamps, and mud flats. Elevations within the Florida Coastal Lowlands ecoregion range from 0 to 80 feet (USFS 2008) and are noted to range between 0 to 25 feet on Perdido Key.

Perdido Key is predominantly a flat barrier island feature, containing old dune ridges with areas exhibiting surface modification by erosion and underground solution. The majority of the Gulf of Mexico coastlines in northwest Florida (similar to Perdido Key) include barrier islands, mainland beaches, and peninsulas. These dynamic ecosystems are subjected to diverse coastal processes including: climate, geomorphology, sediment deposition, littoral drift in ocean currents, tides, wind, saltwater and spray, erosion, and tropical storms. As described above, Perdido Key is a barrier island with limited elevation and relatively narrow width.

The soils of beach dunes are composed primarily of deep siliceous or calcareous sands which drain rapidly and create xeric conditions. Four distinct soil types occur within the Perdido Key project vicinity; Beaches (found south of Perdido Key Drive), and Newhan-Corolla complex, Dirego muck, and Corolla-Duckston sands (found north of Perdido Key Drive). The existing, native sands of Perdido Key are fine to medium grained sands that are very well sorted. Beach dunes are subject to drastic topographic alterations during winter and tropical storms which have resulted in overwash from the beaches along the Key and direct loss of dune vegetation and habitat.

Environmental Consequences

The project would have a no adverse impact on geology since all restoration work would be confined the dune area and no additional fill or excavation would be necessary to accomplish the goal of the restoration. Typically, this type of construction does not require erosion control measures beyond the proposed sand fencing. However, if it is determined that erosion control measures are warranted, it would be required as a part of any permitting process and would be maintained by the construction contractor throughout construction activities and would be monitored by the contracting authority (the Florida DEP). Native plants would be installed using hand tools, which would not cause short-term or long-term adverse impacts to geology and substrates. Revegetation and sand fencing would have major beneficial short- and long-term impacts by reducing erosion of the dune habitat and encouraging future dune development. All appropriate permits would be obtained prior to begin of construction and all BMPs and conditions set forth would be followed. After restoration is complete, no long-term impacts would be anticipated as the project would take place within the existing footprint of the original dunes. As a result of the proposed project, impacts to geology and substrates would likely be long-term and negligible.

12.26.5.2.2 Hydrology and Water Quality

Affected Resources

The hydrology of northwestern Florida is very complex. Deposits are predominantly marine in origin and generally dip toward the south. Although the strata range from Paleozoic to Recent, only those deposited during the past 60 million years are important for groundwater resources (DEP 2006). The typical hydrogeologic sequence in this area consists of predominantly sandy materials in the uppermost deposits. These geologic units contain the Sand and Gravel Aquifer. Underlying these upper sandy deposits are variable thickness of generally clayey materials that function primarily as confining beds. Beneath this zone is the Floridan Aquifer, which is composed of several massive formations of carbonate rocks that exhibit highly variable water-bearing characteristics.

Hydrology at the project site is predominantly natural and water quality is good. The surface waters of the region are a valuable resource and generally support an abundance of wildlife and aquatic life. Water quality problems found in some areas of the region are high concentrations of nutrients and coliform bacteria likely caused by domestic and industrial waste discharges, natural swamp drainage and urban and agricultural runoff.

Perdido Key is located at the mouth of the Perdido River, a designated Outstanding Florida Waters river under authority of Section 403.061 (27), Florida Statutes as worthy of special protection because of its natural attributes.

Environmental Consequences

The restoration project would have little to no adverse impact on hydrology and water quality since all work would be confined the dune area and no additional fill or excavation would be necessary to accomplish the goal of the restoration. All appropriate permits would be obtained prior to begin of construction and all BMPs and conditions set forth will be followed. After restoration is complete, no long-term impacts are anticipated as the project will take place within the exiting footprint of the original dunes. Impacts to hydrology and water quality would be short-term and would have little to no adverse impact.

12.26.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources

Air quality and greenhouse gas (GHG) emissions at the site are primarily affected by the nearby Perdido Key Drive, parking areas adjacent to the dunes, nearby residential development in the area, and boat traffic in the Gulf of Mexico and Old River. Air quality within the Florida panhandle is in attainment with the National Ambient Air Quality Standards (EPA 2013). To determine if an area meets the ozone standard in 2012, data from 2009, 2010 and 2011 is needed to determine an area's attainment status with the 8-hr ozone standard. If the average is higher than 75 parts per billion, the area would not meet the ozone standard. In Escambia County, Florida, the 2012 year-to-date 3 year average is 73 parts per billion, thus meeting attainment status (DEP 2013).

Vehicle emissions directly associated with construction would only come from the use of ATVs to shuttle vegetation and hand tools to the dune restoration sites. A pick-up truck with a trailer, a tractor trailer for initial material delivery, and a bobcat with auger are considered limited duration equipment and will only be used on site for transitory use. No other emission sources are expected as construction will not require constant use of heavy equipment.

Environmental Consequences

Negative impacts to overall air quality would not occur because the installation of plants and sand fencing will be short in duration and will use hand tools. Construction activities would have a short-term negligible negative impact on air quality and GHG emissions at the site as the GHG emission calculation for the construction and transportation equipment (11.4 metric tons/year) fell well below the 25,000 metric ton/year of CO_2 threshold (Table 12-44). During construction activities, use of ATVs and handheld tools would not likely increase emissions at the project site. Construction will be relatively short in duration and no long-term impacts to air quality or GHG emissions would be expected to result from this project. Dune plantings will have a moderate beneficial impact to air quality.

Based on Table 12-44, no long-term impact to air quality or GHG emissions would result from this restoration project because contributions to GHGs fall below the 25,000 metric ton/year threshold.

Project implementation would not require the regular use of heavy equipment; therefore, air pollution due to equipment exhaust would not be an issue. Available BMPs would be employed to prevent, mitigate, and control potential minor air pollutants during project implementation. Any minor pollution that does occur would be localized and short in duration. No air quality related permits would be required. Adverse impacts to air quality would be minor to negligible.

Table 12-44. Estimated greenhouse gas emissions for equipment to be used.

EQUIPMENT[29]	CO2 (METRIC TONS)[30]	CH4 (CO2E) (METRIC TONS)[31]	NOX (CO2E) (METRIC TONS)	TOTAL CO2E (METRIC TONS)
Bobcat	5.32	0.0028	0.028	5.32
Tractor Trailer	0.085	0.00005	0.0005	0.085
Pickup truck	1.2	0.00075	0.0075	1.2
ATV (assume similar to pickup)	4.8	0.003	0.03	4.8
TOTAL	11.405	0.0066	0.066	11.405

12.26.5.2.4 Noise

Affected Resources

Existing ambient noise levels along the shoreline at Perdido Key are low and predominantly result from the nearby Perdido Key Drive, parking areas adjacent to the dunes, nearby residential development, military aircraft operations (Pensacola Naval Air Station), and boat traffic on the Gulf of Mexico and Old River (USFWS 2011). Residential construction is increasing on the Key where temporary noise may become an issue, especially at the developments located in or near beachfront areas during the tourist season. There are no timing/dBA level restrictions from natural resource agency recommendations for the project area.

Environmental Consequences

Human presence and use of ATVs and hand tools employed during construction would not generate a noticeable change in the level of ambient noise in the general area. However, human presence and the use of ATVs may disturb wildlife in the immediate area. As such, noise would be kept to a minimum using best management practices. The level of noise is unlikely to affect resources. Timing considerations will be made to address species needs/concerns raised in the biological review process. Adverse impacts from noise during the construction phase would be minor and short in duration. However, no long-term impacts to noise from the proposed project are expected after construction work is complete.

[29] Emissions assumptions for all equipment based on 8 hours of operation.

[30] CO_2 emissions assumptions for diesel and gasoline engines based on USEPA 2009.

[31] CH_4 and NOx emissions assumptions and CO_2e calculations based on USEPA 2011.

12.26.5.3 *Biological Environment*

12.26.5.3.1 Living Coastal and Marine Resources

Protected Species

Affected Resources

The Gulf Coast has a variety of shoreline types including sandy beaches, barrier islands, SAV, forested swamps, marshes, tidal mud flats, saltpans, cheniers and coastal forests, and estuarine systems. The beach and dune system of the Perdido Key area is a dynamic environment subject to extensive change as a result of wind, waves, tides and storms. Native salt-resistant vegetation is essential to the beach and dune system as it both accumulates and stabilizes sand. Vegetation traps wind-blown sand which collects around the plant and builds up the dune in a process known as "accretion." As the plants become buried, new roots develop on the recently buried stems while new stems emerge from the sand. A dense stand of sea oats, and other primary vegetation in the foredune can significantly minimize erosion during high tides and storms.

Habitat surrounding the Perdido Key dune restoration project area is characterized as natural beach and dune habitat, with some development in the immediate vicinity behind the dunes. This habitat is located along seaward, foredunes, and typically contains a mixture of open sandy areas, grasses and forbs. The vegetative community is typically dominated by plants such as sea oats, panic grass, beach morning-glory, and seashore elder. Vegetation in this project area, however, has been degraded due to storms and flooding.

Numerous species throughout the Gulf are listed as threatened or endangered through the Endangered Species Act of 1973 (ESA). These species are protected and as provided under ESA, federal consultations are required when environmental actions may affect these listed species or their designated critical habitat. There are two species for which the area is known: the Perdido Key beach mouse (PKBM) and loggerhead sea turtles. Both are federally listed as endangered species.

Perdido Key Beach Mouse

The Perdido Key Beach Mouse (PKBM) is endemic to Perdido Key in Alabama and Florida (Humphrey 1992). The historic range of the PKBM included coastal dunes extending from Gulf State Park-Florida Point in Baldwin County, Alabama, to the eastern terminus of Gulf Islands National Seashore-Johnson's Beach in Escambia County. The USFWS originally identified three areas of critical habitat for the mouse, including areas within Perdido Key State Park and adjacent privately owned lands. PCE's for critical habitat are: 1) A contiguous mosaic of primary, secondary scrub vegetation, and dune structure, with a balanced level of competition and predation and few or no competitive or predaceous nonnative species present, that collectively provide foraging opportunities, cover, and burrow sites; 2) Primary and secondary dunes, generally dominated by sea oats that, despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators; 3) Scrub dunes, generally dominated by scrub oaks, that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane induced storm surge; 4) Functional, unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and recolonization of locally extirpated areas; and 5) A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth and viability of all life stages.

Sea Turtles

There are five species of endangered or threatened sea turtles that may occur or have the potential to occur in the project area. These include green turtle, hawksbill turtle, Kemp's ridley turtle, leatherback turtle, and loggerhead turtle. Sea turtles forage in the waters of the coastal Florida panhandle region and occur in the waters adjacent to the project area. The project site contains suitable sea turtle nesting habitat along the sandy beach.

Piping Plover

The sandy beaches and shorelines within the project area offer suitable foraging and resting habitat for the piping plover during the winter migratory season, and piping plover may forage in the shallow waters of the project area. Natural shorelines in the proposed project vicinity provide suitable winter migration resting habitat for the piping plover. Piping plover wintering habitat includes beaches, mudflats, and sandflats, as well as barrier island beaches and spoil islands (Haig 1992 as cited by USFWS 2013). On the Gulf Coast, preferred foraging areas are associated with wider beaches, mudflats, and small inlets (USFWS 2013).

Red Knot

The red knot, a federal proposed species, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate down to specific wintering locations in South America (Niles et al. 2008) and could be present in the project area. Wintering and migrating red knots forage along sandy beaches, tidal mudflats, saltmarshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sand flats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

Migratory Birds and Bald Eagles

The snowy plover (*Charadrius alexandrinus*) is a small whitish light colored shorebird with a dark, thin bill and dark legs. Snowy plovers are solitary nesters and require open dry sand near dunes for breeding. Nesting can occur in early February but typically the nesting season is March to September in Florida. Nests are an open scrape, sometimes lined with shell matter, within sight of the Gulf of Mexico and near the frontal dune line. Snowy plover nesting has been well documented at Gulf Islands National Park and recent nesting attempts were documented at nearby Perdido Key State Park. All nesting locations have been on State or Federal lands. Suitable nesting habitat does not usually exist in the privately owned lands in the area. However, resting and feeding habitat may occur in the area.

There are no wading bird rookeries at the site. Due to the lack of wooded areas surrounding the site, there is little potential for bald eagle nesting in the area. If bald eagles would be found nesting within 660 feet of the construction area, then activities would need to occur outside of nesting season, or avoidance measures would need to be followed.

Environmental Consequences

The beach dune habitat, from an endangered species perspective, is by far the most important and sensitive community type along Perdido Key. The dunes are fragile and very easily damaged by foot traffic. Construction activities at the site would have a temporary minor negative impact on living coastal and marine resources. The presence of construction crews and use of construction equipment would likely temporarily disturb wildlife, including the PKBM. Construction may take up to 2 months to complete, and would likely occur during the summer months. Standard construction conditions for dune restorations and beach mouse protection would be implemented to minimize impacts to beach mice and their ciritical habitats such that they are short term and minor.

Currently, many unauthorized trails traverse the dune fields from the highway to the beach all along the length of the beach. Deeply rutted foot trails have grown wide and are subject to wind erosion, fragmenting the habitat. This habitat is currently in fair condition and should improve as restoration and protective measures are implemented and enforced. Ultimately, the project would restore appropriate dune vegetation to approximately 20 acres of degraded beach dune habitat including some habitat used by the federally endangered PKBM. Remaining habitat utilized in this area by the beach mouse is typically within areas that are undeveloped or in public ownership.

Floodlights from nearby houses, condominiums, and streetlights cause serious negative impacts on wildlife inhabiting the dunes. Beach mice and sea turtles require dark beaches to live normally. Every year sea turtle hatchlings become disoriented by the nearby lighting and are killed by cars, exposure or predation due in part to the excessive lighting. Beach mice may be at increased risk from predation due to the increased visibility associated with the artificial lighting. Restoration of the dunes would help to create a vegetation screen to reduce exposure to the lighting.

Section 7 consultation with USFWS will be initiated. The Trustees will implement any conservation measures that are recommended during theses consultations to avoid and minimize impacts to biological resources.

Perdido Key beach mouse

To minimize potential impacts during installation of dune plants and sand fencing, all possible PKBM burrows would be flagged under the supervision of a qualified biologist. These flagged burrows would be avoided during the project.

Sea turtles

Restoration activities would be subject to the following mitigation measures designed to minimize impacts to nesting loggerhead sea turtles (May-October). Restoration activities should occur March through June and would avoid much of the sea turtle nesting and hatching season. However, when restoration occurs during nesting season the precautions described below would be followed.

- Actual installation of dune plants and sand fencing would occur during daylight hours and would, therefore, not impact nesting females or hatchlings are active during the evening hours. Additionally, no restoration equipment would be left on the beach overnight. All loggerhead sea turtle nests in the project area are marked each morning by survey crews by 9:00 am. Restoration crews would not begin work in an area until after it is cleared by the survey crews. If a nest occurs in a restoration area the nest would be avoided by no less than 10 feet.

To minimize potential impacts of the sand fencing on sea turtle nesting after installation the Florida Fish and Wildlife Conservation Commission minimal distance guidelines for sand fence installation would be followed.

Piping plover and Red Knot
Restoration activities would be subject to the following mitigation measures would be designed to minimize impacts to piping plovers and associated overwintering habitat:

- Restoration activities would ideally occur from March through June and would avoid most piping plover overwintering in Florida. However, when restoration occurs during the overwintering season the precautions described below will be followed.
- Vehicles used for restoration on the sandy beach south of the primary dune would not exceed 10 mph.
- Occupied habitat would be avoided by 150 feet until the piping plovers leave the area.

Snowy plover
Restoration activities would be subject to the following mitigation measures would be designed to minimize impacts to snowy plovers and associated nesting habitat:

- Each week, during nesting season, a qualified biologist would survey the active restoration sites for snowy plover activity. Areas of consistent activity would be flagged off and avoided by restoration crews until the birds leave the area.

Construction activities at the site would have a temporary, minor negative impact on living coastal and marine resources. The presence of construction crews and use of ATVs and occasional heavy equipment will likely temporarily disturb wildlife, including the Perdido Key Beach Mouse. Because construction should only take up to 2 months to complete, impacts to living coastal and marine resources would be short-term and minor. Planting would occur during the growing season and care would be taken to ensure plants would be installed in areas where nesting sea turtles and shorebirds would not be impacted. Contractors are required to be aware of, and comply with applicable law prohibiting harm to protected species, including migratory birds and endangered species. The proposed project would have major beneficial impacts for the dune ecosystem through the reestablishment of vegetation. The project is designed to restore the function of the dune habitat, which would benefit overall wildlife, including the Perdido Key beach mouse.

Essential Fish Habitat
EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The project is located in uplands above the mean high- tide line, therefore no EFH is located within the project footprint.

Invasive Species

Affected Resources
Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences
Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.26.5.4 Human Uses and Socioeconomics

12.26.5.4.1 Socioeconomics and Environmental Justice

Affected Resources
The Gulf is among the nation's most valuable and important ecosystems. The Gulf Coast and its natural resources are key components of the U.S. economy, producing 30 percent of the nation's gross domestic product in 2009 (NOAA 2011, as cited in GCERTF 2011). The region provides more than 90 percent of the nation's offshore oil and natural gas production (USEIA n.d., as cited in GCERTF 2011); 33 percent of the nation's seafood (Mabus, 2010, as cited in GCERTF 2011); 13 of the top 20 ports by tonnage in the United States in 2009 (USACE 2010, as cited in GCERTF 2011); as well as regionally and nationally important tourism and recreational activities such as fishing, boating, beachcombing, and bird watching.

These activities support more than 800,000 jobs (Mabus 2010, as cited in GCERTF 2011) across the region, providing a substantial economic input to Gulf communities and the nation. All of these industries depend on a healthy and resilient Gulf. The five U.S. Gulf Coast States, if considered an individual country, would rank seventh in global gross domestic product (NOAA 2011, as cited in GCERTF 2011).

The Perdido Key dune restoration project is located within Escambia County which encompasses 661 square miles, or 420,480 acres, with an additional 64,000 acres of water area. The population of Escambia County is currently estimated at 302,715. Data and characteristics on the population of Escambia County are summarized and compared to those same measures for the population of the state as a whole (Table 12-45).

Environmental Consequences

The proposed project would create jobs in the short-term during construction and planting. The improved beach access and dune restoration would result in a minor increase in visitation to the site, which could benefit the local economy for multiple years. This project would not create a benefit for any specific group or individual, but rather would produce benefits realized by the local community and visitors. There are no indications that the dune improvements would be contrary to the goals of E.O. 12898, or would create disproportionate, adverse human health or environmental impacts on minority or low income populations of the surrounding community. Therefore no environmental justice issues would be anticipated in the short-term or long-term.

The proposed project would be expected to have short-term, beneficial impacts on socioeconomics for project area and adjacent areas, based on a very slight increase in the workforce, required to perform the restoration. The exact number of person to be employed by this project is undetermined, but is estimated to be approximately eight persons.

Table 12-45. Population characteristics of Escambia County compared with State of Florida data.

U.S. CENSUS DATA QUICKFACTS BY COUNTY	ESCAMBIA	FLORIDA
Population, 2012 estimate	302,715	19,317,568
Persons under 5 years, percent, 2012	6.2%	5.5%
Persons under 18 years, percent, 2012	21.1%	20.7%
Persons 65 years and over, percent, 2012	15.2%	18.2%
Female persons, percent, 2012	50.5%	51.1%
White alone, percent, 2012 (a)	70.1%	78.3%
Black or African American alone, percent, 2012 (a)	22.9%	16.6%
American Indian and Alaska Native alone, percent, 2012 (a)	0.9%	0.5%
Asian alone, percent, 2012 (a)	2.9%	2.7%
Native Hawaiian and Other Pacific Islander alone, percent, 2012 (a)	0.2%	0.1%
Two or More Races, percent, 2012	3.0%	1.9%
Hispanic or Latino, percent, 2012 (b)	5.1%	23.2%
White alone, not Hispanic or Latino, percent, 2012	66.0%	57.0%
Homeownership rate, 2007-2011	67.3%	69.0%
Median household income, 2007-2011	$43,707	$47,827
Persons below poverty level, percent, 2007-2011	16.9%	14.7%
Manufacturer shipments, 2007 ($1000)	2,117,030	104,832,907
Merchant wholesaler sales, 2007 ($1000)	1,838,916	221,641,518

(a) Includes persons reporting only one race.

(b) Hispanics may be of any race, so also are included in applicable race categories.

Source: US Census Bureau State & County QuickFacts 2012

12.26.5.4.2 Cultural Resources

Affected Resources
At this time no cultural resources are known to exist at the site.

Environmental Consequences
Restoration of the dunes at Perdido Key would have no anticipated impact on cultural resources because none are known to be present and the work would take place within the existing footprint of the site. Nonetheless, 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.

12.26.5.4.3 Infrastructure

Affected Resources
There is no major infrastructure at the site; however, there are condos and residences adjacent to the project outside of the state park. The dunes are near Perdido Key Drive but are located in Perdido Key State Park, away from developed areas.

Environmental Consequences
Restoration of the dunes at Perdido Key would have no impact on infrastructure; the project includes dune restoration within the existing footprint so no major infrastructure changes would be made.

12.26.5.4.4 Land and Marine Management

Affected Resources
The project area includes part of the Perdido Key State Park and is adjacent to developed area. Surrounding land uses include un-improved areas of the park and some small residential areas. The majority of development is located on the eastern part of the Key between the bridge and River Road and the west end of Perdido Key Drive near the Alabama border. Approximately 16 percent of the land may be developed in resort/tourism related uses and in small scale commercial uses. Site-specific densities are pursuant to the requirements of the zoning districts where a site is located. Each zoning district has its own height and building footprint limitations, which vary from one zoning district to the next. Density units may not be transferred to parcels south of SR 292 (Perdido Key Drive) (USFWS 2011).

Environmental Consequences
Restoration of the dunes at Perdido Key is not anticipated to have an impact on land and marine management because changes at the site would be limited to dune resources.

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.

12.26.5.4.5 Aesthetics and Visual Resources

Affected Resources
The existing aesthetic and visual resources at the site include natural dune, beach, and Gulf of Mexico habitat. Residential housing and development is limited to the areas immediately adjacent to Perdido Key Drive. There is minimal development, other than a few parking lots, to obstruct the viewshed of the dune restoration project area.

Environmental Consequences
Impacts to visual resources would be limited to the restoration time frame. Beneficial impacts on aesthetics and visual resources would be expected following the restoration as a result of enhanced quality of dune habitat and viewshed. The improved habitat would enhance the look of the natural dune habitat.

Aesthetics would be reduced in the project area during construction due to the presence of equipment and materials. However, these impacts would be minor, temporary changes to visual resources. Following construction and planting the project would provide moderate long-term beneficial aesthetic impacts to the dune habitat and visitor access areas.

12.26.5.4.6 Tourism and Recreational Use

The project site is currently a tourist and recreational user destination. Some dune walkovers provide users with access to the beach and provide opportunities for observing natural dune and beach habitat and wildlife. Leisure and recreational pursuits are on the increase on Perdido Key, along with northwest Florida. The impact of recreation and tourism on the economy continues to expand. Recreational visits to state and national parks grew by an estimated 300,000 visitors from 2003 to 2004 and taxable sales of transient facilities outpaced Florida's growth rate (7.7 % v. 6.3%). Employment and payroll for the tourism industry was also up (0.8 % and 2.4%, respectively) (USFWS 2011).

Recreation opportunities on Perdido Key revolve around the mild climate and water related activities typical of the Gulf coast. Recreational swimming and sun bathing provide seasonal enjoyment for residents and tourists, and fishing, both on Old River and the Gulf provide year round opportunities. Approximately half of Perdido Key is public land that provides significant recreational opportunities.

Environmental Consequences
For a short time, the construction process would limit recreational activities near the restoration areas. Access to the restored areas would be restricted during vegetation establishment. However, once the restoration project is implemented, an increase in visitation for the life of the project is anticipated. Moderate beneficial impacts to tourism and recreational use would be expected through enhanced habitat and visual quality of the restored dune habitat. There would be no long-term adverse impacts to tourism or recreational use. The project would have a moderate positive impact on recreational user enjoyment of the site. The project would improve conservation of dune habitat and improve the overall habitat quality and function of the site.

12.26.5.4.7 Public Health and Safety and Shoreline Protection

Affected Resources

Public health and safety and shoreline protection at the site are of high quality. Part of the site includes the Perdido Key State Park and is managed to maximize health and safety for human use and the environment. There are no known hazardous waste generation or disposal sites in the vicinity of the project. Erosion at the proposed project site is typical of a barrier island shoreline.

Environmental Consequences

Restoration of the dunes at Perdido Key would have a major beneficial impact on public health and safety. The project would have no impact on existing shoreline protection, no work is planned for the shoreline and current management practices will not be altered by the project.

Planting native dune vegetation would support the natural control of shoreline erosion. Overall, the project would have a moderate beneficial impact on public health and safety and shoreline protection, and would have no negative impacts on these resources.

12.26.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Perdido Key Dune Restoration project implements restoration techniques within Alternatives 2 and 4.

The proposed Florida Perdido Key Dune Restoration project would restore appropriate dune vegetation to approximately 20 acres of degraded beach dune habitat in Perdido Key, Florida, including habitat used by the federally endangered Perdido Key Beach Mouse. The project would consist of planting appropriate dune vegetation (e.g., sea oats, panic grasses, cord grasses, sea purslane, beach elder) approximately 20 – 60' seaward of the existing primary dune to provide a buffer to the primary dune and enhance dune habitats. In addition, gaps in existing dunes within the project area will be re-vegetated to provide a continuous dune structure. The project is consistent with Alternative 2 (Contribute to Restoring Habitats and Living Coastal and Marine Resources) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would provide long-term benefits by restoring and enhancing approximately 20 acres of degraded dune habitat. The Trustees have started coordination and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.26.7 References

Deepwater Horizon Natural Resource Trustees (Trustees)

2012 Deepwater Horizon Oil Spill Phase II Early Restoration Plan and Environmental Assessment. 161 pp.

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2011 Gulf of Mexico regional ecosystem restoration strategy. 104 pp.

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2011 The Gulf of Mexico at a glance: A second glance. http://stateofthecoast.noaa.gov/NOAAs_Gulf_of_Mexico_at_a_Glance_report.pdf.

Olsen Associates, Inc.

2006 "*Perdido Key, FL, Feasibility Study for Beach Restoration*" Report submitted to Escambia County, FL, and the Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems, Olsen Associates, Inc., Jacksonville, FL.

United States Census Bureau (US Census)

2013 State and County Quickfacts for Escambia County, Florida. Access online at: http://quickfacts.census.gov/qfd/states/12/12033.html

U.S. Energy Information Administration (USEIA)

n.d. Gulf of Mexico fact sheet. http://www.eia.doe.gov/special/gulf_of_mexico/index.cfm.

U.S. Environmental Protection Agency (USEPA)

2013 Status of SIP Requirements for Designated Areas – Florida Areas by Pollutant. Accessed on September 24, 2013 at http://www.epa.gov/airquality/urbanair/sipstatus/reports/fl_areabypoll.html.

U.S. Fish and Wildlife Service (USFWS)

2011 Environmental Assessment-Issuance of an Incidental Take Permit to Escambia County, Florida for Take of Perdido Key Beach Mouse, Sea Turtles, and Piping Plovers. Incidental to Private Development and Escambia County Owned Lands and Infrastructure Improvements on Perdido Key, Florida. Prepared By: PBS&J, Pensacola, Florida for the U.S. Fish and Wildlife Service, Ecological Services Division, Panama City, Florida. June 23, 2011. (http://www.fws.gov/panamacity/resources/DraftEAforPerdidoKey.pdf)

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12.27 Florida Oyster Cultch Placement Project: Project Description

12.27.1 Project Summary

The proposed Florida Oyster Cultch project would enhance and improve the oyster populations in Pensacola Bay, Andrew Bay and Apalachicola Bay. The proposed improvements include the placement of a total of 42,000 cubic yards of suitable cultch material over 210 acres of previously constructed oyster bars for the settling of native oyster larvae and oyster colonization in three Florida Bays. The total estimated cost for this project is $5,370,596.

12.27.2 Background and Project Description

The Trustees propose to enhance and improve the oyster populations in three Florida Bays (see Figure 12-53 for envisioned project locations). The objective of the proposed Florida Oyster Cultch project is promote reef development for oysters by restoring existing oyster reef habitat. The restoration work proposed includes the placement of suitable cultch material on existing or previously constructed oyster bars for the settling of native oyster larvae and oyster colonization. In particular, it will include:

- Placing 12,000 cubic yards of shell on debilitated oyster reefs over a 60 acre area in the Pensacola Bay system in Escambia and Santa Rosa Counties;
- Placing 12,000 cubic yards of shell on debilitated oyster reefs over a 60 acre area in the St. Andrew Bay system in Bay County; and
- Placing 18,000 cubic yards of shell on debilitated oyster reefs over a 90 acre area in the Apalachicola Bay system in Franklin County.

Cultch material to be placed will consist of combinations of oyster shells, either mined from existing sources or from active oyster shell collection sources, and/or limestone approved for use in these projects by Florida's Department of Agriculture and Consumer Services (DACS). The cultch placement generally involves offloading material from barges mechanically using either spray cannons or large excavator type equipment. The new cultch material will be placed on top of existing oyster bars created and managed by DACS because these bars are depleted of shell material or have reached the end of their productive life. Placing substrate or "cultch" in bays where natural reproduction occurs, is the most effective technique used throughout the GOM to 1) create three-dimensional reef structure, 2) stimulate spat setting, 3) sustain oyster fisheries, 4) enhance community functions, 5) increase natural productivity and 6) accelerate the recovery process. Florida DACS has been involved in rehabilitating oyster reefs for more than sixty years and provides a multi-dimensional approach built on decades of experience. The restoration methods proposed here are established methods for this type of restoration project.

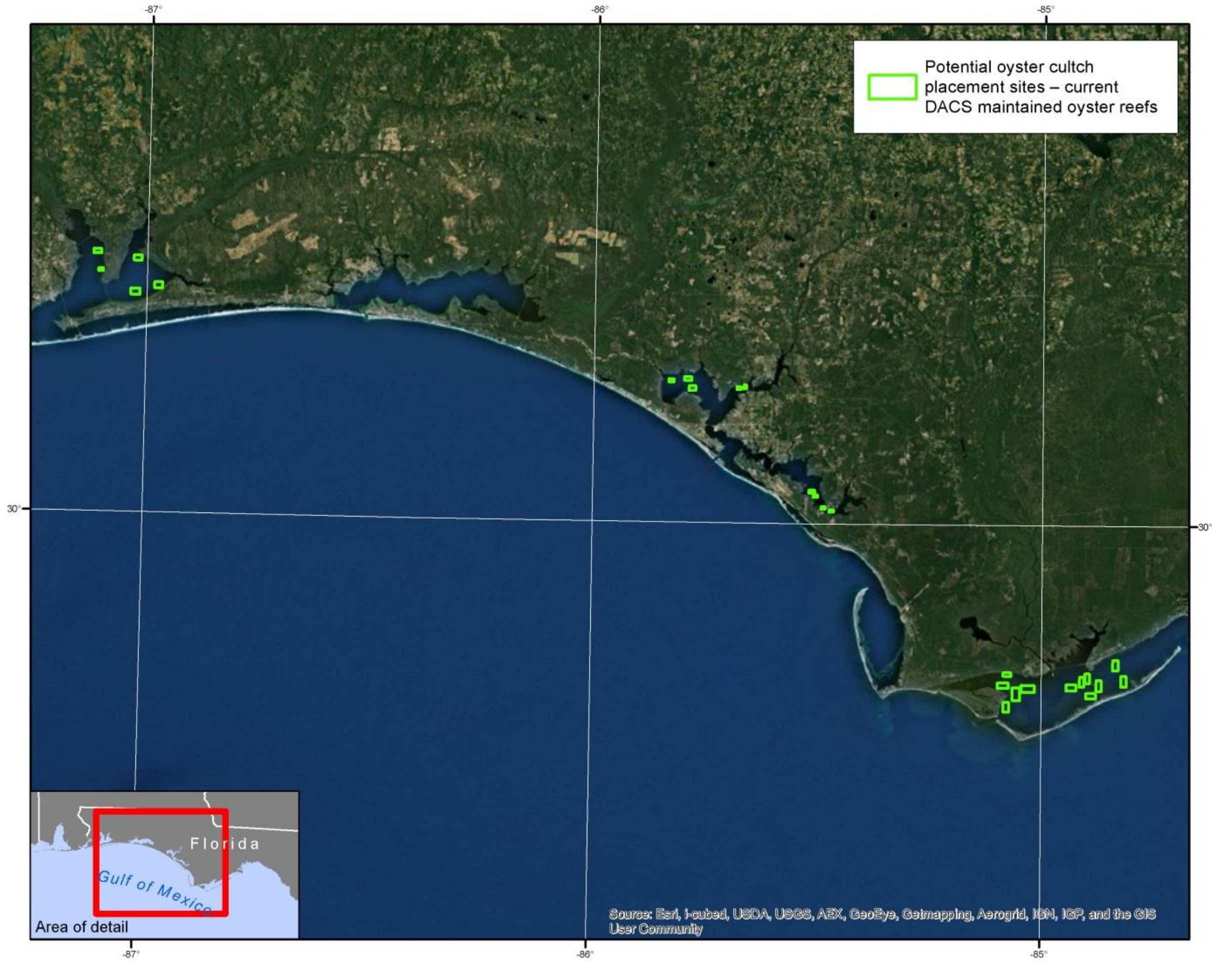

Figure 12-53. Location of envisioned Florida Oyster Cultch Restoration Project.

12.27.3 Evaluation Criteria

This proposed project meets the evaluation criteria for the Framework Agreement and OPA. As a result of the Deepwater Horizon oil spill and associated response actions, oyster secondary productivity along Florida's Panhandle suffered adverse impacts. This project seeks to foster reef development, which would help compensate the public for Spill-related injuries and losses to oyster secondary productivity. Thus, nexus to resources injured by the Spill is clear. See 15 C.F.R. § 990.54(a)(2); and Sections 6a-6c of the Framework Agreement.

The project is technically feasible and utilizes proven techniques with established methods and documented results. Florida agencies have successfully implemented similar projects in the region. These projects were designed by DACS following established methods and techniques utilized by them, other states, and private contractors to restore oyster bars. In addition, DACS has a Programmatic General Permit SAJ-99 (SAJ-2007-03138) issued to them from the US Armey Corps of Engineers to accomplish oyster restoration utilizing these techniques. For these reasons, the project has a high likelihood of success. See 15 C.F.R. § 990.54(a)(3); and Section 6e of the Framework Agreement.

Furthermore, the cost estimates are based on similar past projects executed by DACS in the envisioned project areas and therefore the project can be conducted at a reasonable cost. See 15 C.F.R. § 990.54(a)(1); and Section 6e of the Framework Agreement. These projects are part of DACS's Division of Aquaculture Shellfish Program and are therefore consistent with the long term restoration needs of the State. See Section 6d of the Early Restoration Framework Agreement.

Many ecological projects, including ones similar to this project, were submitted as a restoration project on the NOAA website (http://www.gulfspillrestoration.noaa.gov) and submitted to the State of Florida (http://www.deepwaterhorizonflorida.com). In addition to meeting the evaluation criteria for the Framework Agreement and OPA, the Florida Oyster Cultch Project also meets the State of Florida's additional criteria that Early Restoration projects occur in the 8-county panhandle area that deployed boom and was impacted by response and SCAT activities for the Spill.

12.27.4 Performance Criteria, Monitoring and Maintenance

As part of the project costs, monitoring will be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. Performance criteria will be used to determine project success or the need for corrective actions. The monitoring has been designed around the project objective. The project objective is to promote reef development for oysters by restoring existing oyster reef habitat. Specific success criteria include: construction of reefs that meet project design criteria, support oyster secondary productivity, and are sustained for the expected life of the project.

Post construction performance monitoring will focus on the recruitment and growth of oysters on the new cultch placements. Restored reefs may become productive in as few as 3 to 6 months under optimal conditions, with oyster reaching market size in 12 to 18 months. However, since recruitment and survival can be highly variable, some reefs may not become productive for 2-5 years. It has been shown that restored reefs can remain productive for more than 10 years with little additional maintenance (dragging to re-expose shell material and substrate enhancement). Based on the expected longevity of the restored reefs, a monitoring program will assess oyster population parameters for ten years.

DACS will be responsible for effectively assessing or providing guidance on the status of oyster resources on reefs that are restored during this project. Specific metrics to delineate reef locations and reef area, measure population parameters, and estimate production potential will be accomplished.

The monitoring will include collecting samples following project completion on all restored reefs and establishing a sampling schedule based on expected recruitments cycles. All restored reefs will be sampled twice a year from year-one through year-five and once a year from year-six through year-ten. Sampling intervals may be modified to assess significant events which may affect oyster population dynamics. A total of sixteen sampling trips are planned for each restored reef.

The monitoring program will establish and describe the parameters and metrics required to accurately assess oyster reef habitat and populations on restored reefs. Reefs will be measured and delineated to determine the surface area and reef boundaries, and estimate the coverage forming available reef habitat. The Standard Oyster Resource Management Protocol utilized by the state of Florida will be used to establish baseline and serial oyster population data to measure and report changes in oyster populations and oyster population dynamics.

The Standard Oyster Resource Management Protocol is based on collecting oyster samples from quadrats established at specific sampling locations on restored reefs. Samples are collected by divers using current standard procedures and returned to the laboratory for analyses. Live oysters collected during replicated samples are individually measured, dead oysters and recent boxes are counted, predators are identified and counted, and the general condition of the reef is recorded. The numbers and size of live oysters are converted to size frequency distributions that are used to develop population parameters, such as density, production levels, recruitment, growth, and survival, which in turn, can be applied to predict population trends and identify adverse impacts from events such a hurricanes, floods and drought.

The Standard Oyster Resource Management Protocol provides that estimated production exceeding 400 bags of oysters per acre indicates healthy oyster reefs capable of sustaining commercial harvesting. Accordingly, oyster populations are 1) capable of supporting limited commercial harvesting when stocks exceed 200 bags/acre, 2) below levels necessary to support commercial harvesting when stocks fall below 200 bags/acre, and 3) considered depleted when marketable stocks are below 100 bags/acre (Berrigan, 1990). Generally, the protocol has been an accurate indicator of oyster production in Florida.

12.27.5 Offsets

For the purposes of negotiations of Offsets with BP in accordance with the Framework Agreement, the Trustees used Resource Equivalency Analysis to estimate appropriate Offsets for the Florida Oyster Cultch Project. Oyster Secondary Productivity Offsets (expressed in ash-free-dry-weight DKg-Ys) were estimated for expected increases in oyster biomass (tissue) attributable to the project. In estimating DKg-Ys, the Trustees considered a number of factors, including, but not necessarily limited to, typical productivity in the project area, estimated project lifespan and project size. The Trustees and BP agreed that if this restoration is selected for implementation, BP would receive Offsets of 425,000 DKg-Ys of oyster Secondary Productivity in Florida, applicable to oyster Secondary Productivity injuries in Florida, as determined by the Trustees' total assessment of injury for the Spill. If the Offsets exceed the oyster Secondary Productivity injury in Florida, the Trustees and BP will apply "excess" Offsets to injuries to benthic Secondary Productivity (defined to include the net production of mobile and sessile invertebrate infauna and epifauna associated with hard bottom substrate) in Florida. These Offset types and amounts are reasonable for this project.

12.27.6 Cost

The total estimated cost to implement this project is $5,370,596. This cost reflects current cost estimates developed from the most current information available to the Trustees at the time of the project negotiation. The cost includes provisions for planning, engineering and design, construction, monitoring, and potential contingencies.

12.28 Florida Oyster Cultch Placement Project: Environmental Review

The proposed project involves oyster reef restoration for oyster beds that have reached their productive lifespan. The proposed project goals would be to improve and restore existing oyster beds managed by the Florida Department of Agriculture and Consumer Services (DACS). All of the areas are publicly owned and managed by DACS.

The project proponent is relying on existing Programmatic Section Rivers and Harbors Act Section 10 and Clean Water Act Section 404 Programmatic General Permit for Live Rock and Marine Bivalve Placement SAJ-99 (SAJ-2007-03138) issued to DACS. The Programmatic General Permit is intended for DACS activities. The Florida Department of Environmental Protection (FDEP) is relying on the Programmatic General Permit for Rivers and Harbors Act Section 10 and Clean Water Act Section 404coverage of the proposed project.

12.28.1 Introduction and Background

In April 2011, the Natural Resource Trustees (Trustees) and BP Exploration and Production, Inc. (BP), entered into the Framework Agreement for Early Restoration Addressing Injuries Resulting from the *Deepwater Horizon* Oil Spill (Framework Agreement). Under the Framework Agreement, BP agreed to make $1 billion available for Early Restoration project implementation. The Trustees' key objective in pursuing Early Restoration is to achieve tangible recovery of natural resources and natural resource services for the public's benefit while the longer-term injury and damage assessment is underway. The Framework Agreement is intended to expedite the start of restoration in the Gulf of Mexico, in advance of the completion of the injury assessment process. Early restoration is not intended to, and does not, fully address all injuries caused by the Spill. Restoration beyond Early Restoration projects would be required to fully compensate the public for natural resource losses from the Spill.

Pursuant to the process articulated in the Framework Agreement, the Trustees released, after public review of a draft, a Phase I Early Restoration Plan (ERP) in April 2012. In December 2012, after public review of a draft, the Trustees released a Phase II ERP. On May 6, 2013, the National Oceanic and Atmospheric Administration (NOAA) issued a public notice in the *Federal Register* on behalf of the Trustees, announcing the development of additional future Early Restoration projects for a Phase III Early Restoration Plan (ERP). This project, in various locations spanning Pensacola Bay in Escambia and Santa Rosa Counties, St. Andrews Bay in Bay County, and Apalachicola Bay in Franklin County, was submitted as an Early Restoration project on the NOAA website and submitted to the state of Florida. In addition to meeting the evaluation criteria of the Framework Agreement and the Oil Pollution Act (OPA), the project meets Florida criteria that Early Restoration projects occur in the eight-county panhandle area that was impacted by the Spill.

This oyster reef restoration project is designed to help support natural oyster populations without requiring construction of new facilities or developing new approaches to pursuing the project objectives. The proposed project involves placing suitable cultch material, typically oyster shell but sometimes limestone or other rock/hard materials, depending on availability, on previously constructed oyster bars to allow settling of native oyster larvae and encourage oyster colonization in three Florida bays (Figure 12-54). Oyster shells would be added in areas where they are part of the natural marine ecosystem.

The overall likelihood of success is good, in the short and long term. There is a risk of sedimentation of the oyster cultch, which would prevent successful attachment of spat and cause the destruction of reefs during extreme weather events (e.g., hurricanes). However, the state of Florida has extensive experience restoring and creating oyster reefs in estuaries for over 50 years, and thus, these projects are anticipated to have a high likelihood of success.

12.28.2 Project Location

The proposed project is located in the state of Florida and would be completed at multiple offshore and nearshore locations in Escambia, Santa Rosa, Bay, and Franklin Counties. Appropriate project locations in Pensacola Bay, St. Andrews Bay, and Apalachicola Bay have been selected. Figure 12-54 illustrates the proposed project locations. The total area from all proposed project locations is approximately 210 acres.

12.28.3 Construction and Installation

This proposed project would place a total of 42,000 cubic yards of suitable cultch material over 210 acres of existing or previously constructed, commercially harvested oyster bars for the settling of native oyster larvae and oyster colonization in three Florida Bays (Pensacola Bay, St. Andrews Bay, and Apalachicola Bay).

The proposed effort includes:

- Placing 12,000 cubic yards of shell on debilitated oyster reefs over a 60-acre area in the Pensacola Bay system in Escambia and Santa Rosa counties
- Placing 12,000 cubic yards of shell on debilitated oyster reefs over a 60-acre area in the St. Andrews Bay system in Bay County
- Placing 18,000 cubic yards of shell on debilitated oyster reefs over a 90-acre area in the Apalachicola Bay system in Franklin County

Cultch material to be placed would consist of combinations of oyster shells, either mined from existing, permitted sources or from active oyster shell collection sources, and/or limestone approved for use in these project areas by DACS. Fossil shell and lime rock are commonly mined from quarries in the Gulf Coast region and may be used if oyster shell is not available. Processed oyster shell is preferred for cultch material to restore oyster reefs where the shell is available and can be efficiently transported to reef sites. Processed shell would be purchased from local processors through a shell buying program. DACS schedules shell collections, collects shell using dump trucks and front-end loaders, and then transports and stockpiles shell at a staging area in the city of Apalachicola for oyster restoration projects. Processed shell would be collected from 2 to 5 days per week, depending on the availability of shell and the time of year.

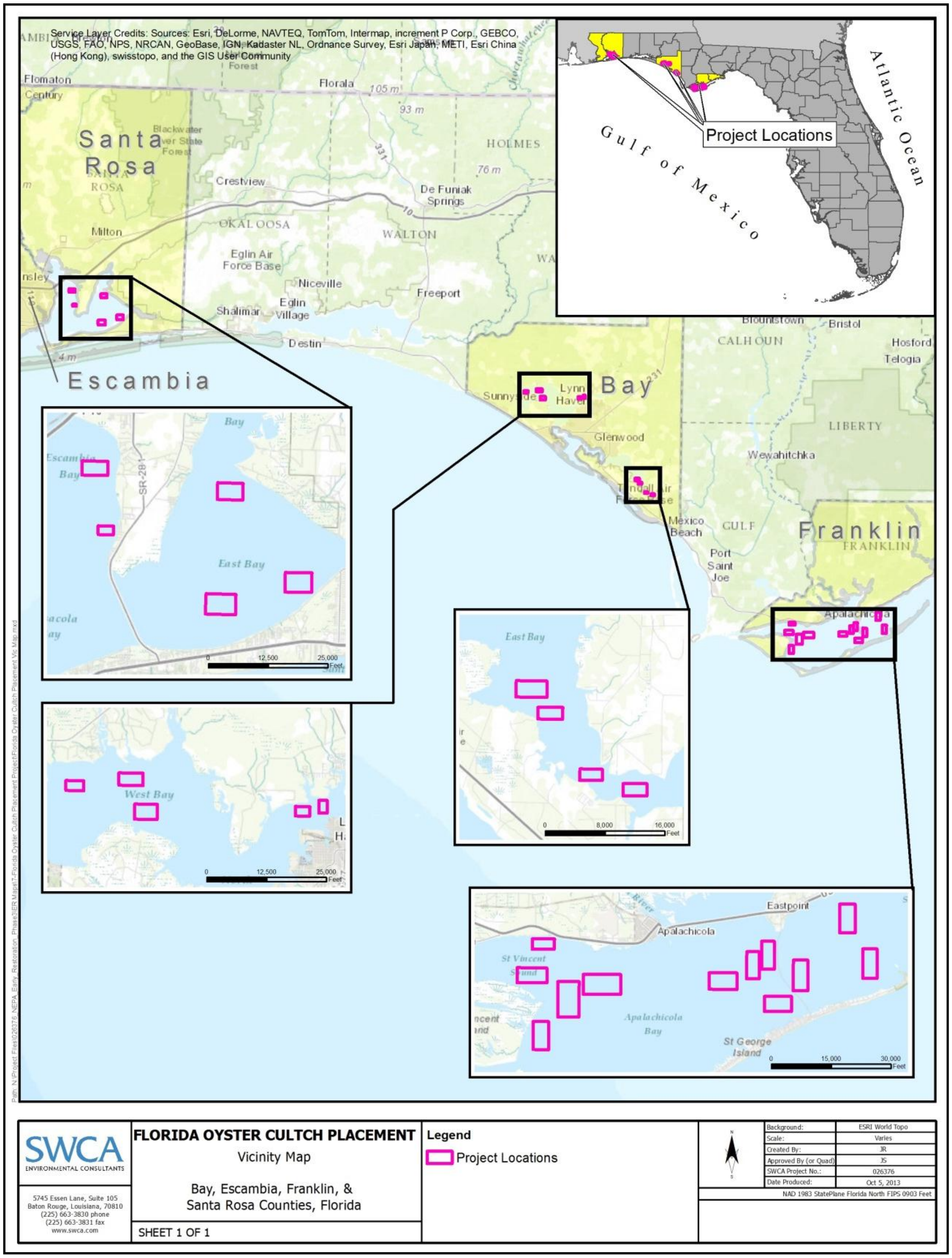

Figure 12-54. Oyster reef restoration would take place in the areas outlined in pink.

Oyster shells would be stored for at least 2 weeks to allow for a process called "seasoning." Seasoning involves sun exposure of oyster shells to dry and removes bacterial film from the shells to provide a cleaner substrate for larval attachment. Seasoned shell would be removed from the stockpile, placed on deck barges using front-end loaders and dump trucks, and transported to oyster reef sites. Once at the site, oyster cultch locations and specific deposition sites would be delineated and marked by staff prior to depositing cultch materials as specific substrate types are necessary to support the cultch.

Once the specific cultch locations have been determined, the cultch would be washed overboard using high-pressure water jets (See Figure 12-55 for images of this sequence of events). Similarly, fossil shell or lime rock would be transported by deck barge to the reef sites, where they would be washed overboard using a high-pressure water stream, or deposited using a crane and bucket. The method for deposition is determined by the material used and the configuration and elevation of the reef to be restored. Cultch would be deposited at a rate of 100 to 300 cubic yards per acre; the amount of material deposited is determined by the condition of the reef to be restored. In cases where the physical integrity of the reef has been severely damaged, up to 300 cubic yards may be required.

For Apalachicola Bay cultch deposition, loading would occur on one day and, based on the proximity to the in-water staging area, planting would be accomplished on the following day. For all estuaries west of Apalachicola Bay, loading would be accomplished in 2 or 3 days, and travel time to and from a given estuary (2 to 9 days) would yield a maximum project duration of 12 days to accomplish the restoration work at each individual site within an estuary.

12.28.4 Operations and Maintenance

Project work is expected to commence 7 to 12 months after funding is received. Oyster reef restoration activities are expected to be completed within 1 year after work begins.

Cultching activities have been historically conducted from February to November. Ideally, cultching activities are conducted prior to a spat fall event; however, cultching activities are similar to crop rotation in that many oyster reef complexes require routine maintenance in the form of cultching. DACS rotates which reefs receive the required attention based on commercial harvesting seasons, availability of material, and severity of reef conditions. Post construction performance monitoring would focus on the recruitment and growth of oysters on the new cultch placements. Restored reefs may become productive in as few as 3 to 6 months under optimal conditions, with oysters reaching market size in 12 to 18 months. However, since recruitment and survival can be highly variable, some reefs may not become productive for 2 to 5 years. It has been shown that restored reefs can remain productive for more than 10 years with little additional maintenance. Based on the expected longevity of the restored reefs, a monitoring program would assess oyster population parameters for 10 years.

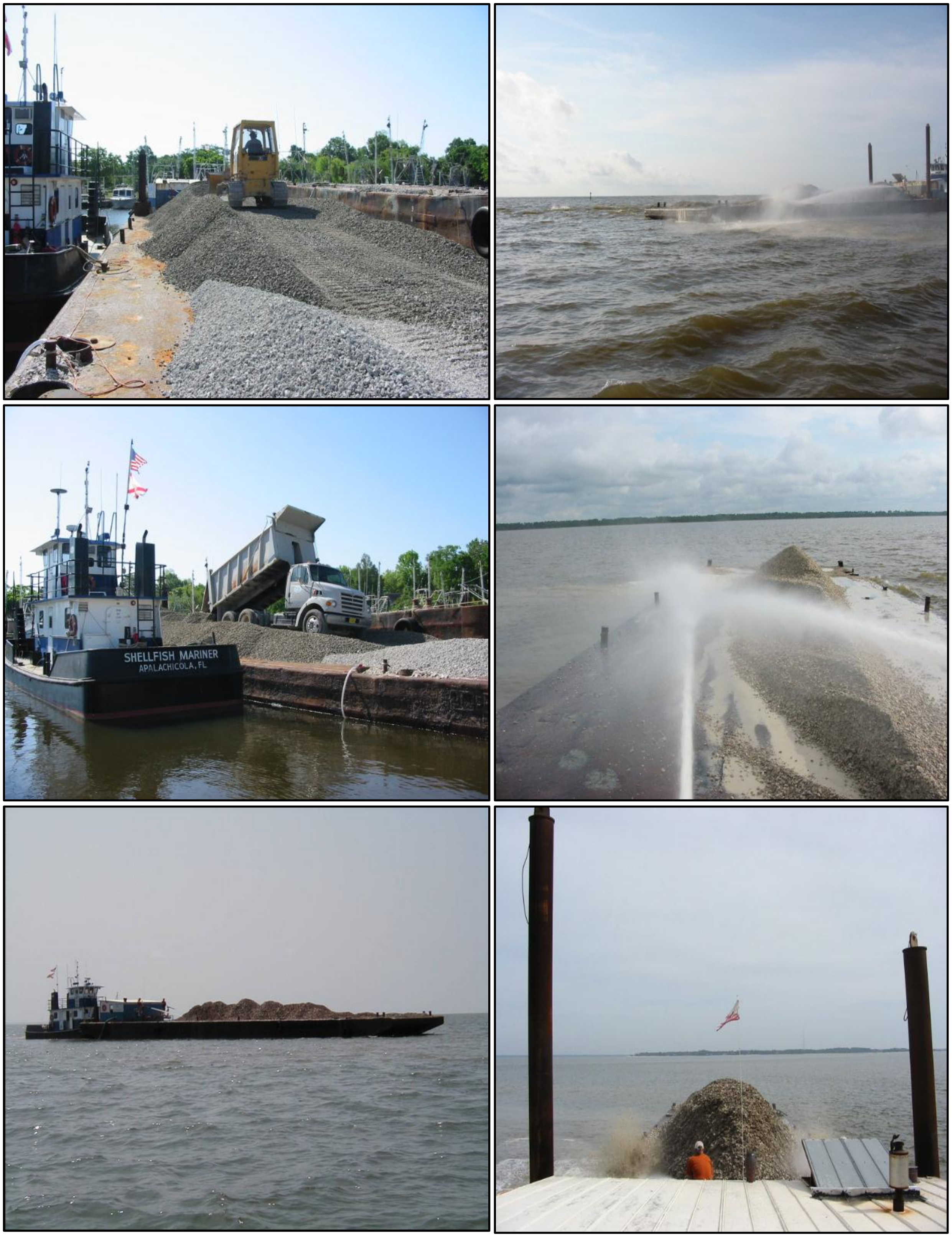

Figure 12-55. Examples of cultch loading and transportation (right images) and offloading using water cannon (left images).

DACS would be responsible for effectively assessing the status of oyster resources on reefs that are restored during this project and would collect information on a number of metrics in order to delineate reef locations and reef area, measure population parameters, and estimate production potential. The monitoring would include collecting oyster samples following project completion on all restored reefs and establishing a sampling schedule based on expected recruitments cycles. All restored reefs would be sampled twice a year from year 1 through year 5 and once a year from year 6 through year 10. Sampling intervals may be modified to assess significant events, which may affect oyster population dynamics. A total of 16 sampling trips are planned for each restored reef that would involve the use of the Standard Oyster Resource Management Protocol.

12.28.5 Affected Environment and Environmental Consequences

12.28.5.1 No Action

Both OPA and NEPA require consideration of the No Action alternative. For this Draft Phase III ERP proposed project, the No Action alternative assumes that the Trustees would not pursue this project as part of Phase III Early Restoration.

Under No Action, the existing conditions described for the project site in the affected resources subsections would prevail. Restoration benefits associated with this project would not be achieved at this time.

12.28.5.2 Physical Environment

12.28.5.2.1 Geology and Substrates

Affected Resources

Geology

The existing geology and substrates in project areas for oyster reef restoration is generally flat or gently sloping. The three bays where restoration is planned are part of the Gulf of Mexico formation. Each proposed project location supports existing oyster reef structures.

In general, the estuarine embayments are within the Gulf Coast Lowlands subdivision of the Gulf Coastal Plain. The lowlands constitute a series of parallel terraces rising from the coast in successively higher levels. They formed during the Pleistocene epoch, when fluctuating sea levels were associated with the growth and melting of ice caps. Dunes, barrier islands, beach ridges, and other topographical features were stranded inland as seas receded. Land surfaces of the lowlands are generally level and less than 100 feet above mean sea level (AMSL). Substantial areas are less than 30 feet AMSL and are characterized by excessive wetlands.

Soils

Soils in the area have been sculptured from alluvial plain underlain by sand, gravel, silt, and clay. The soil surveys for the various counties identify the areas for cultch placement as “waters of the Gulf of Mexico,” and no soils data are provided (Natural Resources Conservation Service [NRCS] 2013).

Environmental Consequences
Oyster reef restoration would have no adverse impacts on geology or substrates in the proposed project locations. Oyster cultch material would be placed on existing oyster reef structures and, therefore, would not alter the geology or substrates.

12.28.5.2.2 Hydrology and Water Quality

Affected Resources
Oyster cultch restoration would take place in nearshore, open-water habitats in three Florida bays. Existing hydrology and water quality are affected by shoreline development and management, as well as boat traffic in the bays and the Gulf of Mexico.

Water Quality
The CWA requires that the surface waters of each state be classified according to designated uses. Florida has six classes with associated designated uses, which are arranged in order of degree of protection required. According to 62.302-400, Fla. Admin. Code, all of the project occurs within Class II waters (Shellfish Propagation or Harvesting). Stricter standards for water quality are required for Class II Shellfish Harvesting Waters.The surface waters of the state are designated Class III unless described in Florida rule. The Pensacola Bay watershed and Apalachicola Bay is also identified as a priority waterbody under Florida's Surface Water Improvement Management (SWIM) Program, which develops comprehensive plans for at-risk waterbodies and directs the work needed to restore damaged ecosystems, prevent pollution from stormwater runoff and other sources, and educate the public. Additional oyster populations created by the proposed project would effectively increase water quality due to their filter feeding. Short-term water quality impacts are possible due to sediment disturbance and cultch deposition.

Outstanding Florida Waters
The Apalachicola River and Apalachicola Bay are listed as OFW's (FDEP 2013c).

Aquatic Preserves
In Florida, state aquatic preserves arelisted as OFWs. Specifically, Apalachicola Bay, Fort Pickens, Yellow River Marsh, St. Joseph Bay, Alligator Harbor, and St. Andrews Aquatic Preserves are located in the general area of the proposed cultch placements. Waters in aquatic preserves and state parks, as OFWs, require additional water quality considerations; the Florida Fish and Wildlife Conservation Commission (FWC) would be consulted to determine any concerns due to proposed project activities. Short-term impacts due to cultch placement are possible but would be negligible when considering the water quality improvements made by oyster filtering.

Floodplain
The entirety of the project area is within the Florida panhandle floodplain, and waters where the work would be done are effectively the drainage holding areas for the floodplain areas to the north. The actual floodplain would not be impacted by any of the proposed activities as they would occur in open-water areas.

Wetlands
The project is located in open water, and no wetlands are known to be in the project area. Land-based storage areas for cultch material would be placed outside of wetland areas.

Environmental Consequences
Oyster cultch restoration would have no long-term adverse impact on hydrology and water quality. Restoration would be completed at existing oyster reef locations so no water bottom impacts are expected as restoration cultch would be placed on natural cultch materials. There may be short-term impacts during the approximately 1-year-long period of construction. This would include increased sediment disturbance and turbidity during cultch placement. All required permits would be obtained, and conditions, permit requirements, and best management practices (BMPs) would be followed during construction.

The restoration would have a minor, beneficial impact on water quality in the immediate vicinity of the newly placed cultch material.

The placement of cultch for the submerged oyster reefs would result in short-term, minor, temporary impacts to water quality, specifically short-term elevations in turbidity. BMPs, along with other avoidance and mitigation measures required by state and federal regulatory agencies, would be employed to minimize any water quality and sedimentation impacts. Rivers and Harbors Act Section 10 and Clean Water Act Section 404 and water quality certifications would be required and all permit conditions would be adhered to.

12.28.5.2.3 Air Quality and Greenhouse Gas Emissions

Affected Resources
The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS have been set for six common air pollutants (also known as criteria pollutants)—particle pollution or particulate matter, ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead. Particulate matter is defined as fine particulates with a diameter of 10 micrometers or less (PM_{10}) and fine particulates with a diameter of 2.5 micrometers or less ($PM_{2.5}$). When a designated air quality area or airshed in a state exceeds a NAAQS, that area may be designated as a "nonattainment" area. Areas with levels of pollutants below the health-based standard are designated as "attainment" areas. To determine whether an area meets the NAAQS, air monitoring networks have been established and are used to measure ambient air quality. The EPA also regulates 187 hazardous air pollutants (HAPs) that are known or suspected to cause cancer or other serious health effects.

Air quality in the Florida panhandle is in attainment with the NAAQS (EPA 2013a). The FDEP Northwest District currently operates two air monitors near the proposed project areas, one in Santa Rosa County (Woodlawn Beach Middle School) and one in Bay County (St. Andrews State Park). The Woodlawn Beach Middle School monitor in Gulf Breeze records ozone and $PM_{2.5}$ concentrations, and the St. Andrews State Park monitor in Panama City records ozone and $PM_{2.5}$ concentrations. Readings at these monitors for the last 3 years show attainment with the NAAQS for ozone and $PM_{2.5}$ (FDEP 2013a). Sulfur dioxide attainment data were not available for these areas (EPA 2013b).

Greenhouse Gases

Gases that trap heat in the air are called greenhouse gases (GHGs). The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_x), and fluorinated gases. Over the past century, human activities have released large amounts of GHGs into the atmosphere, which are contributing to global warming. Global warming is defined as the ongoing rise in global average temperature near the Earth's surface and is known to cause changes in climate patterns.

According to the EPA, the average annual temperature in the southeastern portion of the United States has increased by approximately 2.0 degrees Fahrenheit (°F) since 1970. Winters, in particular, are getting warmer, and the average number of freezing days has decreased by 4 to 7 days per year since the mid-1970s. Most areas are getting wetter; autumn precipitation has increased by 30% since 1901 (EPA 2013c). In many parts of the region, the number of heavy downpours has increased. Despite the increases in fall precipitation, the area affected by moderate and severe drought has increased since the mid-1970s (EPA 2013c).

Average annual temperatures in the region are projected to increase from 4°F to 9°F by 2080. Hurricane-related rainfall is projected to continue to increase. Models suggest that rainfall will arrive in heavier downpours, with increased dry periods between storms. These changes would increase the risk of both flooding and drought. The coasts will likely experience stronger hurricanes and sea level rise. Storm surges could present problems for coastal communities and ecosystems (EPA 2013c).

Total GHG emissions in the state of Florida from 1990 to 2007 have increased at an average rate of 2.1% per year. Total GHG emissions in 2007 were 290 million metric tons of CO_2 equivalent (CO_2e). In 2007, 91% of GHG emissions in Florida were CO_2 emissions (FDEP 2010).

Environmental Consequences

Oyster cultch restoration would take place in nearshore, open-water habitats in three Florida bays. Existing air quality and GHGs are affected by shoreline development and management, as well as boat traffic in the bays and Gulf of Mexico. Air quality within the Florida panhandle is in attainment with the NAAQS.

Project implementation would require the use of heavy equipment, which would temporarily affect air quality in the project vicinity due to construction vehicle emissions. Fine particulate matter associated with the oyster cultch placement may become airborne during materials transfers and the deployment process. Available BMPs would be employed to prevent, mitigate, and control potential air pollutants during project implementation. No air quality–related permits would be required. Any air quality impacts that would occur would be localized and short in duration. Therefore, impacts to air quality would not be considered significant.

In terms of construction equipment, the barge, dump truck, and front-end loader would likely contribute most of the GHG emissions; GHG emissions from remaining equipment would be negligible. GHG emissions from the barge have been estimated using the operating assumption of 8 hours per day and 192 days of use for cultch loading, transportation, and offloading, and GHG emissions from the dump truck and front-end loader have been estimated using the operating assumption of 8 hours per day and 54 days of use for cultch loading. These estimates represent maximum usage based on proposed construction plans. Based on the estimated 300 days of combined equipment operation, the project would be estimated to contribute approximately 912.72 metric tons of total CO_2e emissions (Table 12-46), well below the EPA threshold of 25,000 metric tons per year for GHG emissions. Therefore, the proposed project would result in a minor impact to ambient air quality.

Table 12-46. Greenhouse Gas Impacts of the Proposed Project for Major Construction Equipment.

CONSTRUCTION EQUIPMENT	NO. OF DAYS OPERATED[1]	CO_2 (METRIC TONS)[2]	CH_4 (CO_2e) (METRIC TONS)[3]	NO_x (CO_2e) (METRIC TONS)	Total CO_2e (METRIC TONS)
Barge	192	864.0	1.92	7.68	873.6
Dump truck	54	18.36	0.01	0.11	18.48
Front end loader	54	20.52	0.01	0.11	20.64
Total					**912.72**

[1] Emissions assumptions for all equipment based on 8-hour days of operation per piece of equipment.
[2] CO_2 emissions assumptions for diesel and gasoline engines based on EPA (2009).
[3] CH_4 and NOx emissions assumptions and CO_2e calculations based on EPA (2011).

12.28.5.2.4 Noise

Affected Resources

Noise can be defined as unwanted or nuisance sound. The Noise Control Act of 1972 (42 USC 4901–4918) was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. Amplitude is the magnitude of a sound and is usually expressed in decibels (dB), a dimensionless ratio of sound pressure to a reference pressure. The A-weighted decibel (dBA) is the adjusted unit of sound used to describe the human response to noise from industrial and transportation sources. The threshold of hearing is 0 dB. A 3-dB increase is equivalent to doubling the sound pressure level, but is barely perceptible to the human ear.

Table 12-47 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Ambient noise levels in the project area are moderate. The major noise-producing source of the area year-round is related to urbanized areas and commercial, industrial, and residential boating. The waterways are typical of this part of Florida, with significant boat traffic and associated noise, especially on weekends.

Table 12-47. Typical noise levels for common sources.

NOISE SOURCE OR EFFECT	SOUND LEVEL (dBA)
Rock-and-roll band	110
Truck at 50 feet	80
Gas lawn mower at 100 feet	70
Normal conversation indoors	60
Moderate rainfall on foliage	50
Refrigerator	40
Bedroom at night	25

Source: Adapted from U.S. Department of Energy and Bonneville Power Administration (1986).

Environmental Consequences

The proposed project would generate most of its associated construction noise from cultch loading and offloading, with minor noise during cultch transportation. While this noise would be evident to those workers on the job and the immediate area, the project would not significantly add to existing ambient noise levels. Normal noise levels would be achieved at the end of each workday and after completion of the job. Short-term impacts associated with construction would be minor, and no long-term adverse impacts would occur.

12.28.5.3 Biological Environment

12.28.5.3.1 Living Coastal and Marine Resources

Coastal and Submerged Aquatic Vegetation

Affected Resources

The presence and productivity of seagrasses in nearshore environments largely depends upon light availability. Although seagrasses have been recorded at 230-foot depths in clear waters, they are more generally restricted to shallow ocean or estuarine waters due to the rapid decline of light with depth (Green and Short 2003). In addition to the availability of light, a number of other factors also affect seagrasses. These include water temperature, salinity, sediment and water nutrient content, wave fetch (length of open water over which the wind can blow unimpeded), turbidity, and water depth (Koch 2001; Merino et al. 2005; USFWS 1999). Seagrasses generally grow in salinities that range from fresh water to 42 parts per thousand (ppt) and can tolerate short-term salinity fluctuations, but most have an optimum salinity range from 24 to 35 ppt.

Environmental Consequences

The occurrence of seagrasses at the project site is not likely, due to the water quality and other past disturbance to the project areas. Past surveys, discussed above, also indicate that there are no seagrass beds in the vicinity of the project areas in Pensacola Bay, St. Andrew Bay or Apalachicola Bay. Therefore no environmental consequences to seagrass beds are anticipated. Instead, the proposed project would likely benefit water quality in the three bay systems.

Due to the lack of existing seagrass beds or minimal coverage of seagrass in the project area, no adverse impacts from the proposed activities would be expected. Additionally, BMPs to avoid impacts to seagrass have been incorporated into the construction plan, including 1) situating anchoring sites to avoid impacts to seagrass, if found to be in the project area; 2) avoiding access over existing seagrass to the extent practicable to minimize prop-scarring impacts; and 3) monitoring turbidity levels during construction and implementing additional BMPs if turbidity levels rise too high based on local and state regulatory/permit levels.

Marine and Estuarine Fauna (fish, shell beds, and benthic organisms)

Affected Resources

The project areas in Bay, Escambia, Franklin, and Santa Rosa Counties provide habitat for numerous fish and other marine species. The value of marine habitats at the proposed project area has been affected by population growth, urban development, and water contamination from runoff and wastewater disposal. Increased coastal development, in particular, has contributed to displaced habitats, loss of wetlands, and greater amounts of stormwater runoff entering rivers, bays, and their tributaries (Northwest Florida Water Management District [NFWMD] 2011). Nonetheless, the marine environment at the project sites provides habitat to an array of aquatic species, including ladyfish (*Elops saurus*), hardhead catfish (*Arius felis*), gafftopsail catfish (*Bagre marinus*), and pigfish (*Orthopristis chrysoptera*), among others. Benthic organisms, such as bivalves, gastropods and other mollusks, anemones, amphipods, annelids, crustaceans, and echinoderms, can also be abundant in these waters (FWC 2001).

Environmental Consequences

No adverse impacts to fish, shell beds, and benthic organisms would be anticipated as a result of project implementation. Oyster shells would be added in areas where they are already part of the natural marine ecosystem; therefore, short- and long-term, moderate benefits would be likely to occur.

Protected Species

Affected Resources

Protected species and their habitats include ESA-listed species and designated critical habitats, which are regulated by either the USFWS or the NMFS. Protected species also include marine mammals protected under the Marine Mammal Protection Act, essential fish habitat (EFH) protected under the Magnuson-Stevens Fishery Conservation and Management Act, migratory birds protected under the Migratory Bird Treaty Act (MBTA) and bald eagles protected under the Bald and Golden Eagle Protection Act (BGEPA).

The federally listed threatened and endangered species reported for the project area in Bay, Escambia, Franklin, and Santa Rosa Counties include five species of sea turtles, West Indian manatee (*Trichechus manatus*), piping plover (*Charadrius melodus*), and gulf sturgeon (*Acipenser oxyrinchus desotoi*), as well as one proposed species, red knot (*Calidris canutus rufa*) (USFWS 2013). A list of federally designated threatened, endangered, and candidate wildlife species known or believed to occur in the project area is shown in Table 12-48. The project area is completely in-water and while adjacent to does not overlap with designated or proposed critical habitat for sea turtles or piping plover. Gulf sturgeon critical habitat is within the project area and is discussed below.

Sea Turtles and Marine Mammals

There are five species of endangered or threatened sea turtles that may occur or have the potential to occur in the project area. These include green turtle, hawksbill turtle, Kemp's ridley turtle, leatherback turtle, and loggerhead turtle. Sea turtles forage in the waters of the coastal Florida panhandle region and have the potential to occur in the waters where in-water work is proposed. The project site contains potentially suitable sea turtle nesting habitat along the sandy beach, but the site is on the bay side where nesting is uncommon.

Twenty-two marine mammals are native to the Gulf of Mexico: 21 pelagic species of whales and dolphins, and the West Indian manatee (see Chapter 3). Of these species, the endangered West Indian manatee has the potential to occur in the project area waters. Manatee typically seek out shallow seagrass areas as preferred feeding habitat. Additionally, bottlenose dolphin (*Tursiops*) populations are known to migrate into bays, estuaries, and river mouths and could be located in the proposed project area (NMFS 2013a). Bottlenose dolphins have been observed entering and leaving nearshore coastal waters (NMFS 2012).

Table 12-48. Threatened, endangered, and candidate wildlife species known or believed to occur in Bay, Escambia, Franklin, and Santa Rosa Counties.

RESOURCE CATEGORY	COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	STATE STATUS	NATURAL COMMUNITIES
Birds	Piping plover	*Charadrius melodus*	T (CH)	T	• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants **Potential habitat present**
Birds	Red knot	*Calidris canutus rufa*	P		• Estuarine: exposed unconsolidated substrate • Marine: exposed unconsolidated substrate • Terrestrial: dunes, sandy beaches, and inlet areas. Mostly wintering and migrants **Potential habitat present**
Fish	Gulf sturgeon	*Acipenser oxyrinchus desotoi*	T (CH)	T	• Estuarine: various Marine: various habitats Riverine: alluvial and blackwater streams **Habitat presentand critical habitat present**
Mammals	West Indian manatee	*Trichechus manatus latirostris*	E	E	• Estuarine: submerged vegetation, open water • Marine: open water, submerged vegetation • Riverine: alluvial stream, blackwater stream, spring-run stream **Potential habitat present**
Reptiles	Green turtle	*Chelonia mydas*	E	E	• Terrestrial: sandy beaches; nesting **Potential habitat present**
Reptiles	Hawksbill turtle	*Eretmochelys imbricata*	E	E	Marine: open water; no nesting **Potential habitat present**
Reptiles	Kemp's ridley turtle	*Lepidochelys kempii*	E	E	• Terrestrial: sandy beaches; nesting **Potential habitat present**
Reptiles	Leatherback turtle	*Dermochelys coriacea*	E	E	• Terrestrial: sandy beaches; nesting **Potential habitat present**
Reptiles	Loggerhead turtle	*Caretta caretta*	T	T	• Terrestrial: sandy beaches; nesting **Potential habitat present**

Gulf Sturgeon

Gulf sturgeon are restricted to the Gulf of Mexico and its drainages, occurring primarily from the Pearl River in Louisiana to the Suwannee River, in Florida (NMFS 2009). Adult fish reside in rivers for 8 to 9 months each year and in estuarine or Gulf of Mexico waters during the 3 to 4 cooler months of each year (NMFS 2009). Important marine habitats include seagrass beds with sand and mud substrates (Mason and Clugston 1993). Gulf sturgeon critical habitat was jointly designated by the NMFS and USFWS on April 18, 2003 (50 Code of Federal Regulations [C.F.R.] 226.214). Two of the three project sites are located within gulf sturgeon designated critical habitat. The Escambia County project site is located in Pensacola Bay Critical Habitat Unit 9 and the Franklin County project site is located in Apalachicola Bay Critical Habitat Unit 13. Critical habitat was designated based on seven primary constituent elements (PCEs) essential for the species' conservation, as defined in the 2003 *Federal Register* notice for gulf sturgeon critical habitat (*Federal Register* 2003).

According to the 2003 *Federal Register* notice for gulf sturgeon critical habitat, the Pensacola Bay system provides winter feeding and migration habitat for gulf sturgeon from the Escambia River and Yellow River subpopulations. Over the past 4 years, FDEP researchers have conducted tracking studies in the Pensacola Bay system to observe gulf sturgeon winter migrations and have identified specific areas in the bays where Escambia River and Yellow River gulf sturgeon collect, or migrate through, during the fall and winter season. These studies also identified two main habitat types where gulf sturgeon concentrate during winter months. Movement is generally along the shoreline area of Pensacola Bay. Gulf sturgeon showed a preference for several areas in the bay, including Redfish Point, Fort Pickens, and Escribano Point, near Catfish Basin (Craft et al. 2001:32; NMFS 1998). Sandy shoal areas, located along the south and east sides of Garcon Point, the south shore of East Bay (Redfish Point area), and near Fair Point, appear to be commonly used, especially in the fall and early spring. During midwinter, sturgeon are commonly found in deep holes located north of the barrier island at Fort Pickens, south of the Pensacola Naval Air Station, and at the entrance of Pensacola Pass. The depth in these areas ranges from 6 to 12.1 meters (20–40 feet). Other areas where tagged fish were frequently located include Escribano Point, near Catfish Basin, and at the mouth of the Yellow River. Previous incidental captures of gulf sturgeon have been recorded in Pensacola Bay, Big Lagoon, and Bayou Grande (Lorio 2000; Reynolds 1993).

The 2003 *Federal Register* provides further information for the Apalachicola Bay system; it states that Apalachicola Bay provides winter feeding migration habitat for the Apalachicola River gulf sturgeon subpopulation. Gulf sturgeon have been documented by sightings, incidental captures, and telemetry studies throughout Apalachicola Bay, East Bay, St. George Sound, St. Vincent Sound, and Indian Lagoon (Odenkirk 1989; Swift et al. 1977; Wooley and Crateau 1985). Gulf sturgeon have also been documented in Indian Pass, West Pass, East Pass, and just north of Dog Island (Odenkirk 1989; Wooley and Crateau 1985). Substantial weight gain and the presence of suitable habitat for prey items indicate that gulf sturgeon are feeding while in these bodies of water (Odenkirk 1989; Wooley and Crateau 1985). These areas are also used for accessing adjacent marine and estuarine feeding areas proposed in Unit 11. Gulf sturgeon are believed to migrate from Apalachicola Bay into the Gulf of Mexico, following prevailing currents and exiting primarily through the two westernmost passes (Indian and West) (Odenkirk 1989). No gulf sturgeon have been documented using Sike's Cut, a human-made opening established in the 1950s that bisects Little St. George Island and St. George Island; therefore, Sike's Cut is excluded from our proposed designation. See Figure 12-56 for critical habitat areas for gulf sturgeon.

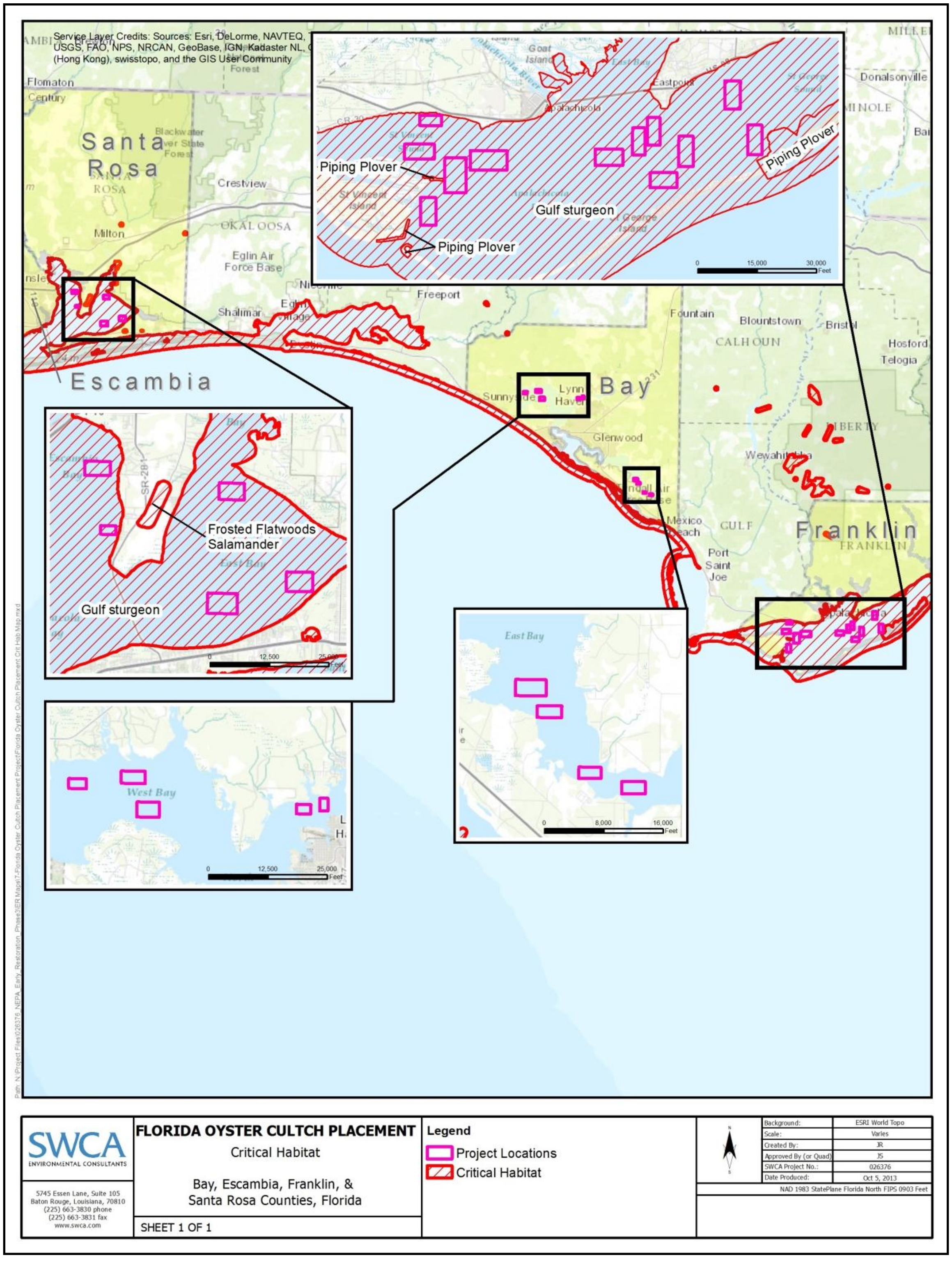

Figure 12-56. Critical habitat map for oyster cultch restoration project locations.

Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The NMFS has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell, and rock substrates, and the estuarine water column. The EFH within the project area include emergent wetlands, mud substrate, and estuarine water columns for species of fish, such as red drum, brown shrimp, pink shrimp, and white shrimp. There are no marine components of EFH in the vicinity of the project site.

The area also provides habitat for prey species (e.g. Gulf menhaden, shad, croaker and spot) that are consumed by larger commercially important species. In addition, the area provides habitat for spotted seatrout, striped mullet, southern flounder, Atlantic croaker, and Gulf menhaden. Table 12-49 provides a list of the species that NMFS manages under the federally Implemented Fishery Management Plan in the vicinity of Pensacola, Andrew and Apalachicola Bays.

Table 12-49. List of species managed by NMFS in vicinity of the project study area (NMFS EFH mapper, 2013).

Management Unit / Species	Lifestage(s) Found at Location	FMP
Red Drum (*Sciaenops ocellatus*)	ALL	Red Drum
Highly Migratory Species		
Atlantic Sharpnose Shark	All	Highly Migratory Species
Blacknose Shark	All	
Blacktip Shark	All	
Bonnethead Shark	All	
Bull Shark	All	
Finetooth Shark	Juvenile, Adult	
Great Hammerhead Shark	All	
Lemon Shark	Adult	
Nurse Shark	Juvenile, Adult	
Sandbar Shark	Juvenile, Adult	
Scalloped Hammerhead Shark	All	
Spinner Shark	All	
Tiger Shark	Juvenile	
Shrimp		
Brown shrimp (*Penaeus aztecus*) White shrimp (*Penaeus setiferus*) Pink shrimp (*Penaeus duararum*) Royal red shrimp (*Pleoticus robustus*)	ALL	Shrimp
Coastal Migratory Pelagics		
King mackerel (*Scomberomorus cavalla)* Spanish mackerel (*Scomberomorus maculatus*) Cobia (*Rachycentron canadum*) Dolphin (*Coryphaena hippurus*)	ALL	Coastal Migratory Pelagics

Management Unit / Species	Lifestage(s) Found at Location	FMP
<u>**Reef Fish**</u>		
Balistidae - Triggerfishes		
Gray triggerfish (Balistes capriscus)		
Carangidae - Jacks		
Greater amberjack (Seriola dumerili)		
Lesser amberjack (Seriola fasciata)		
Almaco jack (Seriola rivoliana)		
Banded rudderfish (Seriola zonata)		
Labridae - Wrasses	ALL	Reef Fish
Hogfish (Lachnolaimus maximus)		
Lutjanidae - Snappers		
Queen snapper (Etelis oculatus)		
Mutton snapper (Lutjanus analis)		
Schoolmaster (Lutjanus apodus)		
Blackfin snapper (Lutjanus buccanella)		
Red snapper (Lutjanus campechanus)		
Cubera snapper (Lutjanus cyanopterus)		
Gray (mangrove) snapper (Lutjanus griseus)		
Lane snapper (Lutjanus synagris)		
Wenchman (Pristipomoides aquilonaris)		
Vermilion snapper (Rhomboplites aurorubens)		
Malacanthidae – Tilefishes		
Goldface tilefish (Caulolatilus chrysops)		
Blackline tilefish (Caulolatilus cyanops)		
Blueline tilefish (Caulolatilus microps)		
Serranidae – Groupers		
Speckled hind (Epinephelus drummondhayi)		
Yellowedge grouper (Epinephelus flavolimbatus)		
Red grouper (Epinephelus morio)		
Warsaw grouper (Epinephelus nigritus)		
Snowy grouper (Epinephelus niveatus)		
Nassau grouper (Epinephelus striatus)		
Marbled grouper (Epinephelus inermis)		
Black grouper (Mycteroperca bonaci)		
Yellowmouth grouper (Mycteroperca interstitialis)		
Gag (Mycteroperca microlepis)		
Scamp (Mycteroperca phenax)		
Yellowfin grouper (Mycteroperca venenosa)		

Piping Plover

The sandy beaches and shorelines adjacent to the project area offer suitable foraging and resting habitat for the piping plover during the winter migratory season, and piping plover may forage in the shallow waters of the project area. Natural shorelines in the proposed project vicinity provide suitable winter migration resting habitat for the piping plover. Piping plover wintering habitat includes beaches, mudflats, and sandflats, as well as barrier island beaches and spoil islands (Haig 1992 as cited by USFWS

2013). On the Gulf Coast, preferred foraging areas are associated with wider beaches, mudflats, and small inlets (USFWS 2013).

Red Knot

The red knot, a federal proposed species, uses the state of Florida both for wintering habitat and migration stopover habitat for those that continue to migrate down to specific wintering locations in South America (Niles et al. 2008) and could be present in the project area. Wintering and migrating red knots forage along sandy beaches, tidal mudflats, saltmarshes, and peat banks (Harrington 2001). Observations indicate that red knots also forage on oyster reef and exposed bay bottoms, and roost on high sand flats, reefs, and other sites protected from high tides (Niles et al. 2008). In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Threats to wintering and stopover habitat in Florida include shoreline development, hardening, dredging, deposition, and beach raking (Niles et al. 2008).

State-listed Birds, MBTA, and BGEPA

Migratory birds are protected under the MBTA. In Florida, the nesting season is from March 1 through August 1. However, raptors such as osprey and kites typically begin nesting behavior in late February or early March. Bald eagles are protected under the BGEPA. The bald eagle nesting season in Florida is from October 1 to May 15. The nearest bald eagle nest from activities proposed in Escambia Bay is approximately 3 miles north. There are several bald eagle nests throughout the St. Andrews Bay system, ranging from approximately 2 to 5 miles from proposed activities. There are numerous bald eagle nests within the Apalachicola Bay system, due in part to the more rural nature of this part of Florida; the nests are mainly located on St. Vincent Island and St. George Island. Some of the proposed oyster cultch placement in Apalachicola Bay are within a mile of eagle nests on St Vincent and St. George Islands (FWC 2013).

Environmental Consequences

Sea Turtles and Marine Mammals

The proposed project would have short-term, minor impacts to listed sea turtles, manatees, or other marine mammals. While these species may pass through the project area, they are able to move away and avoid construction noise.Turbidity would be anticipated to be minimal due to limitation of cultch placement to existing hard-substrate reef areas. Additionally, Standard Manatee Conditions for In-Water Work (USFWS 2011) and Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS 2006) would be implemented as part of the proposed project. Continued “operation” of the oyster beds through commercial harvest could have long-term temporary impacts. However, commercial harvesters are generally aware that marine mammals and sea turtles could be present and avoid them. We anticipate these conservation measures would minimize impacts to sea turtles or marine mammals

Overall, the oyster cultch placement on existing oyster reefs in the three bay systems is anticipated to have a net benefit to biological resources and special-status species by creating more diverse habitats that encourage a broader and self-sustaining food web.

Gulf Sturgeon
The NMFS consultation letter (USFWS 2013) indicated that the availability/abundance of prey items is increased by the presence of healthy oyster reefs; therefore, it is likely that gulf sturgeon prey species (such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks, and crustaceans) would benefit from the creation of healthy oyster reef areas. NMFS also determined that water quality and sediment quality would not likely be adversely affected due to the limitation that oyster cultch placement only occur over existing hard substrates (per the USACE Programmatic Permit's Special Condition 15), and because Florida limits the placement of cultch material for DACS's oyster aquaculture program to existing shell substrate (i.e., oyster reefs). The proposed project would be unlikely to cause sediments to be disturbed or turbidity to be significantly increased from the placement of shell material or transplanted oysters. Therefore, any effect to the essential features of water quality or sediment quality from increased turbidity or disturbances to sediments would be insignificant. Because Special Condition 5(f) of the USACE programmatic permit prohibits aquaculture activities in river mouths, ocean passes or cuts, and navigation channels, and FDACS does not plant cultch in these locations for practical reasons (i.e., bottom scour, vessel traffic, or depth), NMFS determined there would be no effects associated with reef placement. Therefore, the potential effect to the migratory pathway for gulf sturgeon would be minor.

The proposed project would have short-term, minor adverse impacts to the gulf sturgeon or its critical habitat. There would be no long-term impacts to PCEs identified or individual fish. Although temporary adverse impacts may occur to water quality within the project and mitigation areas due to turbidity created from the proposed activities, these impacts would be confined to the project area via a turbidity curtain and would be temporary in nature as suspended sediments would quickly settle out following completion of the proposed actions. Sediment quality is expected to improve following removal of contaminated sediments. To further avoid and minimize potential short-term impacts to gulf sturgeon, in-water activities would occur from May to September when gulf sturgeon use riverine habitats.

Essential Fish Habitat
An EFH assessment will be coordinated with the NMFS Habitat Conservation Division. If necessary, species specific measures would be recommended by NMFS and would be incorporated into the project construction plan. The project would not result in adverse, direct impacts to emergent wetlands, existing oyster reefs, or Submerged Aquatic Vegetation (SAV). Most motile fauna such as crab, shrimp, and finfish will likely avoid the area of potential effect during the construction process. The project may result in minor, adverse short term impacts to benthic organisms and temporarily affect habitat utilization by individuals considered under EFH fishery management plans.

Impacts to EFH, or the natural processes sustaining EFH, from the offloading of cultch material from barges using spray cannons or large excavator type equipment, may be detectable but would be localized and would not measurably alter natural conditions. Small changes to local population numbers, population structure, and other demographic factors would be unlikely to occur. Sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of species.

Potential impacts to EFH in the proposed locations for the Florida Oyster Cultch Plant restoration project have been assessed. Implementing the project would not result in the creation or conversion of one EFH habitat type to another type, as oyster cultch planting activities are proposed to occur in areas of existing oyster bars. Disturbance to any EFH and species using the habitat in areas adjacent to locations where bars would be restored would be brief and insignificant with risks further mitigated by following identified BMPs during construction. No adverse impacts to other EFH types are anticipated to result from the proposed restoration techniques. Finally, the lack of adverse effects is a reflection of the *net* benefit of the project which is focused on restoring a habitat critical to native oysters. This habitat would not be suitable if the bars were not restored. Therefore, the project is not likely to adversely affect EFH.

Piping Plover and Red Knot

The main risk to piping plover and red knot would be from human disturbance during resting and foraging in habitats adjacent to work areas. The proposed project would result in short-term increases in noise, which could startle individuals, though normal activity is expected to resume within minutes. Alternatively, the noise could cause the piping plovers or red knots to move to a nearby area as alternate available habitat is abundant. Piping plovers and red knots are highly mobile species and, if disturbed by construction activities, may be temporarily displaced from foraging and resting areas. However, this displacement would be within normal movement patterns. Therefore, these effects would be considered short term and minor.

State-listed Birds, MBTA, and BGEPA

Migratory birds are protected under the MBTA. If oyster cultch placement occurs during the nesting season (March 1 to August 1), and adjacent to shorelines where birds may be nesting, birds could be disturbed by noise generated by in-water construction activities. In such circumstances, FWC nesting shorebird avoidance measures will be followed. These measures generally call for surveys within 300 feet and an avoidance buffer of 300 feet for nesting birds.

The proposed project in Apalachicola Bay may have short-term, minor effects on nesting bald eagles due to their proximity to cultch placement operations; bald eagle nests may be less than 1 mile from certain oyster cultch placement locations. Florida bald eagle regulations and permitting information from the FWC and USFWS state that “an eagle permit(s) may be required for any project or activity within 660 feet of a bald eagle’s nest tree.” None of the nests appear to be within this 660-foot buffer. Eagles within these bay environments are expected to be acclimated to boat and equipment activity. Bald eagle nests in St. Andrews and Escambia Bays are distant enough that short-term noise from proposed activities would not be likely to result in any impacts to bald eagles nesting there. Prior to commencement of construction activities, a nesting bird preconstruction survey would be conducted. Any identified nest would be avoided, and an appropriate buffer (660-foot or better) would be established in coordination with USFWS and FWC. The buffer would be maintained until the young have fledged.

While many bird species forage, rest, or nest in the general vicinity of the project area, the project would take place at least a half mile offshore, and most roosting/nesting occurs in the dune habitat. The level of project activity in open water could startle birds; however, it is not expected to disrupt feeding, resting, or nesting due to the distance from shore. Care would be taken to minimize noise and vibration near areas where foraging or resting birds are encountered. All disturbances would be minor and short term. Nesting should not be impacted because the proposed project would not occur in nesting habitats and activity would be limited to open-water areas.

Section 7 and Essential Fish Habitat Consultations

Section 7 ESA consultations with the USFWS and NMFS are ongoing for the proposed project. An EFH consultation under the Magnuson-Stevens Fishery Conservation and Management Act also would be completed to address any situations where proposed project activities may affect EFH habitat. The project would incorporate any additional conservation recommendations provided by the NMFS and the USFWS during the consultation to avoid orminimize any impacts from the proposed project on listed species or EFH.

Invasive Species

Affected Resources

Non-native invasive species could alter the existing terrestrial or aquatic ecosystem within, and possible expand out into adjacent areas after the initial introduction. The invasive species threat, once realized, could result in economic damages. Prevention is ecologically responsible and economically sound. Chapter 3 described more about the regulations addressing invasive species, pathways, impacts, and prevention. At this time specific invasive species that may be present on the project site or could be introduced through the project have not yet been identified.

Environmental Consequences

Best Management Practices (BMPs) to control the spread of any invasive species present, and prevent the introduction of new invasive species due to the project will be implemented. In general, best management practices would primarily address risk associated with vectors (e.g., construction equipment, personal protective equipment, delivery services, foot traffic, vehicles/ vessels, shipping material). There are many resources that provide procedures for disinfection, pest-free storage, monitoring methods, evaluation techniques, and general guidelines for integrated pest management that can be prescribed based upon specific site conditions and vectors anticipated. In addition, to best management practices, outreach and educational materials may be provided to project workers and potential users/visitors. Other measures that could be implemented are identified in Chapter 12 Appendix A. Due to the implementation of BMPs, we expect risk from invasive species introduction and spread to be short term and minor.

12.28.5.4 Human Uses and Socioeconomics

12.28.5.4.1 Socioeconomics and Environmental Justice

Affected Resources

The proposed project area spans four counties; these include Bay, Escambia, Franklin, and Santa Rosa Counties. Census information for these counties is listed in Table 12-50 (U.S. Census Bureau 2013).

Table 12-50. Census Data for Bay, Escambia, Franklin, and Santa Rosa Counties.

POPULATION	FLORIDA		BAY COUNTY		ESCAMBIA COUNTY		FRANKLIN COUNTY		SANTA ROSA COUNTY	
Population, 2010	18,801,310		168,852		302,715		11,549		158,512	
White alone	14,721,426	78.3%	139,978	82.9%	212,203	70.1%	9,597	83.1%	138,698	87.5%
Black or African American	3,121,017	16.6%	18,743	11.1%	69,321	22.9%	1,628	14.1%	10,303	6.5%
American Indian and Alaska Native alone	94,007	0.5%	1,182	0.7%	2,724	0.9%	81	0.7%	1,427	0.9%
Asian alone	507,635	2.7%	3,715	2.2%	8,779	2.9%	46	0.4%	3,170	2.0%
Native Hawaiian and other Pacific Islander alone	18,801	0.1%	169	0.1%	605	0.2%	12	0.1%	317	0.2%
Two or more races	357,225	1.9%	4,897	2.9%	9,081	3.0%	185	1.6%	4,597	2.9%
Hispanic or Latino	4,361,904	23.2%	8,780	5.2%	15,438	5.1%	577	5.0%	7,767	4.9%
White alone, not Hispanic or Latino	10,716,747	57.0%	132,718	78.6%	19,979	66.0%	9,078	78.6%	132,199	83.4%

Source: U.S. Census Bureau (2013).

Environmental Consequences

This project would have short-term, minor, direct adverse impacts on socioeconomic resources through the disruption of localized fishing during construction. Direct, short-term, moderate benefits through local job creation would result from construction activities. Long-term, indirect moderate benefits would result from increasing fisheries habitat along with the recreational and fishing values of the area.

This project is not designed to create a benefit for any group or individual, but rather would provide benefits on a local and regional basis. There are no indications that the proposed oyster reef restoration would be contrary to the goals of Executive Order 12898 or would create disproportionate, adverse human health or environmental impact on minority or low-income populations of the surrounding community.

12.28.5.4.2 Cultural Resources

Affected Resources
Most of this project work would take place in the water and would not have an upland component. However, there are cultural resources, notably shipwrecks, present in the Gulf of Mexico and associated inlets. There may also be cultural resources present in the nearshore areas.

Environmental Consequences
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.

12.28.5.4.3 Infrastructure

Affected Resources
Oyster reef restoration would take place in open-water habitats, away from any and all infrastructure.

Environmental Consequences
Oyster reef restoration would have no effect on infrastructure because the project work would take place in open-water habitat, away from existing infrastructure.

12.28.5.4.4 Land and Marine Management

Affected Resources
Oyster reef restoration would take place in open-water habitat in three Florida bays. There are existing management plans adjacent to oyster cultch placement in Escambia County, Gulf Islands National Seashore and Fort Pickens Aquatic Preserve; however, activities would occur outside the park and preserve boundaries. A management plan does cover the area where oyster cultch activities would occur in Franklin County. The Apalachicola National Estuarine Research Reserve (NERR) covers all of Apalachicola Bay (FDEP 2013b).

Environmental Consequences
Oyster reef restoration would have a moderate to major beneficial impact on marine management in the Florida panhandle. The project is expected to increase the amount of oyster reef present and lead to an increase in oyster populations throughout the Florida panhandle. All project work would be completed consistent with state and federal management plans.

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.

12.28.5.4.5 Aesthetics and Visual Resources

Affected Resources

The environment to be affected by the proposed project consists of open water at three locations in western Florida: (1) Pensacola Bay located in Escambia and Santa Rosa Counties, (2) St. Andrews Bay in Bay County, and (3) Apalachicola Bay in Franklin County. The three viewsheds consist of open bay waters that are visible from adjacent shorelines.

Environmental Consequences

Temporary impacts to visual resources would result from construction activity associated with enhancing existing oyster reefs. Placement of barges with cranes for lowering oyster cultch material would temporarily obstruct views of residents and visitors along the adjacent shoreline. However, the time needed for the cultch deployment is short, and, therefore, visual and aesthetic impacts would be for a short duration. The vertical profile of the deployed oyster cultch is designed to be below the water surface, and should not be visible from above the water. Overall, impacts to visual resources would be short term and minor.

12.28.5.4.6 Tourism and Recreational Use

Affected Resources

Tourism and recreation are common throughout the Florida panhandle region. Oyster reef restoration would be completed at locations throughout the panhandle and may take place in some areas where tourism and recreation are common.

Environmental Consequences

Oyster reef restoration would have either no impact or a beneficial impact on tourism and recreational use. If successful, the project may provide increased opportunities for oyster harvesting by recreational oyster fishermen.

12.28.5.4.7 Public Health and Safety and Shoreline Protection

Affected Resources

The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Emergency Planning and Community Right-to-Know Act; and the Hazardous Materials Transportation Act. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites that have already been contaminated by releases of hazardous materials, wastes, or substances.

A review of the EPA's EnviroMapper revealed that there are no CERCLA sites on or immediately adjacent to the proposed project area (EPA 2013b). The project would be conducted at multiple locations throughout the Florida panhandle. The specific public health and safety and shoreline protection conditions at each individual location may vary. Project locations would not be situated in areas with hazardous waste generation or disposal.

Environmental Consequences

Oyster reef restoration would have no impact on public health conditions because restoration techniques would follow health and safety guidance and would not take place in areas where public health conditions may be affected.

12.28.6 Summary and Next Steps

Per the Purpose and Need of the Draft Phase III ERP/PEIS, four alternatives are considered, including a no action (Alternative 1), selection of project types emphasizing habitat and living coastal and marine resources (Alternative 2), project types emphasizing recreational opportunities (Alternative 3), or a combination of both habitat and living coastal and marine resources and recreational opportunities (Alternative 4). As proposed, the Florida Oyster Cultch project implements restoration techniques within Alternatives 2 and 4.

The proposed Florida Oyster Cultch project would enhance and improve the oyster populations in Pensacola Bay, Andrew Bay and Apalachicola Bay. The proposed improvements include the placement of a total of 42,000 cubic yards of suitable cultch material over 210 acres of previously constructed oyster bars for the settling of native oyster larvae and oyster colonization in three Florida Bays. The project is consistent with Alternative 2 (Contribute to Restoring Habitats and Living Coastal and Marine Resources) and Alternative 4 (Preferred Alternative).

Draft NEPA analysis of the environmental consequences suggests that while minor adverse impacts may occur to some resource categories, no moderate to major adverse impacts are anticipated to result. The project would provide long-term benefits by promoting reef development for oysters by restoring approximately 210 acres of existing oyster reef habitat. The Trustees have started consultations and reviews under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the Historic Preservation Act, the Marine Mammal Protection Act, the Bald and Golden Eagle Protection Act, Coastal Zone Management Act, and other federal statutes. The Trustees will consider public comment and information relevant to environmental concerns bearing on the proposed actions or their impacts. Final determination on this project will be included in the final Phase III ERP/PEIS and Record of Decision.

12.28.7 References

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