Draft Environmental Assessment

Martin County, Florida
Tuckahoe Mansion Breakwater Construction Project
FEMA DR-4337-FL

August 2023

U.S. Department of Homeland Security
Federal Emergency Management Agency Region 4
Atlanta, Georgia

TABLE OF CONTENTS

APPENDICES

LIST OF ACRONYMS

BMP	Best Management Practice
CAA	Clean Air Act
CATEX	Categorical Exclusion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHHA	Coastal High Hazard Area
CWA	Clean Water Act
DHS	Department of Homeland Security
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FGS	Florida Geological Survey
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
FT	feet
FWC	Fish and Wildlife Conservation Commission
GHG	greenhouse gas
MSA	Magnuson–Stevens Fishery Conservation and Management Act of 1976
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
OFW	Outstanding Florida Waters
OSHA	Occupational Safety and Health Administration
PA	Public Assistance
PBO	Programmatic Biological Opinion
PL	Public Law
RCRA	Resource Conservation and Recovery Act

RHA	Rivers and Harbors Act
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
US	United States
VOC	volatile organic compounds
WOTUS	waters of the United States
WSRA	Wild and Scenic River Act
WSR	Wild and Scenic Rivers

1.0 INTRODUCTION

Hurricane Irma impacted Florida on September 11, 2017, bringing strong winds, heavy rains, storm surge, and flooding. President Trump signed a disaster declaration (FEMA-4337-DR-FL) on September 10, 2017, authorizing the Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) to provide federal assistance to the designated areas of Florida. This assistance is provided pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), and Public Law (PL) 93-288, as amended. Section 406 of the Stafford Act authorizes FEMA's Public Assistance (PA) Program to repair, restore, and replace state and local government and certain private nonprofit facilities damaged as a result of the event.

Martin County, Florida was designated to receive federal assistance for this disaster. Martin County applied for FEMA funding under the PA program and 406 Mitigation to construct a breakwater system totaling 2,600 linear feet (LF) of which FEMA Mitigation is funding 720 LF.

The proposed action presented by Martin County does not qualify for use of a DHS Categorical Exclusion (CATEX) (N5) for federal assistance for hazard mitigation actions in coastal areas subject to moderate wave action or V zones because the proposed project activities to construct the breakwater system is greater than one-half acre, which is not permitted by the CATEX.

This draft Environmental Assessment (EA) has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, (PL 91-190, as amended), and its implementing regulations at 40 Code of Federal Regulations (CFR) § 1500 to 1508, promulgated by the President's Council on Environmental Quality (CEQ). The Fiscal Responsibility Act of 2023, Public Law 118-5 (June 6, 2023), further amended NEPA. Recent changes to the CEQ regulations (40 CFR § 1500 to 1508) became effective on September 14, 2020; 85 Federal Register 43304-76 (July 16, 2020). As stated in 40 CFR § 1506.13, the new regulations apply to any NEPA process begun after September 14, 2020.

2.0 PURPOSE AND NEED

The objective of FEMA's PA Grant Program is to assist the community in recovering from the damage caused by natural disasters. The purpose of the action alternative presented in this EA is to construct a breakwater system to reduce erosion, protect adjacent infrastructure and minimize the potential for similar damage during future extreme storm events. As a result of the severe wave action and storm surge caused by Hurricane Irma, the shoreline was eroded, vegetation was damaged leading to undermining and scouring of the damaged seawall. The need for this project is to improve the capacity of the shoreline to withstand future storm events, reduce erosion, and decrease risk from future events to human life and improved property, including a National

Register of Historic Places (NRHP) listed structure. Furthermore, there is a need to address additional impacts from erosion including aquatic and terrestrial habitat restoration.

In accordance with federal laws and FEMA regulations, the EA process for a proposed federal action must include an evaluation of alternatives and a discussion of the potential, reasonably foreseeable environmental impacts. This EA was prepared in accordance with FEMA's regulations as required under NEPA. As part of this NEPA review, the requirements of other environmental laws and executive orders are addressed.

3.0 PROJECT LOCATION AND BACKGROUND

The proposed breakwater system would be located along Indian River Lagoon, 60-230 FT offshore from Indian Riverside Park, 1707 NE Indian River Drive Jensen Beach, FL 34957. The approximate start and end GPS coordinates for the entire length of the breakwater system are 27.22414516450896, -80.21127789040061 to 27.229916917493526, -80.21413712509843. However, FEMA's funding is limited to approximately 720 LF from 27.22726004024734, -80.21143345851658 to 27.2291435217899, -80.212508730178.

The damaged sea wall protected the embankment below a historic site, Tuckahoe Mansion, National Register of Historic Places (NRHP# 05001339). The NRHP listed structure was built at the base of an approximately 30-foot-high embankment that supports the historic mansion, and this embankment is a prehistoric shell midden. This shell midden is part of the Mt. Elizabeth Archaeological Site, which was individually listed in the National Register of Historic Places in 2002 (NRHP# 02001011). The seawall was constructed at the same time as the mansion. The shoreline along the elevated midden (especially areas north and south of the mansion) experienced repetitive damage for many years and from multiple disaster events. The historic concrete seawall was built on a shallow foundation which subsequently allowed the wave action and storm surge from Hurricane Irma in September 2017, to scour underneath and undermine the seawall and damage the midden mound, shoreline, and vegetation. This seawall was damaged beyond repair, and a sheet pile wall was installed seaward of the historic seawall. Wind-driven waves, boat wakes, and sea level rise have resulted in ongoing erosion of this shoreline. Additionally, the sea wall system connecting to the historic seawall on the southern portion was recently damaged beyond repair by Hurricane Nicole (DR-4680). No work has been started on the proposed construction project at the time of drafting this EA.

4.0 ALTERNATIVES

The alternatives considered in addressing the purpose and need stated are the No Action Alternative, and the breakwater system construction project (Preferred Action Alternative).

4.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the breakwater construction project would not be completed. Thus, the adjacent areas and community would not be protected from future storm surge events. Erosion would continue to occur along the shoreline further degrading terrestrial and aquatic habitats resulting in negative impacts to species, and continued impacts to the public park, and cultural resources. Therefore, the No Action Alternative has the potential to negatively affect the community, natural and cultural resources, species habitat, and tourism in the vicinity of the shoreline.

4.2 Alternative 2: Construction of the breakwater system (Preferred Alternative)

Under Alternative 2, Martin County would construct an offshore break water system composed of 24 segments totaling approximately 2,365 LF of shoreline, 2,165 LF of stone toe protection, oyster reefs, and seagrass recruitment area. The project would also include mangrove planting, and removal of invasive or toxic species. Martin County has submitted applications to FEMA for funding under the PA program to repair damages as a result of FEMA-4337-DR-FL (Hurricane Irma). The 400 LF sheet pile installation was completed on September 9, 2021. The breakwater system total approximately 2,600 LF between GPS coordinates (27.22414516450896, -80.21127789040061 to 27.229916917493526, -80.21413712509843. The project is projected to begin on September 2023 and be completed by the end of 2024. This Alternative would immediately increase the level of storm protection to the existing shoreline, species habitat, and adjacent infrastructure, including cultural resources.

4.3 Alternatives Considered and Dismissed

The alternative considered but dismissed were a near-shore planted living shoreline. However, failures with near shore planted living shorelines in other wide water locations, similar to this site, were not effective as it did not survive due to excessive wave action.

4.4 Impact Evaluation

The CEQ notes: “Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial” (40 CFR §1508.8).

When possible, quantitative information is provided to establish potential impacts; otherwise, the potential qualitative impacts are evaluated based on the criteria listed in Table 4.4.1 below.

Table 4.4.1: Impact Significance and Context Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
None/Negligible	The resource area would not be affected and there would be no impact, OR changes or benefits would either be non-detectable or, if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Impacts or benefits would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional scale impacts/benefits. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes to the resource would be readily measurable and would have substantial consequences/benefits on a local or regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

The impact analysis in this EA evaluates the potential environmental direct and indirect impact of the No Action, and Proposed Action alternatives. A summary table of the potential impacts of Alternative 1, and 2 are provided in Table 4.4.2 below.

Table 4.4.2: Environmental Consequences and Environmental Protection Measures and Required Permits by Environmental Resource

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
Physical Resource: Geology and Soils, and Farmland Protection Policy Act (FPPA)	No Action Alternative: *No Impact* Alternative 2: *Minor*	Alternative 2 would require compliance with the USACE NWP general conditions, including soil erosion and sediment control.
Physical Resource: Air Quality and Clean Air Act (CAA)	No Action Alternative: *No Impact* Alternative 2: *Negligible*	Not applicable.
Physical Resource: Climate Change	No Action Alternative: *No Impact* Alternative 2: *Negligible*	Not applicable.
Water Resources: Clean Water Act (CWA) and Surface Water	No Action Alternative: *No Impact* Alternative 2: *Minor*	Alternative 2 would require implementing all permit conditions and BMPs included in USACE Permit No. SAJ-2014-03008 (NWP-CMM) and the FDEP ERP (No. 43-199775-EI). Martin County would be required to obtain any permit modifications as needed.
Water Resource: Floodplain Management (EO 11988)	No Action Alternative: *No Impact* Alternative 2: *Minor/beneficial*	Alternative 2 would require compliance with the conditions and BMPs outlined in the FDEP ERP (No. 43-199775-EI), USACE NWP general conditions, and USACE Permit No. SAJ-2014-03008 (NWP-CMM).
Water Resource: Protection of Wetlands (EO 11990) and Wild and Scenic Rivers (WSR)	No Action Alternative: *No Impact* Alternative 2: *Minor*	Alternative 2 would require compliance with the conditions and BMPs outlined in the FDEP ERP (No. 43-199775-EI), USACE NWP general conditions, and USACE Permit No. SAJ-2014-03008 (NWP-CMM).
Water Resource: Coastal Zone Management Act (CZMA) and Coastal Barrier	No Action Alternative: *No Impact* Alternative 2: *Minor/None*	Alternative 2 would require an FDEP ERP, which would constitute consistency review under Florida's Coastal Zone Management (CZM) program. Martin County has obtained an ERP (No. 43-199775-EI) from FDEP. Martin County is required to obtain any permit

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
Resources Act (CBRA)		modifications as needed. Outside of CBRA unit.
Water Resource: Drinking Water and Groundwater	No Action Alternative: *No Impact* Alternative 2: *Negligible*	Hazardous materials used and hazardous wastes generated during construction would be managed in accordance with applicable environmental compliance regulations to prevent releases to groundwater.
Biological Resource: Fish and Wildlife	No Action Alternative: *Minor* Alternative 2: *Minor/beneficial*	Alternatives 2 would require implementation of FDEP ERP and USACE permit conditions regarding ESA, including provisions in JAXBO regarding sea turtles, fish, and mammals. Long term beneficial impacts expected from habitat enhancement.
Biological Resource: Vegetation	No Action Alternative: *Minor* Alternative 2: *Minor/beneficial*	Alternatives 2 would require implementation of FDEP ERP and USACE permit conditions and BMPs regarding vegetation protection during construction, and planting. Long term beneficial impacts expected from vegetation enhancement.
Biological Resource: Threatened and Endangered Species (Endangered Species Act)	No Action Alternative: *Minor* Alternative 2: *Minor/beneficial*	Under Alternatives 2, the following measures would be implemented: 1. USACE JAXBO 2. Sea Turtle and Smalltooth Sawfish Construction Conditions. 3. Manatee Conditions for In-water work All applicable conditions are included in Appendix G, H, and I. Long term beneficial impacts expected from habitat enhancement.
Biological Resource: Migratory Bird Treaty Act (MBTA)	No Action Alternative: *Negligible* Alternative 2: *Minor/beneficial*	Under alternative 2, short term impacts from construction activities area expected, however long-term beneficial impacts are expected from habitat enhancement.
Biological Resource: Magnusson-Stevens Fisheries Conservation Act (MSA)	No Action Alternative: *No Impact* Alternative 2: *Minor/beneficial*	Alternative 2 would require implementing all permit conditions and BMPs included in USACE Permit No. SAJ-2014-03008 (NWP-CMM). Long term beneficial impacts expected from habitat enhancement.
Biological Resource:	No Action Alternative: *No Impact*	Not applicable.

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
Bald and Golden Eagle Protection Act (BGEPA)	Alternative 2: *None*	
Cultural Resource: Historic and Archaeological Resources	No Action Alternative: *No Impact* Alternative 2: *Minor/beneficial*	Consultation letters were sent to the Florida State Historic Preservation Office (SHPO) and six Tribes with vested interest in Martin County, Florida for Alternatives 2 on March 30, 2023, with the following conditions: 1. The applicant will provide a full-time on-site SOI Qualified Archaeologist to monitor all construction activities, preferably one with osteological experience and the ability to identify human skeletal material. The archaeological monitor will have full stop authority if anything of archaeological or historic concern is encountered. The archaeological monitor will be on site during all construction activities for the course of the entire project and a final report will be submitted to the Florida SHPO and FEMA upon completion of the Tuckahoe Mansion Seawall Mitigation. 2. The applicant will have an archaeological consultant provide an updated Archaeological Site Form upon the completion of this project. The site form will record anything encountered during construction as well as documenting any measures that were taken to protect the archaeological site during the construction. 3. Once the living shoreline construction project and all associated work is complete, the applicant will be expected to submit an updated Florida SHPO Historical Structure and Archaeological Site Form and a final report including a complete photographic package documenting the relationship of the living shoreline to the two NRHP listed construction. The report, the Archaeological Site form, and the

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
		Historical Structure Form will be submitted to the Florida SHPO and FEMA. 4. Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way. 5. Prior to conducting repairs, the applicant must identify the source and location of fill material and provide this information to FDEM and FEMA. If the borrow pit is privately owned, or is located on previously undisturbed land, or if the fill is obtained by the horizontal expansion of a pre-existing borrow pit, FEMA consultation with the State Historic Preservation Officer will be required. Failure to comply with this condition may jeopardize FEMA funding; verification of compliance will be required at project closeout. 6. If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The Applicant will assure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The Applicant's contractor will provide immediate notice of such discoveries to the Applicant. The Applicant will contact the Florida Division of Historical Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with the State Historic Preservation Office, tribes, and other consulting parties as necessary. If unmarked human remains are encountered during permitted activities, all

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
		work will stop immediately, and the proper authorities will be notified in accordance with Florida Statutes, Section 872.05.
Socioeconomic Resource: Land Use	No Action Alternative: *No Impact* Alternative 2: *None*	Not applicable.
Socioeconomic Resource: Noise	No Action Alternative: *No Impact* Alternative 2: *Minor*	Noise generated from construction activities described in Alternatives 2 would be intermittent, heard only during daytime, and only for the duration of the project activities.
Socioeconomic Resource: Transportation and Traffic	No Action Alternative: *No Impact* Alternative 2: *Negligible*	Not applicable.
Socioeconomic Resource: Hazardous Materials/Wastes & Solid Waste	No Action Alternative: *No Impact* Alternative 2: *Minor*	Any hazardous materials discovered, generated, or used during implementation of the proposed project for Alternatives 2 would be disposed of and handled in accordance with applicable state and federal regulations. Any permits, or authorizations, if required, would be obtained prior to handling and disposal.
Socioeconomic Resource: Occupational Health and Safety	No Action Alternative: *No Impact* Alternative 2: *Minor*	To minimize occupational health and safety risks for Alternatives 2, workers would wear and use appropriate personal protective equipment and follow all applicable Occupational Safety and Health Administration (OSHA) standards and procedures. Contractors will be required to developed and implemented a health and safety plan prior to beginning work. Work areas would be clearly marked with appropriate signage and secured against unauthorized entry. Standard construction traffic control measures would be used to protect workers, residents, and the travelling public.
Socioeconomic Resource: Utilities	No Action Alternative: *No Impact* Alternative 2: *None*	Not applicable.
Socioeconomic Resource:	No Action Alternative: *No Impact*	Not applicable.

Resource and Resource Type	Environmental Consequence	Environmental Protection Measures and Required Permits
Environmental Justice (EO 12898), Equity, and Protection of Children	Alternative 2: *None*	

5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

5.1 PHYSICAL RESOURCES

5.1.1 GEOLOGY AND SOILS, AND FARMLAND PROTECTION POLICY ACT (FPPA)

According to the Florida Geological Survey (FGS), accessed March 29, 2023, the landform in which the project area is located is considered Eastern Valley, and the Florida Stratigraphic Geology of the shoreline adjacent to the project area is from the Pleistocene, within the Quaternary Period. Per the United States Department of Agriculture's (USDA) National Resources Conservation Service (NRCS) Web Soil Survey soil data, accessed March 30, 2023, the majority of the area is identified as water and the soils underlying the project area include: Paola and St. Lucie sands, 8% to 20% slopes (Map symbol 77/National Map Unit 1jq9t), described as knolls and ridges on marine terraces; Paola and St. Lucie sand, 0% to 8% slopes (Map symbol 6/National Map Unit 1jq7q), described as knolls and ridges on marine terraces; Waveland and Immokalee fine sands (Map symbol 4/National Map Unit 1jq7n), described mainly as flatwoods on marine terraces, including minor components described as drainageways on marine terraces, marine terraces on flatwoods, rises on marine terraces, depressions on marine terraces. The park property is located within zone PS-2 (Public Service District), as recorded by Martin County zoning data.

The purpose of the FPPA is to "minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses" (7 United States Code (USC) § 4201(b)). For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses. The project area was mapped, map units (1jq9t, 1jq7q) are not classified as prime farmland, while map unit (1jq7n) is classified as farmland of unique importance. See USDA Soil Survey Report (**APPENDINX J**).

Alternative 1 – No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no impact on geology or soils.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would cause minor soil disturbance and temporary turbidity associated with construction activities. The applicant is required to follow BMP to reduce soil disturbance, and soil erosion as part of USACE NWP general conditions. A portion of the project area is identified as farmland of unique importance, the only known farming activities date back to 1891 when the Racey Family started a pineapple and citrus plantation. The proposed action is to create a mangrove enhancement area; however, mangroves already exist within the identified farmland. Additionally, the land currently serves as a public park and farming activities are not conducted anymore. FEMA coordinated with USDA NRCS and received an exemption letter from completing the Farmland Conversion Impact Rating form (**APPENDIX K**). The impact to soils would not be significant.

5.1.2 AIR QUALITY AND CLEAN AIR ACT (CAA)

The CAA requires the US Environmental Protection Agency (EPA) to establish national ambient air quality standards for certain common and widespread pollutants based on standards established under the National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Areas that meet the quality standards for the criteria pollutants are designated as being in attainment. Areas that do not meet the air quality standards for one of the criteria pollutants are designated as being in nonattainment for that standard. Martin County is currently classified as being in attainment for all criteria pollutants stipulated under NAAQS.

Alternative 1 – No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no impact on air quality.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would generate short-term construction equipment exhaust emissions and short-term fugitive dust emissions. These air emissions would vary daily, depending on the level and type of work conducted, and would be limited to the project construction period. Pollutants that would be emitted from the internal combustion engine exhausts of construction vehicles and equipment include certain criteria pollutants, volatile organic compounds (VOCs), and certain greenhouse gases (GHGs). Annual construction emissions are expected to be less than the federal de minimis

thresholds for criteria pollutants and VOCs. Construction-related GHG emissions are expected to be negligible in terms of overall quantity and within the range expected for construction of this type and size. Fugitive dust would be generated by construction vehicles and equipment operations on dirt and sandy surfaces and by wind action on stockpiled materials. Generated fugitive dust would consist primarily of non-toxic particulate matter. Based on the review conducted, Alternative 2 would have a negligible impact on air quality. The impact would not be significant.

5.1.3 CLIMATE CHANGE

GHGs are emitted by both natural processes and human activities, and their accumulation in the atmosphere regulates temperature. GHGs included carbon dioxide, methane, nitrous oxide, and other compounds. There are currently no established thresholds or standards for GHGs. However, according to current guidance from the CEQ, a quantitative analysis and disclosure of GHG emissions is not warranted unless the proposed action's direct annual emissions would be greater than 25,000 metric tons of carbon dioxide equivalent.

Alternative 1 – No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no impact on climate change and no GHGs would be emitted.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would result in minor short-term impacts from temporary air emissions due to fuel usage by the construction equipment. These temporary emissions would be expected to be below regulatory standards and would be negligible.

5.2 WATER RESOURCES

5.2.1 CLEAN WATER ACT (CWA) AND SURFACE WATER

The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States (WOTUS) and regulating quality standards for surface waters. Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into WOTUS, including wetlands. Activities in WOTUS regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into WOTUS, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

The Environmental Regulatory Commission can designate an area as an Outstanding Florida Water (OFW). This special designation is applied to certain waters because of their natural attributes and is intended to protect existing good water quality. According to FDEP's OFW mapper, accessed March 30, 2023, the project area is identified as OFW Aquatic Preserve, named Jensen Beach to Jupiter Inlet Aquatic Preserve. In general, OFWs are protected through more stringent requirements for certain activities permitted by the FDEP or a Water Management District (WMD).

The threshold level for a significant impact to surface water would be a violation of state water quality criteria, a violation of federal or state discharge permits, or an unpermitted dredge or fill within the boundary of a jurisdictional waterbody or wetland.

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction or dredging activities; therefore, the No Action Alternative would have no impact on surface waters and WOTUS.

Alternative 2 – Offshore breakwater system construction

Alternative 2 construction activities would require work in a water body. The USACE determined the proposed action will result in a net increase of aquatic resource functions and services. Based on the review conducted, Alternative 2 would have short-term minor impacts on surface waters and WOTUS due to the temporary use of equipment during construction. Short-term impacts due to construction activities would be minimized by implementing BMPs and by following the conditions of USACE Permit No. SAJ-2014-03008 (NWP-CMM) (**Appendix B**). Improvement in water quality, due to introduction of oyster reefs are expected, providing long-term benefits in water quality.

5.2.2 FLOODPLAIN MANAGEMENT

Executive Order 11988, Floodplain Management (EO 11988), as implemented in 44 CFR Part 9, requires federal agencies to "avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." The 100-year floodplain is the area covered by water in the event of a 100-year flood, which is a flood that has a 1% annual chance of being equaled or exceeded in magnitude in any given year. The 500-year floodplain is the area covered by water in the event of a 500-year flood, which is a flood that has a 0.2% annual chance of being equaled or exceeded in magnitude in any given year. The 100- and 500-year floodplains are mapped on FEMA Flood Insurance Rate Maps (FIRMs).

Based on the current FEMA FIRM that covers the area of the Proposed Action, the proposed project location is identified on the FEMA FIRM as being within Flood Zone VE, which is also known as the Coastal High Hazard Area (CHHA) (**Appendix D**).

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no impact on the floodplain. Improved property adjacent to the project area would remain at risk from future flooding events.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would occur within the floodplain. Constructing the breakwater system will serve as flood risk protection to the areas landward of the existing shoreline, including improved property and upland habitat. The breakwater system is functionally dependent upon its location within the floodplain. An 8-step decision-making checklist, as required by 44 CFR Part 9 (Appendix D), has been completed for Alternative 2 (the Preferred Alternative). Based on the review conducted, Alternative 2 would have minor beneficial impacts on the floodplain.

5.2.3 PROTECTION OF WETLANDS (EO 11990) AND WILD AND SCENIC RIVERS ACT (WSRA)

Executive Order 11990, Protection of Wetlands (EO 11990), requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Section 404 of the CWA regulates the discharge of dredged or fill material into WOTUS, including wetlands. Section 10 of the Rivers and Harbors Act (RHA) grants the USACE permitting jurisdiction for structures or works in or affecting navigable WOTUS. FDEP's Environmental Resource Program (ERP) program regulates dredging and filling in wetlands and surface waters, and activities in uplands that generate stormwater runoff or otherwise alter surface water flows.

The purpose of the WSRA of 1968 (PL 90 to 542; 16 USC § 1271 to 1287) is to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations through the creation of the National Wild and Scenic Rivers System (NWSRS). River segments are designated part of the system by Congress or, if certain requirements are met, the Secretary of the Interior. Each designated river or segment is administered by a federal or state agency, tribe, or local government. The U.S. Forest Service (USFS), National Park Service (NPS), Bureau of Land Management (BLM), and the U.S. Fish and

Wildlife Service (USFWS) are the four primary federal agencies with responsibility for the NWSRS. There are two WSRs located in Florida, the Wekiva River and Loxahatchee River.

The proposed project location is within Indian River Lagoon. According to the USFWS's National Wetlands Inventory (NWI), accessed March 29, 2023, the proposed project location is within a designated wetland identified as Estuarine and Marine Deepwater (**Appendix F**).

A portion of Loxahatchee River is in Martin County, however it is at the south end of the county, while the project area is at the north end of the county, over 16 nautical miles away.

The threshold level for a significant impact to wetlands or a WSR would be a violation of federal or state discharge permits.

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no impact on wetlands or a WSR.

Alternative 2 – Offshore breakwater system construction

The proposed project location is not located near or adjacent to a WSR; therefore, no impacts to WSR are anticipated. Alternative 2 would involve constructing a breakwater system, with toe protection, creating a seagrass recruitment and mangrove enhancement areas within the designated wetland. Additionally, invasive species would be removed. Temporary increases in turbidity would be expected due to construction activities; however, no long-term impacts are expected due to implementation of BMPs. FDEP determined wetlands wouldn't be impacted by the proposed action and mitigation measures are not required. The applicant would be required to comply with the FDEP ERP (No. 43-199775-EI), including staging outside of wetlands and removal of debris; USACE NWP general conditions, including placing heavy equipment on mats or other measures to minimize soil disturbance in wetlands and SAJ-2014-03008 (NWP-CMM) specific conditions to minimize impacts from construction. The permit documentation is found in **Appendix B and C.**

5.2.4 COASTAL ZONE MANAGEMENT ACT (CZMA) and COASTAL BARRIER RESOURCES ACT (CBRA)

The CZMA provides the management of the nation's coastal resources. The CZMA defines the coastal zones where development must be managed to protect areas of natural resources unique to coastal regions. States are required to define the area that will comprise coastal zone and develop management plans that will protect these unique resources through enforceable policies of state CZM programs. As defined in the Act, the coastal zone includes coastal waters extending to the

outer limit of state submerged land title and ownership, adjacent shorelines, and land extending inward to the extent necessary to control shorelines. Federal as well as local actions must be determined to be consistent with the CZM plans and policies before they can proceed.

The CBRA of 1982 and subsequent amendments are designed to address problems caused by coastal barrier development by restricting most Federal expenditures and financial assistance that tend to encourage such development. Three important goals of CBRA are to minimize loss of human life by discouraging development in high-risk areas, reduce wasteful expenditure of federal resources, and protect the natural resources associated with coastal barriers. The Coastal Barrier Improvement Act of 1990 (CBIA) reauthorized the CBRA and added new units. The CBIA, an addition to the CBRA, designated a new category of lands known as "otherwise protected areas" (OPAs). OPAs are based on areas established under federal, state, or local law, or held by a qualified organization, primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes.

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no impact to coastal resources or the coastal zone.

Alternative 2 – Offshore breakwater system construction

Under Alternative 2, activity and construction would occur in the coastal zone. Martin County has obtained FDEP ERP (No. 43-199775-EI), which lists construction conditions and monitoring requirements. Issuance of this permit constitutes a consistency review for the project. Additionally, Alternative 2 would not involve any construction activities within a CBRS Unit or an OPA; therefore, there would be no impact to coastal resources.

5.2.5 DRINKING WATER AND GROUNDWATER

The Safe Water Drinking Act, passed in 1974, authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. According to EPA's Map of Sole Source Aquifer Locations, accessed March 30, 2023, Indian River Lagoon is not located within a sole source aquifer.

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no impact to drinking water or groundwater.

Alternative 2 – Offshore breakwater system construction

Under Alternative 2, the construction of the breakwater system would not have an impact on groundwater or drinking water as there are no Sole Source Aquifers in the lagoon.

5.3 BIOLOGICAL RESOURCES

5.3.1 FISH AND WILDLIFE

Indian River lagoon serves as foraging habitat for numerous species, including threatened and endangered species. These include various species of birds, mammals, reptiles, and fish. There are no hardbottom and coral reef habitats located offshore in the vicinity of the project area.

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction activities and would have no direct impacts to fish and wildlife from construction activities. However, species habitat would continue to decline due to continued erosion of the lagoon shoreline and would cause minor adverse impacts to fish and wildlife if the erosion is not addressed.

Alternative 2 – Offshore breakwater system construction

Under Alternative 2, short-term changes in nearshore and water may occur. Temporary impacts to land and water species are likely to occur. As part of permitting conservation measures, placement of breakwater structure will avoid all submerged aquatic vegetation (SAV). Wildlife has the ability to move and return after construction, species and wildlife resources are expected to recover and no long-term impacts are expected. Alternative 2 would require implementation of the county's FDEP and USACE permit conditions regarding EFH, ESA, and MBTA, including provisions in the applicable PBOs regarding species and natural habitat. A seagrass recruitment area and mangrove enhancement will be created as part of the project to further support wildlife. Based on the review conducted, Alternative 2 would have short-term minor impacts and long-term benefits to fish and wildlife.

5.3.2 VEGETATION

Vegetation is a necessary component of a functioning intracoastal shoreline as it provides resistance to erosion caused by wind and storm surge. In addition, vegetation provides foraging and nesting habitat to animals such as shorebirds, sea turtles, and manatees. Submerged aquatic vegetation are located within the project boundaries, while shoreline vegetation mainly consists of mangroves, palm trees, and exotic/invasive species.

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction activities; and therefore, would have no impacts to vegetation from construction. However, continuing erosion could lead to ongoing vegetation loss due to erosion, resulting in minor adverse impacts to this resource if no action is taken.

Alternative 2 – Offshore breakwater system construction

Martin County would create a seagrass recruitment area and enhance the mangroves, additionally removing exotic/ invasive plants as part of Alternative 2, which would have beneficial impacts on the project area located within the lagoon. The installation of the breakwater component would avoid submerged aquatic vegetation. Further information on the planting's placement is located in the construction plans (Appendix A). The construction of the breakwater system, and shoreline enhancement would strengthen the shore's buffer from storm surge minimizing continuing erosion of the shoreline.

5.3.3 THREATENED AND ENDANGERED SPECIES

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, the project was evaluated for the potential occurrences of federally listed threatened and endangered species. The ESA requires any federal agency that funds, authorizes, or carries out an action to ensure their action is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat.

ESA-listed species that may occur within the proposed project location were identified by accessing the USFWS Information for Planning and Consultation (IPaC) database (accessed March 31, 2023) and the National Oceanic and Atmospheric Administration (NOAA) Fisheries Species Directory (https://www.fisheries.noaa.gov/species-directory). The species likely to occur within the project area include: the federally threatened West Indian manatee (*Trichechus manatus*), green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), and the federally endangered leatherback sea turtle (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbricata*), and smalltooth sawfish (*Pristis pectinata*). However, the likelihood of USFWS listed species including the Florida panther puma, Puma, Southeastern beach mouse, eastern black rail, Florida scrub-jay, American Alligator, American crocodile, eastern indigo snake, the wood stork, Florida leafwing butterfly, and Miami blue butterfly, within the proposed project area is unlikely, as those species do not prefer estuarine and marine deep-water habitat. NOAA listed species including a variety of fish, clams, conch, seals, sharks, whales, squid, and corals being present within the proposed project area is unlikely, as the project location is located in shallow waters (approximately 2-4 FT), the nearest inlet is over 5 miles away, and there's no

identified coral reefs or hardbottom habitat making it unlikely for offshore species to be present in the area. There is designated critical habitat for the West Indian manatee present within the proposed project location.

Alternative 1 - No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no direct impacts to threatened and endangered species from construction activities. However, species habitat would continue to decline due to continued erosion of the lagoon shoreline, which would cause minor adverse impacts to listed species.

Alternative 2 – Offshore breakwater system construction

Alternative 2 is expected to have impacts to species within the lagoon, and in the nearshore environment due to construction and vegetation enhancement activities. Construction activities may affect, but are not likely to adversely affect, sea turtles, manatees, and smalltooth sawfish due to in water construction. The project would be required to meet the terms and conditions of the USACE Jacksonville District PBO (JAXBO) for Aquatic Habitat Enhancement, Establishment, and Restoration Activities (dated November 20, 2017) (**Appendix G**) to minimize impacts to listed species. The project would also adhere to the Florida Standard Manatee Conditions (**Appendix H**), and Sea Turtle and Smalltooth Sawfish Conditions (**Appendix I**) as required by the USACE permit, and PBO. The terms and conditions of these documents can be found in Section 7.0 of this EA.

Under Alternative 2, environmental impacts to species within the project area are anticipated due to construction activities. Sea turtles, manatees and pelagic marine species would be impacted by the temporary disruptions caused by in-water installation. The project was designed with placement of a minimum of 5 FT gaps between each breakwater structure and no breakwater structure will exceed 75 FT to allow species freedom of movement and to reduce the risk of entrapment. The impacts to ESA-listed species would be temporary, and the species are expected to recover once construction has been completed. The installation of the breakwater system and vegetation enhancement areas would have long-term benefits to threatened and endangered species.

5.3.4 MIGRATORY BIRD TREATY ACT (MBTA)

The MBTA of 1918 provides a program for the conservation of migratory birds that fly through lands of the United States. The lead federal agency for implementing the MBTA is the USFWS. The law makes it illegal for anyone to “take” (meaning to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture or collect), attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase,

purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or eggs.

The entire state of Florida is considered a flyway zone for migratory birds. According to the USFWS IPaC database accessed on March 30, 2023, 17 migratory bird species were identified, and 14 of the species have a designated breeding season which could occur within the project timeline. However, upon further review only 9 species have been recorded within the Indian Riverside Park, but not directly in the project location according to the Cornell Lab of Ornithology eBird mapper.

Alternative 1 – No Action Alternative

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no direct impacts to migratory bird species from construction activities. Species habitat decline due to continued erosion of the shoreline is expected to be negligible.

Alternative 2 – Offshore breakwater system construction

Under Alternative 2, minor impacts would occur due to temporary disruption in the foraging and nesting habitat during construction activities for migratory bird species near the project area. Once the project is complete, the intracoastal shoreline and vegetation enhancement would provide long-term positive effects by providing enhanced habitat for nesting and foraging area for these species.

5.3.5 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (MSA)

The MSA is the primary law governing marine fisheries management in US federal waters and is meant to foster long-term biological and economic sustainability of our nation's marine fisheries. Key objectives of the MSA are to prevent overfishing, rebuild overfished stocks, increase long-term economic and social benefits, and ensure a safe and sustainable supply of seafood. The NOAA EFH Mapper online tool has identified designated EFH for species in the project area. However, according to the Florida Fish and Wildlife Conservation Commission (FWC) data no hardbottom habitats or coral reefs were identified near the project location. FDEP has determined that the wetlands and submerged resources located within the project boundaries will not be impacted by the proposed project.

Alternative 1 – No Action Alternative

The No Action Alternative would not involve any construction activities, therefore there would be no impact on fisheries or breeding habitat.

Alternative 2 – Offshore breakwater system construction

The construction activities associated with Alternative 2 would involve in-water work and could temporarily limit access to habitat and resources in the area. In order to minimize impacts to EFH, the applicant must adhere to the conservation measures of USACE Permit No. SAJ-2014-03008 (NWP-CMM), including JAXBO, which include erosion control and avoidance of SAV. The impact to adjacent fisheries resources is expected to be minor and temporary in nature. The oyster reefs will provide habitat and safe nursery for a variety of species, provide an important food source, and improve water quality. Additionally, the project proposes to create a 5.59-acre area for sea grass recruitment, and 0.21 acres of mangrove enhancement areas which is intended to provide long term benefits to species habitat and resources.

5.3.6 BALD AND GOLDEN EAGLE PROTECTION ACT (BGEPA)

The BGEPA (16 USC § 668 to 668c), enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald and golden eagles, including their parts, nests, or eggs. Like the MBTA, the law makes it illegal for anyone to “take,” possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or their parts, feathers, nests, or eggs. “Take” is defined as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

According to the FWC Historical Bald Eagle Nesting Areas mapper and the Audubon Florida Eagle Watch Nest Application, accessed on March 30, 2030, no documented bald eagle nests are located within the project area. The general nesting season for bald eagles in the southeast is from October 1 to May 15. Golden eagles inhabit tundra, grasslands, forested habitat and woodland-brushlands, south to arid deserts and avoid nesting in urban habitat. Due to the species habitat being inconsistent with the habitat of the project location, the presence of a golden eagle is unlikely to occur within the project area and no impacts are expected.

Alternative 1 – No Action Alternative

Alternative 1 would not involve any construction activities, therefore, there would be no impact to bald or golden eagles.

Alternative 2 – Offshore breakwater system construction

The Alternative 2 project area is not within the vicinity of a known bald eagle nest nor is the area suitable for golden eagle habitat; therefore, Alternative 2 would have no impact on these species.

5.4 CULTURAL RESOURCES

5.4.1 HISTORIC AND ARCHAEOLOGICAL RESOURCES

Cultural resources include historic architectural properties (including buildings, structures, and objects), prehistoric and historic archaeological sites, historic districts, designed landscapes, and traditional cultural properties. The primary federal statutes that apply to cultural resources are NEPA and Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended. The NHPA created the National Register of Historic Places (NRHP) and criteria to determine if cultural resources are eligible for listing in the NRHP. The NHPA defines historic properties as any prehistoric or historic district, site, building, structure, or object that is listed in, or eligible for listing in, the NRHP (36 CFR 800.16). When NRHP-eligible properties are present, federal agencies must assess the effect of the undertaking on them and consider ways to avoid, minimize, or mitigate potential adverse effects.

The area of potential effect (APE) for cultural resources is limited to the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties if any such properties exist. A literature review of the Florida Master Site File (FMSF) was conducted. The literature review focused on the APE and included a 400 FT buffer around the APE. Five cultural resource investigations; one archaeological site listed in the NRHP, Mt. Elizabeth (MT00030); and three above ground historic resources, The Willaford Leach House/Tuckahoe Mansion (MT01047) listed in the NRHP, Garage to the Willaford Leach House (MT01276), and Guest House to the Willaford Leach House (MT01277) were identified but only Mt. Elizabeth and Tuckahoe Mansion occurred within portions of the APE.

The Programmatic Agreement between FEMA and the Florida SHPO signed September 10, 2014, and the Duration Amendment, effective September 9, 2022, does not include programmatic allowances addressing the potential new ground disturbance associated with construction of offshore shoreline protection components.

The threshold level for significant impacts to cultural resources under NHPA would be those impacts that adversely affect any historic property that is eligible for or listed in the NRHP under Section 106 or has been identified by a federally recognized tribe as a sacred site or traditional cultural property.

Alternative 1 - No Action Alternative

The No Action Alternative would not involve any construction activities and no federal undertaking would occur; therefore, there would be no impact to cultural resources or further responsibility under Section 106.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would include the construction of the offshore breakwater system, including stone toe protection, seagrass recruitment area. Mangrove enhancement area and removal of invasive species. Ground disturbance would be limited to construction activities and monitoring will be conducted as required by FDEP permit. The construction of the breakwater system for erosion and wave action control would serve as an additional layer of protection for any in situ archaeological or historic material, and historic structures.

Based on the results of previous investigations and FEMA's historic property identification efforts, FEMA submitted a formal consultation to the SHPO on March 30, 2023. Concurrence from SHPO was received on April 18, 2023, with a finding of *No Adverse Effect to Historic Properties*. Additionally, FEMA contacted six Native American Tribes. None of the tribes express any objections to the proposed project. The following conditions will be applied to the project:

- The applicant will provide a full-time on-site SOI Qualified Archaeologist to monitor all construction activities, preferably one with osteological experience and the ability to identify human skeletal material. The archaeological monitor will have full stop authority if anything of archaeological or historic concern is encountered. The archaeological monitor will be on site during all construction activities for the course of the entire project and a final report will be submitted to the Florida SHPO and FEMA upon completion of the Tuckahoe Mansion Seawall Mitigation.
- The applicant will have an archaeological consultant provide an updated Archaeological Site Form upon the completion of this project. The site form will record anything encountered during construction as well as documenting any measures that were taken to protect the archaeological site during the construction.
- Once the living shoreline construction project and all associated work is complete, the applicant will be expected to submit an updated Florida SHPO Historical Structure and Archaeological Site Form and a final report including a complete photographic package documenting the relationship of the living shoreline to the two NRHP listed properties, any measures that were taken to protect the properties during the construction. The report, the Archaeological Site form, and the Historical Structure Form will be submitted to the Florida SHPO and FEMA.

- If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The applicant will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The applicant's contractor will provide immediate notice of such discoveries to the applicant. The applicant will contact the Florida Division of Historic Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. If unmarked human remains are encountered during permitted activities, all work will stop immediately, and the proper authorities will be notified in accordance with Florida Statutes, Section 872.05.
- Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way.
- Prior to conducting repairs, the applicant must identify the source and location of fill material and provide this information to FDEM and FEMA. If the borrow pit is privately owned, or is located on previously undisturbed land, or if the fill is obtained by the horizontal expansion of a pre-existing borrow pit, FEMA consultation with the State Historic Preservation Officer will be required. Failure to comply with this condition may jeopardize FEMA funding; verification of compliance will be required at project closeout.

Additional conditions requested by the FL SHPO:

- A qualified professional archeologist be present to monitor all ground-disturbing activities that take place in the above referenced project area. The monitor should forward a monitoring report to FL SHPO's office at the conclusion of the project for review.
- If any cultural resource deposits are discovered, the monitor should be empowered to direct construction activities to other areas to enable recovery and recordation of the deposits before project activities resume in the area. The resultant report(s) of such discoveries should be forwarded to the SHPO for review.
- In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with Section 872.05, Florida Statutes.

Based on the analysis conducted and the conditions required for fortuitous finds or unexpected discoveries, Alternative 2 would have no adverse effects on historic and archaeological resources.

5.5 SOCIOECONOMIC RESOURCES

5.5.1 LAND USE

The project area is located within the shoreline of Indian Riverside Park and within Indian River Lagoon. Indian River lagoon is a designated state aquatic preserve, while Indian Riverside Park is a county managed land conservation area. Structures and park components, including museums, boardwalk, piers, fountains, pavilions, gardens, and beach areas are also locally owned and maintained. The proposed project to construct the breakwater system and enhance species habitat would not alter or change the current intended land use of the area.

Alternative 1 - No Action Alternative

The No Action Alternative would not involve any construction activities, therefore there would be no alteration of the current land use.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would have no impact on land use and planning. The proposed breakwater system, and associated components would not change the current intended land use of the area. Additionally, this proposed action would have a long-term beneficial impact on land use and planning by preserving the area for public open space recreational use for the local community.

5.5.2 NOISE

Noise is defined as unwanted sound; sound levels are measured in decibels (dB). A-weighted sound measures emphasize the frequency range of human hearing and are expressed in terms of A-weighted decibels (dBA). In general, animals and humans are stressed by noisy environments. The effects of noise on humans include annoyance, sleep disturbance, and health impacts. In animals, high noise can interfere with communication, reproduction, identifying food sources, and can induce fear, forcing species to abandon their habitat. The primary source of ambient noise in the project area is vehicular traffic.

Based on the data presented in the US EPA publication, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances (USEPA, 1971), the main phases of outdoor construction typically generate noise levels that range from 78 dBA to 89 dBA, approximately 50 feet from the construction site. Noise levels are estimated to decrease by approximately 6 dBA with every doubling of distance from a noise source. The threshold level for a significant noise impact is defined as a permanent increase in noise or prolonged periods of nighttime noise in noise-sensitive areas.

Alternative 1 – No Action Alternative

The No Action Alternative would not involve any construction activities, therefore, there would be no impact on noise levels in the area.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would involve construction activities to install the breakwater system and associated components; therefore, minor short-term impacts on noise levels resulting from the use of construction equipment in the project area would be expected. After the construction activities are complete, there would be no long-term impacts on noise levels in the area. Based on the review conducted, Alternative 2 would have minor noise-related impacts. The impacts would not be significant.

5.5.3 TRANSPORTATION AND TRAFFIC

The proposed project would not include the construction of any new transportation features, as the work would be completed using the existing roads in the area. The construction equipment and vehicles would utilize Indian River Drive, to access Indian Riverside Park's publicly accessible parking lots and sidewalks and boardwalk that lead to the project area. No road closures are expected during construction that would impact the local community.

Alternative 1 - No Action Alternative

The No Action Alternative would not involve any construction activities, therefore, no impacts on existing infrastructure or transportation would occur within the project area.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would involve construction activities and would have minor short-term impacts from construction equipment entering and leaving the project areas to transport materials and construction equipment to the project locations. The impacts from Alternative 2 would be short-term and limited to the construction period; however, the breakwater would provide long term benefits from erosion and storm protection to the shoreline and adjacent public infrastructure.

5.5.4 HAZARDOUS MATERIALS AND SOLID WASTES

Hazardous materials are identified as hazardous through various federal regulations including 40 CFR Parts 302.4 and 355, and 29 CFR Part 1910.1200. Hazardous waste is any solid, liquid, or contained gas waste that is dangerous or potentially harmful to humans and the health of the environment. Thousands of contaminated sites exist nation-wide due to hazardous waste being dumped, left out in the open, or otherwise improperly managed and disposed. In response,

Congress established the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) on December 11, 1980. CERCLA, commonly known as Superfund, was enacted to allow EPA to clean up contaminated sites. The EPA utilizes the National Priorities List (NPL), the list of contaminated sites of national priority, to guide the determination of which sites warrant further investigation. According to the NPL, accessed April 3, 2023, the project area does not contain any Superfund sites.

An EPA designated Brownfield site is a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. A Brownfield area is a contiguous area of one or more Brownfield sites.

The threshold level for a significant impact to hazardous materials and waste would include a release of hazardous materials or waste, or a violation of local, state, or federal regulations pertaining to hazardous materials or waste.

Alternative 1 - No Action Alternative

The No Action Alternative would not involve any construction activities, therefore, there would be no potential to disturb existing hazardous materials or create any potential new hazardous waste sites within the area. There would be no impact to human health or the surrounding environment from hazardous or solid waste.

Alternative 2 – Offshore breakwater system construction

Alternative 2 would involve the construction of the breakwater system and would have a minor short-term impact on the lagoon and adjacent shoreline due to construction activities. The handling of hazardous materials and waste generated during construction activities would be handled in accordance with applicable Resource Conservation and Recovery Act (RCRA) and state regulations for managing solid and hazardous waste materials. Potential for spills from construction equipment would be minimized and handled in accordance with applicable regulations. Per FDEP permit conditions all debris shall be removed from wetlands/waters within 14 days of completion of work. There is no potential for any construction activities related to this project to impact hazardous waste sites designated under CERCLA as there are no Superfund sites at or near the proposed project area.

5.5.5 OCCUPATIONAL HEALTH AND SAFETY

Occupational health and safety hazards could include chemical agents (such as asbestos or lead), physical agents (such as noise or vibration), physical hazards (such as slip, trip, and fall hazards, electricity, or machinery), or biological hazards (such as infectious waste, poisonous plants, ticks, or another hazardous biota). Occupational health and safety concerns could affect both workers

and other non-workers near the project site. Martin County employees and contractors are responsible for following applicable OSHA regulations and for conducting their work in a manner that does not pose any risk to other workers or the public. The threshold level for a significant impact to occupational health and safety would be exposure of workers to health and safety hazards without proper protection or creating health and safety hazards that could affect the public.

Alternative 1 - No Action Alternative

The No Action Alternative would not involve any construction activities, therefore, there would be no risk of occupational health and safety hazards within the area. There would be no impact to human health or the surrounding environment.

Alternative 2 – Offshore breakwater system construction

Occupational health and safety hazards under Alternative 2 would include those common to construction activities, such as loud noise, heavy machinery, debris, and hazardous materials used or encountered during work. To minimize occupational health and safety risks, workers would wear and use appropriate personal protective equipment and follow all applicable OSHA standards and procedures. A health and safety plan would be developed and implemented for work. Work areas would be clearly marked with appropriate signage and secured against unauthorized entry. Standard construction traffic control measures would be used to protect workers, residents, and the travelling public. Based on the review conducted, Alternative 2 would have a negligible impact on occupational health and safety.

5.5.6 UTILITIES

There are no existing utilities in the vicinity of the project area that would be impacted by the breakwater construction project, nor are any new utilities expected to be installed as part of the project. The threshold level for significant impact to utilities would be an exceedance of the existing utility service capacity.

Alternative 1 – No Action Alternative

Under the No Action Alternative, no construction activities would occur; therefore, the No Action Alternative would have no impact to utilities.

Alternative 2 – Offshore breakwater system construction

Under Alternative 2, the breakwater construction would not require the installation of new utilities, nor would it involve any replacement, repair, or modification to existing utilities in the area. Therefore, Alternative 2 would have no impact on utilities.

5.5.7 ENVIRONMENTAL JUSTICE, EQUITY, AND PROTECTION OF CHILDREN

EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, directs federal agencies to address and avoid disproportionate environmental and human health impacts from federal actions on minority populations and low-income populations. All federal agencies must analyze the environmental effects, including human health, social, and economic effects, on minority and low-income communities. The impacted area includes all areas of the scope of work for the proposed project, any staging areas or hauling routes, and any areas outside of the immediate project area that may be impacted indirectly by the proposed project.

In January 2021, President Biden issued EO 13985, Executive Order on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce, and EO 14008, Tackling the Climate Crisis at Home and Abroad, to further address the need to achieve environmental justice and equity across the federal government. These new executive orders direct federal agencies to renew their energy, effort, resources, and attention to implement environmental justice and underscore the administration's commitment to environmental justice.

Guidelines for the protection of children are specified in EO 13045, Protection of Children from Environmental Health Risks and Safety Risk (Federal Register, Volume, 62, Number 78, April 23, 1997). This EO requires that federal agencies make it a high priority to identify and assess policies, programs, and standards addressing disproportionate adverse risks to children resulting from environmental health or safety risks.

According to the US Census Bureau as of July 2021, Martin County has a total population estimate of 159,942. Of the total population children (18 years and younger) are 16.1% of the population; minorities (African American, American Indian, Alaska Native, Asian, Native Hawaiian and Pacific Islanders, Hispanic or Latino, or a mix of these races) are 24.9% of the population; and persons in poverty are 11.4% of the population. Additionally, 32% of the population is 65 years and over, the total labor force is 51.2% of the population, the median household income is $69,769, and the per capita income is $46,973.

The project area, including a 1.45-mile extension, was evaluated under EPA's EJ Screen tool and covered an approximate population of over 2,900. All 12 environmental justice indexes were below the 80th percentile in state average, the socioeconomic indicator (people of color) was below the 50th percentile in state average, however the socioeconomic indicator (low income) was at 61st

percentile in state average, which classified as low-income population identified within the project area.

The threshold level for a significant impact to environmental justice is disproportionately high or adverse human health or environmental effects on minority or low-income populations. The threshold level for a significant impact to protection of children is disproportionate environmental health or safety risks to children.

Alternative 1 - No Action Alternative

Under the no action alternative, the breakwater wouldn't be constructed, therefore, no disproportionate impacts on minority or low-income populations, or children are anticipated.

Alternative 2 – Offshore breakwater system construction

Under Alternative 2, only low-income population was identified within the project area. No environmental hazards, or human health hazards are expected as work will take place away from residential and commercial properties, therefore, no disproportionate impacts or adverse impacts to low-income populations are anticipated. The project would benefit all population members and would protect the public park that serves the visitors and provides recreational value to the community.

6.0 CUMULATIVE IMPACTS

Per the CEQ regulations, cumulative impacts refer to the impact on the environment that "results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR § 1508.7). In accordance with NEPA, this EA considered the combined effect of the preferred alternative and other actions occurring or proposed in the vicinity of the proposed project site.

Due to the project being in a coastal area, it is inherently susceptible to coastal erosion from tropical storms and hurricanes which may result in future presidentially approved emergency declarations, requiring FEMA funding for repairs, in addition to scheduled maintenance for on-going erosion. The proposed project is expected to increase the level of storm protection to the improved property along the existing shoreline while also protecting remaining habitat. It is not expected that the project would increase development along the shoreline but would help protect and maintain existing infrastructure.

The shoreline of the project area is partially developed with a variety of park components. However, the natural elements comprise a vast majority of the park. It is not anticipated that the proposed project, or future maintenance actions, would have an impact on development due to the nature of the existing area as a public park. The continued existence of improved property and redevelopment of public servicing properties may be associated with the continued maintenance of the park.

The proposed project, and anticipated future actions in the area, would have short-term impacts to recreational usage of the shoreline due to construction efforts. However, it is anticipated there would be no long-term impacts to natural resources, and beneficial long-term impacts to commercial and recreational usage of the shoreline as a result of the erosion protection measures protecting the shoreline. Indian Riverside Park is a contributing factor to the local tourism of the county. The shoreline protection measures would continue its benefit for the tourism industry and provide recreational value of the area to the community. Additionally, strengthening the shoreline serves to protect the cultural and historic resources adjacent to the project action.

The proposed action is not expected to have any significant adverse cumulative impacts on any resources based on the review conducted when added to past, present, and reasonably foreseeable future actions within the proposed project area.

7.0 PERMIT AND PROJECT CONDITIONS

1. Under Alternative 2, the applicant would comply with all conditions for the project, including the Special Conditions in USACE permit No. SAJ-2014-03008 (NWP-CMM), and obtain any permit modifications as needed.
2. Under Alternative 2, the applicant would comply with all conditions in the FDEP ERP No. 43-199775-EI, and obtain any additional modifications as needed.
3. Under Alternative 2, Martin County would follow the conditions below set forth by the Florida SHPO:
    a. A qualified professional archaeologist be present to monitor all ground-disturbing activities that take place in the above referenced project area. The monitor should forward a monitoring report to this office at the conclusion of the project for review.
    b. If any cultural resource deposits are discovered, the monitor should be empowered to direct construction activities to other areas to enable recovery and recordation of the deposits before project activities resume in the area. The resultant report(s) of such discoveries should be forwarded to the SHPO for review.
    c. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with Section 872.05, Florida Statutes.

4. Under Alternative 2, the applicant would follow the conditions included in FEMA's consultation letter for interested Indian Tribal Nations:
    a. The applicant will provide a full-time on-site SOI Qualified Archaeologist to monitor all construction activities, preferably one with osteological experience and the ability to identify human skeletal material. The archaeological monitor will have full stop authority if anything of archaeological or historic concern is encountered. The archaeological monitor will be on site during all construction activities for the course of the entire project and a final report will be submitted to the Florida SHPO and FEMA upon completion of the Tuckahoe Mansion Seawall Mitigation.
    b. The applicant will have an archaeological consultant provide an updated Archaeological Site Form upon the completion of this project. The site form will record anything encountered during construction as well as documenting any measures that were taken to protect the archaeological site during the construction.
    c. Once the living shoreline construction project and all associated work is complete, the applicant will be expected to submit an updated Florida SHPO Historical Structure and Archaeological Site Form and a final report including a complete photographic package documenting the relationship of the living shoreline to the two NRHP listed properties, and any measures that were taken to protect the properties during the construction. The report, the Archaeological Site form, and the Historical Structure Form will be submitted to the Florida SHPO and FEMA.
    d. Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way.
    e. Prior to conducting repairs, the applicant must identify the source and location of fill material and provide this information to FDEM and FEMA. If the borrow pit is privately owned, or is located on previously undisturbed land, or if the fill is obtained by the horizontal expansion of a pre-existing borrow pit, FEMA consultation with the State Historic Preservation Officer will be required. Failure to comply with this condition may jeopardize FEMA funding; verification of compliance will be required at project closeout.
    f. If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The Applicant will assure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The Applicant's contractor will provide immediate notice of such discoveries to the Applicant. The Applicant will contact the Florida Division of Historical Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with the State Historic Preservation Office, tribes, and other consulting parties as necessary. If unmarked human remains

are encountered during permitted activities, all work will stop immediately, and the proper authorities will be notified in accordance with Florida Statutes, Section 872.05.

5. Under Alternative 2, the applicant will comply with all applicable project Design Criteria (PDC), including Activity 7 (Aquatic Habitat Enhancement, Establishment, and Restoration Activities from the USACE Jacksonville District Programmatic Biological Opinion (JAXBO), # SER-2015-17616, issued to the U.S. Army Corps of Engineers on November 20, 2017. Since FEMA became involved with the project after the PBO was issued to the Corps, where the conditions refer to the Corps, it can be assumed that they also apply to FEMA.
6. Under Alternative 2, the applicant will comply with the following conditions from the Sea Turtle and Smalltooth Sawfish Construction Conditions, issued by the National Oceanic and Atmospheric Administration National Marine Fisheries Service on March 23, 2006:
    a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
    b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
    c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
    d. 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 will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
    e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
    f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

7. Under Alternative 2, the applicant will comply with the following conditions from the Standard Manatee Conditions for In-water Work:
    a. 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.
    b. 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 will follow routes of deep water whenever possible.
    c. 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.
    d. 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 will 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.
    e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com
    f. 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. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads Caution: Boaters must be posted. A second sign measuring at least 8 ½" 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. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.
8. All debris staging sites shall be authorized by FDEP. Martin County shall ensure that all debris is separated and disposed at permitted facilities or at a disposal site or landfill authorized by

FDEP. The county is responsible for ensuring contracted staging and disposal of debris also follows these guidelines.

9. Handling, storage, and disposal of hazardous materials and waste during construction activities, including measures to prevent releases, must be conducted in accordance with applicable environmental compliance regulations.

8.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The following agencies were contacted during the preparation of this EA:

- Florida Division of Historic Resources (SHPO)
- United States Army Corps of Engineers (USACE)
- U.S Fish and Wildlife Service (USFWS)
- National Marine Fishery Service (NMFS)

FEMA issued a disaster-wide initial public notice for Hurricane Irma on October 6, 2017 (**Appendix L**), to notify the public of projects under the PA, Individual Assistance, and Hazard Mitigation Grant programs that may be occurring within floodplains or wetlands. The public will be notified of the availability of this EA for review and comment by posting of the public notice (**Appendix M**) on FEMA's website, Martin County's website, and near the proposed project location at the Mansion at Tuckahoe in the Indian River Park, and a hard copy of the EA will be made available at the Martin County Administration Center, Public Works Department, located at 2401 SE Monterey Road, Stuart, Florida 34996, during normal business hours. The public comment period ends after 15 days from the date of initial posting.

9.0 LIST OF PREPARERS

Name	Organization	Title
Angelika Phillips	FEMA	Acting Regional Environmental Officer
Allison Collins	FEMA	Senior Environmental Protection Specialist
M. Coral Rosado-Tobaschus	FEMA	Environmental Protection Specialist
Marc Marino	FEMA	Historic Preservation Specialist

10.0 REFERENCES

Aubudon Center for Birds Prey. Eagle watch program mapper. Accessed on March 30, 2023. Retrieved from: https://cbop.audubon.org/conservation/about-eaglewatch-program

Cornell Lab of Ornithology. eBird mapper tool. Accessed on March 31, 2023. Retrieved from: https://ebird.org/map/

EPA. February 28, 2023. Current Nonattainment Counties for All Criteria Pollutants. Accessed on March 29, 2022. Retrieved from: https://www3.epa.gov/airquality/greenbook/ancl.html#Top

FDEP. Outstanding Florida Waters Mapper. Accessed March 30, 2023. Retrieved from: https://floridadep.gov/dear/water-quality-standards/content/outstanding-florida-waters

FGS. Florida Geological Survey. Accessed on March 29, 2023. Retrieved from: https://floridadep.gov/fgs

FWC. Bald Eagle Nesting mapping data. Accessed on March 30, 2023. Retrieved from: https://myfwc.com/wildlifehabitats/wildlife/bald-eagle/

Martin County Florida. Indian Riverside Park. Accessed on April 3, 2023. Retrieved from: https://www.martin.fl.us/IRSP

NOAA. Oyster Reef Habitat (2/4/2022). Accessed on April 4, 2023. Retrieved from: https://www.fisheries.noaa.gov/national/habitat-conservation/oyster-reef-habitat#:~:text=Benefits%20of%20Oyster%20Reef%20Habitat%201%20Habitat%20for,waves%2C%20floods%2C%20and%20tides.%20...%204%20Seafood%20

NPL. Superfund National Priorities List. Accessed on April 3, 2023. Retrieved from: https://www.epa.gov/superfund/search-superfund-sites-where-you-live

SSA. Sole Source Aquifer Locations. Accessed on March 30, 2023. Retrieved from: https://www.epa.gov/dwssa/map-sole-source-aquifer-locations

U.S. Census Bureau. Quick Facts Martin County, Florida. Accessed on April 4, 2023. Retrieved from: https://www.census.gov/quickfacts/martincountyflorida

USDA. Soil survey data base. Accessed on March 30, 2023. Retrieved from: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

USFWS. IPaC tool. Accessed on March 31, 2023. Retrieved from: https://ecos.fws.gov/ipac/

USFWS. National Wetlands Inventory Mapper. Accessed March 30, 2023. Retrieved from: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

Appendices available upon request to FEMA Region 4 EHP (FEMA-R4EHP-FLORIDA@fema.dhs.gov)