



# Draft Supplemental Environmental Assessment

699821 – Lovers Key and Bonita Beach  
Nourishment

FEMA-DR-4673-FL

Lovers Key and Bonita Beach, Lee County, Florida

November 2023



U.S. Department of Homeland Security  
Federal Emergency Management Agency  
Region IV – Atlanta, GA

This page intentionally left blank

## Table of Contents

<b>1.</b>	<b>INTRODUCTION</b>	<b>9</b>
<b>2.</b>	<b>PURPOSE AND NEED</b>	<b>10</b>
<b>3.</b>	<b>PROJECT LOCATION AND BACKGROUND</b>	<b>10</b>
<b>4.</b>	<b>ALTERNATIVES</b>	<b>12</b>
4.1.	<i>Alternative 1: No Action Alternative</i>	12
4.2.	<i>Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)</i>	13
4.3.	<i>Alternatives Considered and Dismissed</i>	14
4.4.	<i>Impact Evaluation</i>	15
<b>5.</b>	<b>AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS</b>	<b>27</b>
5.1.	<b>PHYSICAL RESOURCES</b>	27
5.1.1.	Climate Change	27
5.2.	<b>WATER RESOURCES</b>	28
5.2.1.	Water Quality	28
5.2.2.	Floodplains	31
5.2.3.	Wetlands	32
5.3.	<b>COASTAL RESOURCES</b>	33
5.3.1.	Coastal Zone Management Act (CZMA)	33
5.3.2.	Coastal Barrier Resources Act (CBRA) and Coastal Barrier Improvement Act (CBIA) of 1990	34
5.4.	<b>BIOLOGICAL RESOURCES</b>	36
5.4.1.	Fish and Wildlife	36
5.4.2.	Vegetation	38
5.4.3.	Threatened and Endangered Species	38
5.4.4.	Migratory Bird Treaty Act	42
5.4.5.	Bald and Golden Eagle Protection Act (BGEPA)	43
5.5.	<b>CULTURAL RESOURCES</b>	44
5.5.1.	Historic (Standing) Structures	46
5.5.2.	Archaeological Resources	47
5.6.	<b>SOCIOECONOMIC RESOURCES</b>	48
5.6.1.	Land Use and Planning	48
5.6.2.	Transportation	49
5.6.3.	Public Services and Utilities	50
5.6.4.	Public Health and Safety	51
5.6.5.	Environmental Justice	52
5.7.	<b>CUMULATIVE IMPACTS</b>	53
<b>6.</b>	<b>PERMITS AND PROJECT CONDITIONS</b>	<b>55</b>
<b>7.</b>	<b>AGENCY COORDINATION AND PUBLIC INVOLVEMENT</b>	<b>56</b>
<b>8.</b>	<b>LIST OF PREPARERS</b>	<b>57</b>
<b>9.</b>	<b>REFERENCES</b>	<b>58</b>

## **APPENDICES**

APPENDIX A: USACE and BOEM Environmental Assessment

APPENDIX B: Coastal Engineering Consultants Inc. Post-Ian Engineering and Assessment Report

APPENDIX C: Floodplain Management Checklist and Map

APPENDIX D: Wetland Maps

APPENDIX E: CBRA Consultation Letter and Map

APPENDIX F: Endangered Species Biological Opinions and IPaC

APPENDIX G: SHPO/THPO Consultation Letters

APPENDIX H: EJScreen

APPENDIX I: FDEP Permits

APPENDIX J: USACE Permit

APPENDIX K: Public Notices

## LIST OF ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
BFE	Base Flood Elevation
BMP	Best Management Practice
BO	Biological Opinion
BOEM	Bureau of Ocean Energy Management
CAA	Clean Air Act
CBIA	Coastal Barrier Improvement Act of 1990
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CCCL	Coastal Construction Control Line
CEC	Coastal Engineering Consultants, Inc.
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHHA	Coastal High Hazard Area
CRAS	Cultural Resource Assessment Survey
CWA	Clean Water Act
CY	Cubic Yards
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Plan
DHR	Florida Division of Historical Resources
DSEA	Draft Supplemental Environmental Assessment
DOT	Department of Transportation
EA	Environmental Assessment

## LIST OF ACRONYMS AND ABBREVIATIONS, CONTINUED

EFH	Essential Fish Habitat
EO	Executive Order
EPA	Environmental Protection Agency
ERP	Environmental Resource Permit
ESA	Endangered Species Act
FCMP	Florida Coastal Management Program
FDEM	Florida Division of Emergency Management
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMFS	Florida Master Site File
FWCC	Fish and Wildlife Conservation Commission
GHG	Greenhouse Gases
GIS	Geographic Information System
GPS	Global Positioning System
GRBO	Gulf Regional Biological Opinion
IPaC	Information for Planning and Consultation
JCP	Joint Coastal Permit
JD	Jurisdictional Determination
LiMWA	Limit of Moderate Wave Action
MBTA	Migratory Bird Treaty Act
MCY	Million Cubic Yards
MHWL	Mean High Water Line

## LIST OF ACRONYMS AND ABBREVIATIONS, CONTINUED

NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NHL	National Historic Landmark
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
OCS	Outer Continental Shelf
OEHP	Office of Environmental Planning & Historic Preservation
OPA	Otherwise Protected Area
PA	Public Assistance
PBO	Programmatic Biological Opinion
PL	Public Law
PNP	Private Non-Profit
RCGA	R. Christopher Goodwin & Associates, Inc.
REO	Regional Environmental Officer
RHA	Rivers and Harbors Act
ROI	Region of Interest
SAV	Submerged Aquatic Vegetation
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office or Officer
SOI	Secretary of Interior

**LIST OF ACRONYMS AND ABBREVIATIONS, CONTINUED**

Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
SPBO	Statewide Programmatic Biological Opinion for Sand Placement
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOTUS	Waters of the U.S.



# 1. Introduction

Hurricane Ian impacted Florida between September 23, 2022, and November 04, 2022, bringing strong winds, heavy rains, storm surge, and flooding. President Biden signed a disaster declaration (FEMA-4673-DR-FL) on September 29, 2022, authorizing the Department of Homeland Security's 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 declared event.

The objective of FEMA's PA Grant Program is to provide funding assistance to state, tribal and local governments, and certain types of Private Non-Profit (PNP) organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the PA Program, FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain PNP organizations. The PA Program also encourages protection of these damaged facilities from future events by providing funding assistance for hazard mitigation measures during the recovery process.

Lee County has applied through the PA Program to receive funding to restore the eroded Gulf Coast shoreline along Lovers Key in Lovers Key State Park and Bonita Beach on Little Hickory Island, Lee County, Florida. The cumulative area of consideration is a total of approximately 10,100 linear feet (LF) (1.9 miles), split across multiple extents of beaches between from Florida Department of Environmental Protection (FDEP) R-monuments R-214.5 and R-221 [GPS Coordinates: (26.394372, -81.883908) to (26.381000, -81.871028)], for Lovers Key, and R-226 and R-239 [Global Positioning System (GPS) Coordinates: (26.364314, -81.86300) to (26.35475, -81.85762)], for Bonita Beach.

Lee County asserts the legal responsibility for the construction, maintenance, and repair of the engineered Lovers Key and Bonita Beach project. The shoreline is an engineered and maintained beach previously authorized for nourishment and maintenance by the United States Army Corps of Engineers (USACE). Both beaches are engineered and were last renourished in 2014 using a combined quantity of approximately 482,600 cubic yards (CY) of beach-compatible sand from two offshore borrow areas located in the ebb tidal shoal of Big Carlos Pass, between Estero Island and Big Hickory Island. The entirety of Lovers Key is within a Coastal Barrier Resources System (CBRS) System Unit P17 (Lovers Key). Additionally, South Bonita Beach, a previously nonengineered beach, would undergo a one-time, non-FEMA funded sand replacement to the Mean High-Water Line (MHWL). All actions would occur concurrently with Lee County's previously scheduled beach maintenance activities.

Coastal Engineering Consultants was contracted by Lee County to prepare an *Environmental Assessment for the Lovers Key-Bonita Beach Nourishment Project*, completed on June 10, 2023. The USACE and Department of the Interior through its Bureau of Ocean Energy Management (BOEM)

are in the process of issuing a Statement of Findings and a formal Finding of No Significant Impact (FONSI) using the Lee County Environmental Assessment. Any federal agency may adopt another federal agency's Environmental Assessment (EA) [40 Code of Federal Regulations (CFR) §1506.3] providing the original document satisfies the agency's National Environmental Policy Act (NEPA) requirements. As part of this Supplemental Environmental Assessment, FEMA adopts the USACE and the BOEM's Environmental Assessment and has also provide supplemental information through this Supplemental Environmental Assessment (SEA). The USACE and BOEM's findings are projected to be posted to the following websites respectively: <https://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/> and <https://www.boem.gov/Regional-Projects/>.

## 2. Purpose and Need

As a result of Hurricane Ian in 2022, the engineered shorelines along Lovers Key in Lovers Key State Park and Bonita Beach on Little Hickory Island in Lee County were heavily eroded. Lee County, having legal responsibility to maintain Lovers Key and Bonita Beach, may be eligible for funding through the FEMA PA Grant Program pursuant to Title 44 of the CFR § 206.223(a)(3). The community has identified the need to restore the capacity of the shoreline to withstand future storm events, reduce erosion, and decrease risk from future events to human life and improved property. Prior to the construction of the engineered beach and subsequent nourishments, the upland areas of Lee County were significantly impacted by storms and surge inundation. The construction and maintenance of the engineered beaches reduced the risk to improved property landward of the beach, provided additional habitat for sea turtles and shorebirds, and increased recreational values.

Lee County receives on an average over four (4) million visitors per year, bringing eco-tourism, hospitality, and recreational dollars to the county, state, and local businesses. According to the most recent annual survey commissioned by the Lee County Visitor and Convention Bureau, 98 percent of visitors to Lee County selected the destination for leisure rather than business, with 65 percent of the polled vacationers citing the beach as the activity for choosing their destination. Per this report, these vacationers generated an estimated economic impact of \$6,592,391,700 in the Lee County area. Furthermore, the environmental impacts including habitat loss for sea turtles and shorebirds associated with the erosion of the beaches were considered. Restoration of the beach and protection of the park facilities will enable this essential economic and environmental element to continue.

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 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 (EOs) are addressed.

## 3. Project Location and Background

The proposed beach nourishment project is planned for the eroded Gulf Coast shoreline along Lovers Key State Park and Bonita Beach on Little Hickory Island, Lee County, Florida. The proposed project

would affect waters of the United States associated with the Gulf of Mexico and Big Carlos Pass ebb shoal. The sand placement area is cumulatively comprised of approximately 10,100 LF (1.9 miles) of engineered beach, beach berm, and dune systems across two extents of beach, referred to as the Lovers Key segment and the Bonita Beach Segment. The Lover's Key segment is located from FDEP R-monuments R-214.5 (26.394372, -81.883908) to R-221 (26.381000, -81.871028), and the Bonita Beach segment is located from R-226A (26.364314, -81.863000) to R-230 (26.354747, -81.857619). The entire Lovers Key segment of the project is located within CBRS System Unit P17. Lovers Key is a state park and development is limited to the park infrastructure. Bonita Beach is on Little Hickory Island which is developed and includes single family, multi-family, and condominium residences, and a county beach park. The south end of Bonita Beach is a natural beach that has not undergone any previous nourishment or other beach maintenance actions. Both the Lover's Key and northern Bonita Beach extents have previously undergone nourishment, with the most recent maintenance activities occurring in 2014. The Lovers Key beach profiles are shallower compared to those of Bonita Beach with much milder profile slopes due to the presence of the large Big Carlos Pass ebb shoal system sheltering the shoreline. The source of the sand includes three borrow areas. Two permitted nearshore borrow areas, located within the Big Carlos Pass ebb shoal complex in state waters [Quadrant coordinates: (26.401231218, -81.902697296), (26.399334813, -81.898918087), (26.395530577, -81.901271911), (26.397426921, -81.905051036)] and [Quadrant coordinates: (26.398061632, -81.896314966), (26.395963921, -81.892025432), (26.390644083, -81.895232863), (26.392733501, -81.899517711)]. The near shore borrow areas have been utilized for prior restoration and nourishment on the two beaches. The third borrow area is offshore, located on the Outer Continental Shelf (OCS) in federal waters [Quadrant coordinates: (26.388827778, -82.364825000), (26.378513889, -82.353647222), (26.369555556, -82.363836111), (26.37.9866667, -82.375013889)]. The sediment from all three borrow areas are characterized by medium to fine-grained gray sand with a low silt content.

The original Bonita Beach nourishment project was completed in November 1995 and included the placement of approximately 217,000 CY of sand sourced from the New Pass Ebb Shoal Borrow Area. The characteristics of this nourishment included a design elevation of +4.3 feet North American Vertical Datum of 1988 (NAVD88), crest slopes of 1 vertical to 200 horizontals (1V:200H), a seaward berm face slope of 15H:1V, and the construction of two terminal rock groins at the northern end of the project. The construction of the project resulted in an initial seaward advancement of the shoreline along the project length of 120 to 160 feet, tapering to 0 feet along the southern 1,500 feet of the project length. The groins extended approximately 200 feet seaward. The first maintenance event was completed in 2004, placing 150,000 CY to the same design elevation and slopes. This sand was sourced from the two previously mentioned near shore borrow areas.

The original Lovers Key nourishment project was completed in 2004 concurrent with the Bonita Beach maintenance event. The project placed 570,240 cubic yards of sand to a design elevation of +2.9 feet NAVD88, crest slope of 1V:200H, and seaward berm face slope of 15H:1V. A small dune feature was constructed at R-215 to an elevation of +4.9 feet NAVD88. Lee County has a management agreement with the State of Florida to maintain the beach on the Lovers Key State Park and an Interlocal

Agreement with the City of Bonita Springs to maintain Bonita Beach. Lovers Key and Bonita Beach are not federally constructed shorelines under the specific authority of the USACE.

Bonita Beach and Lovers Key were last renourished in 2014 by placing approximately 116,000 CY of beach quality sand on 3,922 linear feet between Range monuments R-226.5 to R-230 on Bonita Beach and approximately 345,000 CY of beach quality sand on approximately 5,808 linear feet from 500 feet north of R-215 to 500 feet south of R-220 on Lovers Key. Beach compatible sand was claimed from the two previously referenced near shore borrow areas located in the ebb tidal shoal of Big Carlos Pass. A hydraulic dredge was utilized and sand was transported to shore using floating and submerged pipelines. This beach-compatible sand was placed to established design elevations consistent with those in the original construction template. Sand was transferred from the hopper dredge to the beach hydraulically through pipelines that were floated or positioned on the submerged bottom. The USACE issued Lee County a 15-year permit, SAJ-2012-00198(IP-MJD), on September 03, 2013, for a maximum of two maintenance events or a fifteen-year period.

## 4. Alternatives

Reasonable alternatives are those that meet the purpose and need for the Proposed Action, are feasible from both technical and economic standpoints, and meet reasonable screening criteria (selection standards) that are suitable to a particular action. Two (2) alternatives are considered in addressing the purpose and need of the Lovers Key-Bonita Beach nourishment project: the No Action Alternative (Alternative 1) and the Preferred Alternative (Alternative 2) which would repair Lovers Key and Bonita Beach to the engineered profile, including a one-time sand placement on South Bonita Beach concurrently with Lee County's previously scheduled beach maintenance project. Additional alternatives that were determined to not meet the purpose and need were eliminated from detailed analysis in this DSEA and are discussed below.

### 4.1. Alternative 1: No Action Alternative

Under the No Action Alternative, the Lovers Key-Bonita Beach shoreline would remain in its current state and sand would not be placed on the beach. There would be no offshore impacts to the Gulf bottom or species through dredging or sand placement on beaches. Ongoing erosion would continue along the shoreline, impacting the existing beach, beach berm, and dune system. Consequently, the area would not be protected from future storm events and improved private and public property would be at risk of damages from storm surge and wave action. Benefits to local wildlife including nesting habitat for sea turtles and foraging area for piping plover would be lost. If not renourished, both Lovers Key and Bonita Beach would erode and become gradually narrower and steeper. A narrower and steeper beach is less desirable for tourists and adversely affect the recreational use of the beach and associated tourism. The No Action Alternative would not satisfy the overall project purpose and is neither practicable nor feasible.

#### **4.2. Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)**

Under the preferred alternative, Lovers Key and Bonita beach would undergo construction and repair activities to replace sand lost from Hurricane Ian plus additional sand lost from background erosion in order to return both beaches to their full engineered design template. The engineered beach fill template on Bonita Beach was modified to include an increased berm elevation to account for sea level change and additional beach fill width to serve as advanced nourishment between construction events. The engineered beach fill template on Lovers Key was also modified to include an increased berm elevation to account for sea level change. Based upon the hurricane damages, the Lovers Key fill template was modified to avoid potential scouring or escarpment formation landward of the proposed template. The template was redesigned to mimic pre-storm conditions based upon historical profiles plus address future storm impacts. Additionally, South Bonita Beach, a previously nonengineered beach, would undergo a one-time, non-FEMA funded sand replacement to the Mean High-Water Line (MHWL). All actions would occur concurrently with Lee County's previously scheduled beach maintenance activities.

Utilizing pre- and post-storm surveys and applying background erosion computed to MHWL, the erosion losses directly attributable to Hurricane Ian on Lovers Key and Bonita Beach equaled 52,500 CY. The total volume of sand proposed for the upcoming beach maintenance, including the Hurricane Ian losses, is 950,000 CY. The beach compatible sand will be sourced from three dredged borrow areas. Two borrow areas located in within the Big Carlos Pass ebb shoal complex in state waters (26.401231218, -81.902697296), (26.399334813, -81.898918087), (26.395530577, -81.901271911), (26.397426921, -81.905051036) and (26.398061632, -81.896314966), (26.395963921, -81.892025432), (26.390644083, -81.895232863), (26.392733501, -81.899517711) have been used previously for prior nourishment and beach maintenance activities. Based on the proposed work and the need of future beach restoration events, a third, previously untapped, borrow source has been identified for this alternative. This third source is located on the OCS, in federal waters, (26.388827778, -82.364825000), (26.378513889, -82.353647222), (26.369555556, -82.363836111), (26.37.9866667, -82.375013889).

The in-water work will be conducted using barge and vessel-based heavy equipment. Dredging of the material would include the use of a hydraulic cutterhead dredge and scow barge method as well as the hopper dredge method. Dredged material would be transported to a pump-out area and then transferred through submerged sediment pipelines. The material will exit the Gulf and be discharged onto the dry beach into the fill template. Multiple booster pumps may be required for this process. Land-based work for beach fill construction, hot-spot maintenance, upland sand truck hauls, and maintenance grading would be conducted by traditional earth moving equipment, including bulldozers, excavators, front-end loaders, dump trucks, and off-road vehicles.

Work will be conducted 24 hours per day, seven days per week, beginning in fall of 2023 and could continue into sea turtle nesting season. During sea turtle nesting season, staging areas and temporary storage for construction equipment and pipes shall be located off the beach to the maximum extent practicable. Nighttime storage of construction equipment that is not in use shall be located off the

beach. All construction pipes that are in use on the beach shall be located as far landward as possible without compromising the integrity of a reconstructed dune or existing vegetation. Pipes placed parallel to vegetation shall be placed 10 feet away. If it is necessary to extend construction pipes past a known shorebird nesting site, then those pipes shall be placed landward of the site before birds are active in that area. No pipe or sediment shall be placed seawards of a shorebird nesting site during the shorebird nesting season.

### **4.3. Alternatives Considered and Dismissed**

While off-site locations and configurations are generally alternatives to be considered, they are neither practical nor reasonable for a beach nourishment or shore protection project, as off-site alternatives would not satisfy the overall project purpose and need. Accordingly, offsite alternatives were not further considered in this SEA. Coastal Engineering Consultants Inc. (CEC) considered two alternative design options during the planning process. These options would result in similar impacts as both would utilize sandy material dredged from the proposed borrow locations and all would involve discharge of the dredged material in the near shore environment to accomplish beach nourishment. The conceptual alternatives described below were considered but dismissed from further analysis because of cost and environmental and community impact.

- Constructing the Lovers Key and Bonita Beach engineered beaches and dunes based upon the previously scheduled 2023 maintenance utilizing 827,500 CY of beach compatible sand.
- Constructing the Lovers Key and Bonita Beach engineered beaches and dunes, including placing an additional volume of sand totaling 880,000 CY of beach compatible sand to repair the damages to the engineered beaches caused by Hurricane Ian.

A more comprehensive discussion of alternatives considered and dismissed can be found in the USACE and the BOEM EA (Appendix 1). Additionally, an alternative method of sourcing sand was considered to avoid the addition of a third, previously unused offshore borrow area. This alternative would have utilized inland borrow pits to source sand which would be trucked in. This sand source alternative was ultimately dismissed due to the financial infeasibility of the method.

#### 4.4. Impact Evaluation

The Council on Environmental Quality (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 4.0.1:

**Table 4.0.1: 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 DSEA evaluates the potential environmental direct and indirect impact of the No Action and Proposed Action alternatives. A summary table of the potential impacts of the No Action and Proposed Action alternatives and the corresponding environmental protection measures and permits required is provided here:



**Table 4.0.1: Environmental Consequence by Alternative**

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
5.1	Physical Resources		
	Geology and Soils	<p>No change – see United States Army Corps of Engineers (USACE) Environmental Assessment (EA) Section 4.1.2</p> <p>Alternative 1 – Moderate long-term adverse impacts – significant: As sea level rises, the natural morphological processes of erosion and siltation would continue and worsen over time.</p> <p>Alternative 2 – Moderate long-term beneficial impact – significant: Improve islands ability to resist shoreline erosion, wave overtopping, and breach formation.</p>	<p>Florida Department of Environmental Protection (FDEP) authorized Alternative 2 through Joint Coastal Permit (JCP) number 0311811-001-JC, issued 24 June 2013 and major modification JCP number 0311811-004-JM, issued 14 December 2022 which requires that beach-compatible sand be utilized. Lee County is required to obtain any permit modifications as needed.</p>
	Air Quality	<p>No change – see USACE EA Section 4.1.3</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – Minor short-term adverse impacts – not significant: due to exhaust from construction equipment.</p>	Not applicable.



Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
	Climate Change	<p>Updated – See USACE EA Section 4.1.7</p> <p>Alternative 1 – No impact - Continued impacts from future storm damages along the shoreline associated with fluctuations in weather patterns and sea level dynamics.</p> <p>Alternative 2 – Minor short-term adverse impacts - not significant: due to exhaust from construction equipment.</p>	Not applicable.
5.2	<b>Water Resources</b>		
	Water Quality	<p>Updated – see USACE EA Section 4.1.4</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – Minor short-term adverse impacts – not significant: Increased turbidity during construction would affect water quality.</p>	<p>FDEP authorized the project through JCP number 0311811-001-JC, issued 24 June 2013 and major modification JCP number 0311811-004-JM, issued 14 December 2022. This permit certifies compliance with state water quality standards pursuant to Section 401 of the CWA. Lee County is required to obtain any permit modifications as needed.</p> <p>Best Management Practices (BMPs) are required to control turbidity and minimize impacts to water quality.</p>

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
	<p>Floodplains (Executive Order 11988)</p>	<p>Updated – not included in the USACE EA</p> <p>Alternative 1 – Moderate long-term adverse impacts – significant: Risk to human life and improved property continues and worsens with future erosion events.</p> <p>Alternative 2 – Minor long-term beneficial impact – significant: reduce flood risk to adjacent improved property and nearby parks and preserve the floodplain for open space and recreational use.</p>	<p>Not applicable.</p> <p>An 8-step checklist as required by 44 CFR Part 9 was completed, see Appendix C.</p>
	<p>Wetlands (Executive Order 11990)</p>	<p>Updated – not included in USACE EA</p> <p>Alternative 1 – No impact.</p> <p>Alternative 2 – Minor short-term adverse impact – not significant: due to increased turbidity.</p>	<p>Lee County has obtained USACE Individual Permit # SAJ-2012-00198(IP-MJD) and FDEP JCP permit 0311811-001-JC, issued 24 June 2013 and major modification 0311811-004-JM, issued 14 December 2022. Lee County is required to obtain any permit modifications as needed.</p> <p>An 8-step checklist as required by 44 CFR Part 9 was completed, see Appendix C.</p>
<p>5.3</p>	<p>Coastal Resources</p>		

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
	Coastal Zone Management Act (CZMA)	<p>Updated – not included in USACE EA</p> <p>Alternative 1 - No impact</p> <p>Alternative 2 - Minor long-term beneficial impact – not significant: due to restoration of the beach dunes and vegetation along the shoreline.</p>	<p>FDEP authorized Alternative 2 through JCP number 0311811-001-JC, issued 24 June 2013 and major modification JCP number 0311811-004-JM, issued 14 December 2022. This permit constitutes a finding of consistency with Florida's Coastal Zone Management Program (CZMP), as required by Section 307 of the CZMA. Lee County is required to obtain any permit modifications as needed.</p>
	Coastal Barrier Resources Act (CBRA) and Coastal Barrier Improvement Act of 1990 (CBIA)	<p>Updated – not included in USACE EA</p> <p>Alternative 1 - No impact.</p> <p>Alternative 2 –Minor long-term beneficial impacts - not significant: reduces risk to human safety, improved property, and wildlife</p>	<p>FEMA requested consultation with U.S. Fish and Wildlife Service (USFWS) under the CBRA on June 16, 2023. As of 8/24/2023 there was no response from USFWS. FEMA conveyed to USFWS that concurrence would be assumed for the specific exemptions under 16 U.S.C. 3505 (a)(6)(A) and 44 CFR § 206.345 (b)(5) regarding projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats and 16 U.S.C. 3505 (a)(6)(G) and 44 CFR § 206.345 (b)(6) regarding nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or</p>

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
			restore a natural stabilization system.
<b>5.4</b>	<b>Biological Resources</b>		
	Fish and Wildlife	<p>Updated – see USACE EA Sections 4.2.2, 4.2.3., and 4.2.4.</p> <p>Alternative 1 – Moderate long-term adverse impact – significant: Continuing erosion could lead to ongoing habitat loss.</p> <p>Alternative 2 – Minor short-term adverse impacts – Not Significant: Construction activities generate opportunities to harm or kill wildlife within proximity to work areas.</p>	<p>Alternative 2 would require implementation of FDEP JCP and USACE Individual Permit conditions regarding the Migratory Bird Treaty Act (MBTA), including provisions in applicable Programmatic Biological Opinions (PBOs) as well as USFWS BO 2023-0038749, dated 11/19/23, regarding sea turtles, fishes, and shorebirds. The applicant must also follow the latest Florida Fish and Wildlife Conservation Commission (FWCC) standard guidelines to protect against impacts to nesting shorebirds during implementation of this project during the periods from June – December 2023. Lee County is required to obtain any permit modifications as needed.</p>
	Vegetation	<p>Updated – see USACE EA Section 4.2.1.</p> <p>Alternative 1 – Moderate long-term adverse impact – significant: Continuing erosion could lead to ongoing dune vegetation loss due</p>	<p>Specifications of vegetation planting and other applicable conditions were placed on both the USACE individual and FDEP JCP permitting requirements. Lee County is required to obtain any permit modifications as needed.</p>

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
		<p>to escarpment formation.</p> <p>Alternative 2 – Minor long-term beneficial impact – Not significant: due to restoration of the beach dunes and the inclusion of additional vegetation beyond pre-disaster quantities.</p>	
	Threatened and Endangered Species	<p>No Change – see USACE EA Sections</p> <p>Alternative 1 – Moderate long-term adverse impacts – significant: possible loss of suitable habitat for listed species.</p> <p>Alternatives 2 – Minor short-term adverse impacts – not significant: Potential for incidental take during construction minimized by application of conservation measures</p>	<p>Under Alternative 2, Lee County must comply with all terms and conditions of applicable BOs and permits, including the Special Conditions, of USACE Permit No. SAJ-2012-00198(IP-MJD) and associated guidance, all conditions in the FDEP Permit (No. 0311811-001-JC) and its modification (No. 0311811- 004-JM), and all terms, conditions, and requirements of Biological Opinions Estero Island Beach Nourishment FWS Log #: 2023-0057472 and Lovers Key and Bonita Beach Nourishment FWS Log#: 2023-0038749.</p>
	Essential Fish Habitat	<p>Updated – See USACE EA Section 4.3</p> <p>Alternative 1 – No impact</p> <p>Alternative 2 – Minor short-term adverse impacts on</p>	Not applicable.

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
		EFH or federally-managed fisheries in the Gulf of Mexico.	
	Migratory Bird Treaty Act	Updated – See USACE EA section 4.2.5. Alternative 1 – Moderate long-term adverse impacts - significant Alternative 2 – Minor short-term adverse impacts – Not significant	Under Alternative 2, subrecipient will follow all applicable conditions of USFW issued BOs, including Biological Opinion Estero Island Beach Nourishment FWS Log #: 2023-0057472 and Lovers Key and Bonita Beach Nourishment FWS Log#: 2023-0038749.
	Bald and Golden Eagle Protection Act (BGEPA)	Updated – not included in USACE EA Alternative 1 - No impact. Alternative 2 – No impact.	Not applicable.
<b>5.5</b>	<b>Cultural Resources</b>		
	Historic Standing Structures	Updated – see USACE EA Sections 3.5 and 4.5 Alternative 1: No impact. Alternative 2: No Historic Properties Affected: No historic standing resources were identified within the Area of Potential Effects (APE) of the proposed project area.	Concurrence on the determination of No Historic Properties Affected was received from SHPO on 9/27/23.

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
	Archaeological Resources	<p>Updated – see USACE EA Sections 3.5 and 4.5</p> <p>Alternative 1: No impact.</p> <p>Alternative 2: No Historic Properties Affected: No cultural resources were identified during cultural resource assessment survey.</p>	<p>Lee County shall adhere to the following conditions for Alternative 2:</p> <ul style="list-style-type: none"> <li>• If human remains or intact archaeological deposits (e.g., arrowheads, pottery, glass, metal, etc.) 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 subrecipient 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 subrecipient’s contractor will provide immediate notice of such discoveries to the applicant. The applicant shall 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 State Historic Preservation Office (SHPO), Tribes, and other consulting parties as necessary. In the event that unmarked human remains are</li> </ul>

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
			<p>encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with Florida Statutes, Section 872.05.</p> <ul style="list-style-type: none"> <li>• Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way.</li> <li>• Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.</li> </ul>
5.6	<b>Socioeconomic Resources</b>		
	Land Use and Planning	<p>Updated – not included in USACE EA</p> <p>Alternative 1 – Moderate long-term adverse impacts – significant: Deterioration to the beach system could hinder the long-term recreational land use of the beaches.</p> <p>Alternative 2 – Minor short-term adverse impacts, not significant: to water and beach related recreation</p>	Not applicable.



Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
		and aesthetics during repairs.	
	Noise	No change – see USACE EA Section 4.1.5 Alternative 1 – No impact. Alternative 2 – Minor short-term adverse impacts – not significant: from construction equipment.	Not applicable.
	Transportation	Updated – not included in USACE EA Alternative 1 – No impact. Alternative 2 – Minor, short-term adverse impacts – not significant: due to increase of traffic through construction equipment, vessels, and barges	Not applicable.
	Public Services and Utilities	Updated – not included in USACE EA Alternative 1 – No impact. Alternative 2 – No impact.	Not applicable.
	Public Health and Safety	Updated – not included in USACE EA Alternative 1 – No impact.	To minimize public health and safety risks for Alternative 2, BMPs during construction and after were placed on both the USACE and

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
		Alternative 2 – Minor short-term adverse impacts – not significant: on public health and safety resulting from construction activities.	FDEP permitting requirements.
	Environmental Justice (Executive Order 12898)	Updated – not included in USACE EA Alternative 1 – No Impact. Alternative 2 – No Impact.	Not applicable.
	Hazardous, Toxic, and Radioactive Waste	No change – See USACE EA, Sections 3.7 and 4.7 Alternative 1 - No Impact. Alternative 2 - No Impact.	BMPs shall be required in the contract documents of the construction contractor to prevent oil, fuel, or other hazardous substances from entering the air or water; and, for the construction contractor to have a spill contingency plan for hazardous, toxic, or petroleum products in place, to be implemented in the unlikely event of an occurrence.
5.7	Cumulative Impacts	Updated – See USACE EA Sections 6.1.2, 6.7.4, and 6.8. Alternative 1 – Future storms could result in impacts to the shoreline, reducing buffer	Not applicable.

Section	Area of Evaluation	Alternative 1: No Action and Alternative 2: Proposed Action	Environmental Protection Measures and Required Permits
		between ocean and infrastructure.  Alternative 2 – Not expected to have significant adverse cumulative impacts on any resource.	

## 5. Affected Environment and Potential Impacts

### 5.1. PHYSICAL RESOURCES

#### 5.1.1. CLIMATE CHANGE

Climate change refers to changes in Earth’s climate caused by a general warming of the atmosphere produced by greenhouse gases (GHGs), which are emitted by both natural processes and human activities, and their accumulation in the atmosphere regulates temperature. GHGs include water vapor, carbon dioxide, methane, nitrous oxides, and other compounds. There are 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. Climate change is capable of affecting species distribution, temperature fluctuations, sea level dynamics, and weather patterns.

#### ***Alternative 1: No Action***

Under the no action alternative, no construction activities would occur, and, accordingly, no GHGs would be emitted, therefore, there would be no impact on climate change.

#### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Pollutants that would be emitted from the internal combustion engines exhaust of construction vehicles, equipment, and vessels include certain criteria pollutants, volatile organic compounds (VOCs), and certain GHGs. Emissions resulting from construction activities 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 the Lovers Key and Bonita Beach extents. Under the preferred alternative, restoration of an engineered beach would be completed and is anticipated to result in minor, short-term impacts from construction

equipment and corresponding temporary air emissions due to fuel usage. These impacts would not be significant.

## 5.2. WATER RESOURCES

### 5.2.1. WATER QUALITY

The Federal Water Pollution Control Act was enacted by Congress in 1948 to address water pollution. The Act was amended in 1972 and became commonly known as the Clean Water Act (CWA). The CWA regulates discharge of pollutants into waters of the United States (WOTUS), and it sets water quality standards for all contaminants in surface waters. Section 401 of the CWA requires certification of all Federal licenses and permits in which there is a “discharge of fill material into navigable waters.” The certification process is used to determine whether an activity, as described in the Federal license or permit, would impact established site-specific water quality standards. A water quality certification from the issuing state, the FDEP in Florida, is required prior to the issuance of the relevant Federal license or permit. Section 404 of the CWA was established to regulate the discharge of dredged or fill materials 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 most common Federal license or permit requiring certification is the USACE CWA Section 404 permit.

On the effective date of December 22, 2020, the FDEP assumed regulatory authority of certain WOTUS within the State of Florida. The waters USACE will continue to regulate are referred to as “retained waters.” Pursuant to 404(g) of the CWA, USACE will retain permitting authority under Section 404 of the CWA for those waters which are presently used, or are susceptible to use, in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce shoreward to their ordinary high water mark, including all waters which are subject to the ebb and flow of the tide shoreward to their mean high water mark, including wetlands adjacent thereto. Therefore, USACE will retain responsibility for permitting the discharge of dredged or fill material in:

- Waters identified in USACE’s Retained Waters List. A list of USACE Retained Waters can be found at: (<https://www.saj.usace.army.mil/Missions/Regulatory/>);
- All waters subject to the ebb and flow of the tide shoreward to their mean high-water mark that are not specifically listed in the Retained Waters List;
- Wetlands adjacent to those waters identified above landward to the administrative boundary. The administrative boundary demarcating the adjacent wetlands over which jurisdiction is retained by USACE is a 300-foot guideline established from the ordinary high-water mark or mean high tide line of the retained water; and,
- Those waters of the United States within “Indian Country.”

In the case of a project that involves discharges of dredged or fill material both waterward and landward of the 300-foot guideline, USACE will retain jurisdiction to the landward boundary of the project for the purposes of that project only. All waters of the United States not retained by USACE will be assumed by FDEP as part of its State 404 Program. Projects in assumed waters will be processed by FDEP pursuant to the State 404 Program.

The National Pollutant Discharge Elimination System (NPDES) was established under the CWA to regulate point source and stormwater discharges that release pollutants into WOTUS. Florida's NPDES stormwater program requires a permit from FDEP for any proposed project that would disturb at least one acre of land and those that discharge stormwater to surface waters of the state. As part of this permit, the proponent of the project is required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP), which outlines Best Management Practices (BMPs) and engineering controls to be used to prevent and minimize erosion, sedimentation, and pollution during construction.

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.

The Environmental Protection Agency (EPA) assesses the water quality of waterbodies in the United States utilizing compiled state, territorial, and authorized tribal water quality standards. Information about the water quality of each waterbody is made available through the interactive online *How's My Waterway? Waterbody Report*.

Section 1424(e) of the Safe Drinking Water Act of 1974 [PL 93-523] authorizes EPA to designate an aquifer for special protection under the sole source aquifer program if the aquifer is the sole or principal drinking water resource for an area (i.e., it supplies 50 percent or more of the drinking water in a particular area) and if its contamination would create a significant hazard to public health. No commitment for federal financial assistance may be provided for any project that EPA determines may contaminate a sole source aquifer such that a significant hazard to public health is created.

### **Existing Conditions**

The primary water sources for Lovers Key and Bonita Beach are wells operated by public water systems and private citizens. According to the United States Geological Survey (USGS) "Ground Water Atlas of the United States," these wells draw predominately from the Intermediate Aquifer System. According to the EPA's Map of Sole Source Aquifer Locations, accessed August 30, 2023, the project area is not located within a sole source aquifer.

The Lovers Key and Bonita Beach Nourishment project is located on the Gulf of Mexico, which is an ocean/near coastal waterbody. According to the EPA's waterbody report for 2020, the Gulf of Mexico is categorized as impaired for fish consumption due to mercury in fish tissue. No probable sources of impairment were identified for this waterbody. The EPA assessed the Gulf of Mexico's water quality as good for both the fish and wildlife propagation and recreational water quality parameters.

## Potential Impacts and Proposed Mitigation

### ***Alternative 1: No Action***

Under the no action alternative, there would be no impact to water quality.

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

The proposed project could potentially affect water quality, primarily regarding turbidity. It is reasonable to expect that beach nourishment activity would result in re-suspension of fine-grained materials currently trapped in the sediment at the borrow sites resulting in minor, short-term effects in the vicinity of the project. The discharge of dredged materials in the near shore environment would likely reduce the clarity in the immediate vicinity of active nourishment. The associated discharge may also contribute minor changes in the pH and temperature, chemical content, and dissolved gas levels within the immediate vicinity of active nourishment.

Lee County's proposed construction methodology would incorporate a shore-parallel sand dike constructed seaward of the pipeline discharge point. This dike would be constructed prior to nourishment activities, such that the dredged material discharge would be somewhat contained between the existing beach and the sand dike. Fine-grained material not captured by the dike that moves back into marine waters would be exposed to tidal action within the near shore environment and would be quickly dispersed into the marine environment. Turbid plumes may develop during active nourishment of the beach, but such plumes would quickly dissipate, as would any other re-suspended fine-grained material. Any turbidity created by the project would be limited to the construction phase and would primarily be confined to areas around the excavator, pump-out areas, discharge sites, and locations where dewatering effluent is released. All three borrow areas contain beach compatible sand with very low silt content; as such, high levels of turbidity are not anticipated. Nourishment of Lovers Key and Bonita Beach is currently permitted by USACE permit SAJ-2012-00198(IP-MJD), issued 3 September 2013 (Appendix J) and FDEP Joint Coastal Permit (JCP) number 0311811-001-JC, issued 24 June 2013 and major modification 0311811-004-JM, issued 14 December 2022 (Appendix I). USACE and FDEP are both currently processing permit modifications for this project. These permits certify compliance with state water quality standards pursuant to Section 401 of the CWA.

The proposed project would not involve diversion of fresh water or estuarine water and would not restrict such flows. The Lovers Key and Bonita Beach nourishment project would not be located in proximity to a river mouth. The translocation of sandy material between the borrow area and the nourishment area is not anticipated to have an effect on salinity gradients within the Gulf of Mexico. Considering the size of the active nourishment area, at any point in time, relative to the dynamic nature of the near shore marine environment, (i.e., tidal change, mixing, etc.), Alternative 2 is expected to have minor, short-term adverse impacts to water quality. These impacts would not be significant.

### 5.2.2. FLOODPLAINS

EO 11988, Floodplain Management, amended January 29, 2015, and 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.” Special Flood Hazard Areas (SFHAs) are areas that have special flood, mudflow, or flood-related erosion hazards and will be inundated with water in the event of a 100-year (base) flood, which is a flood that has a 1 percent chance of being equaled or exceeded in magnitude in any given year. SFHAs are also referred to as the 100-year floodplain. 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 percent chance of being equaled or exceeded in magnitude in any given year. Moderate flood hazard areas are those areas between the limits of the 100- and 500-year floodplains. Areas of minimal flood hazard fall outside of the SFHA (100-year floodplain) and are higher than the elevation of the 0.2-percent-chance annual flood (500-year floodplain). The zone VE or Coastal High Hazard Area (CHHA) are coastal areas with a 1 percent or greater change of flooding including an additional hazard associated with storm waves. States or Local municipalities have the option to adopt additional coastal floodplain areas past the minimum defined CHHAs. These additional areas are typically referred to as the “Coastal AE Zone” and are found seaward of the Limit of Moderate Wave Action (LiMWA). Coastal AE zones are defined as those areas where wave heights are between 1.5 feet and 3 feet during a 1 percent flooding event. The State of Florida has adopted Coastal AE zones. SFHAs, CHHAs, moderate flood hazard areas, areas of minimal flood hazard, and both the 100- and 500-year floodplains are mapped on FEMA Flood Insurance Rate Maps (FIRMs).

#### Existing Conditions

Based on the current FEMA FIRMs, the project areas are located within the CHHA (Appendix C). The borrow areas are located in areas designated as “open water” on the FIRM and therefore have no floodplain designation and are not subject to evaluation under EO 11988.

#### Potential Impacts and Proposed Mitigation

##### *Alternative 1: No Action*

Under the no action alternative, no construction would occur, and the floodplain would be allowed to return to its nonengineered state. However, open space use and protection of a community’s health, safety, and wellbeing are considered beneficial values for floodplain resources. A beach system enables a floodplain to facilitate open space use through recreation and provide a buffer to minimize impacts upon a community during flood events. Erosion to the beach system, if unaddressed, negatively impacts the potential for these resources to function as intended. As the beach continues to suffer erosion during future similar events, without intervention, the beach could cease to function as a recreational facility for the community. Furthermore, as the beach continues to erode, the community will experience increased impacts as a result of similar flooding events. This could continue until improved property is ultimately reclaimed by the environment. Due to this, the no action alternative would have moderate long-term adverse impacts upon the floodplain. These impacts would be significant.



### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Under the preferred alternative, construction to renourish the beaches would occur within the floodplain. Restoring Lovers Key and Bonita Beach would serve to reduce the flood risk to the areas landward of the existing shorelines, including improved property and upland habitat. The beaches are functionally dependent upon their location within the floodplain. The beach system exhibits several natural and beneficial values of floodplains as noted in 44 CFR Part 9. Lovers Key and Bonita Beach facilitate open space use of the floodplain for recreational value. Additionally, the beach provides nearshore habitat for flora and fauna, including endangered species such as turtles and shore birds. An 8-step checklist, as required by 44 CFR Part 9, has been completed for this alternative (Appendix C). Alternative 2 has been determined to have minor, long-term, beneficial impacts to the floodplain. These impacts are significant.

#### **5.2.3. WETLANDS**

EO 11990: Protection of Wetlands requires Federal agencies to avoid funding activities that directly or indirectly support occupancy, modification, or development of wetlands, whenever there are practicable alternatives. FEMA uses the 8-step decision-making process to evaluate potential effects on, and mitigate impacts to, wetlands in compliance with EO 11990.

Effective December 22, 2020, the EPA delegated to FDEP the authority to issue wetland permits in the state under Section 404 of the CWA. Accordingly, FDEP administers and regulates state jurisdictional and state-assumed wetlands and certain WOTUS in Florida. The USACE retains jurisdiction and Section 404 permitting authority of wetlands and WOTUS not assumed by FDEP. As part of their two-step Jurisdictional Determination (JD) process, the USACE must identify and locate aquatic resources, including wetlands, on a property prior to determining whether these areas are under its jurisdiction per Section 404 of the CWA or Section 10 of the Rivers and Harbors Act (RHA). This first step in the JD process is termed delineation.

#### **Existing Conditions**

Per the USFWS National Wetlands Inventory, accessed August 30, 2023, the Lovers Key and Bonita Beach Restoration project area is located within designated wetlands (Appendix D). Lovers Key and Bonita Beach are located in and adjacent to mapped estuarine and marine wetlands. The two existing borrow areas are located within mapped Estuarine and Marine Deepwater wetlands. The offshore borrow area for the Lovers Key and Bonita Beach Restoration project is approximately eleven (11) nautical miles offshore and is not in a mapped wetland.

#### **Potential Impacts and Proposed Mitigation**

##### ***Alternative 1: No Action***

Under the no action alternative, sand placement and associated dredging activities would not occur, therefore, there would be no impact to existing wetland resources.



### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Under the preferred alternative, sand would be obtained from nearshore and offshore borrow areas and placed on the beach to restore erosion and maintain the engineered beach profile and features. Temporary increases to turbidity are likely to occur during both the excavation of sand at the borrow areas and during sand placement operations on the beach. BMPs are required by both the obtained USACE Individual Permit #SAJ-2012-00198(IP-MJD) and FDEP JCP #0311811-001-JC and major modification 0311811-004-JM. Beneficial impacts to estuarine and marine wetlands are expected to persist by a restored beach area providing a buffer against coastal erosion preserving habitat and recreational values.

An 8-step checklist, as required by 44 CFR Part 9, has been completed for this alternative (Appendix C). Lee County will have to provide verification that all permitting requirements and conditions were adhered to during and after the construction work. This verification will be required at project closeout. Under alternative 2, minor short-term adverse impacts are anticipated as a result of construction activity. These impacts would not be significant.

## **5.3. COASTAL RESOURCES**

### **5.3.1. COASTAL ZONE MANAGEMENT ACT (CZMA)**

The Coastal Zone Management Act (CZMA), administered by states with shorelines in coastal zones, requires those states to have a Coastal Zone Management Plan (CZMP) to manage coastal development. 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. Projects falling within designated coastal zones must be evaluated to ensure they are consistent with the CZMP. Projects receiving federal assistance must follow the procedures outlined in 15 CFR § 930.90 – 930.101 for federal coastal zone consistency determinations.

The Florida Coastal Management Program (FCMP) was approved by National Oceanic and Atmospheric Administration (NOAA) in 1981 and is codified in Chapter 380, Part II, F.S. The state of Florida's coastal zone includes the area encompassed by the state's 67 counties and its territorial seas. The FCMP consists of a network of 24 Florida Statutes administered by eight state agencies and five water management districts. This framework allows the state to make integrated, balanced decisions that ensure the wise use and protection of the state's water, property, cultural, historic, and biological resources; protect public health; minimize the state's vulnerability to coastal hazards; ensure orderly, managed growth; protect the state's transportation system; and sustain a vital economy. In order to guide development and resource management within the Florida's coastal area, FDEP implements federal consistency reviews through the Florida State Clearinghouse or its permitting process.

FDEP's Coastal Construction Control Line (CCCL) Program regulates structures and activities that are seaward of established CCCLs and have the potential to cause beach erosion, dune destabilization, damage to upland properties, or interference with public access. CCCLs delineate the limits of beach-

dune systems that are subject to severe fluctuations based on a 100-year storm surge, storm waves, or other predictable weather conditions. CCCLs have been established in twenty-five (25) of Florida's coastal counties that have sandy beaches fronting the Atlantic Ocean, the Gulf of Mexico, the Straits of Florida, or associated inlets. An FDEP JCP is required for activities located on Florida's natural sandy beaches that extend seaward of the mean high-water line, extend into sovereign submerged lands, and are likely to affect the distribution of sand along the beach. The JCP Program combines the regulatory requirements of the CCCL Program with the Environmental Resource Permit (ERP) Program, enabling activities that would have required both a CCCL permit and ERP permit to be authorized by a JCP.

### **Existing Conditions**

For the purposes of the CZMA, the entire state of Florida is considered a coastal zone. The Lovers Key and Bonita Beach nourishment project area is, accordingly, within a coastal zone. FDEP's CCCL online mapping tool indicates that the project area is seaward of the CCCL in Lee County. As such, the Lovers Key and Bonita Beach Restoration project is subject to regulation under FDEP's JCP Program.

### **Potential Impacts and Proposed Mitigation**

#### ***Alternative 1: No Action***

Under the no action alternative, the critical coastal areas and ecosystems would be unprotected and susceptible to further coastal erosion. However, no work would occur and there would be no impact to the coastal zone.

#### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Under the preferred alternative, activity and construction would occur in the coastal zone and seaward of the CCCL. The project would restore eroded areas of the shore by replacing beach compatible sand to a designed beach profile meant to mimic the natural beach profile. FDEP authorized the preferred alternative through FDEP JCP number 0311811-004-JM, issued 14 December 2022. This permit constitutes a finding of consistency with Florida's CZMP, as required by Section 307 of the CZMA. Under the no action alternative, there would be a minor long-term beneficial impact to coastal zones. The impacts would not be significant.

### **5.3.2. COASTAL BARRIER RESOURCES ACT (CBRA) AND COASTAL BARRIER IMPROVEMENT ACT (CBIA) OF 1990**

The Coastal Barrier Resources Act (CBRA) of 1982 and subsequent amendments encourage the conservation of storm-prone and dynamic coastal barriers by prohibiting Federal funding for actions that would encourage development in areas that have been designated as System Units within the CBRS. There are exemptions to the Act and actions that meet specific exemptions must demonstrate consistency with the three purposes of CBRA. The purposes of CBRA are to minimize the loss of human life, the wasteful expenditure of Federal revenues, and the damage to fish, wildlife, and other natural

resources. CBRA was amended by the Coastal Barrier Improvement Act (CBIA) of 1990, designating a new category of units within the CBRS, 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. OPAs don't have the same restrictions as System Units and Federal funding is not prohibited in these areas.

## Existing Conditions

The Lovers Key portion of the project area is within System Unit P17 of the CBRS as identified by the US Fish and Wildlife Service (USFWS) CBRS mapper, accessed August 20, 2023 (Appendix E). Bonita Beach and the associated borrow areas are not located within the CBRS.

## Potential Impacts and Proposed Mitigation

### ***Alternative 1: No Action***

Under the no action alternative, no work would occur and there would be no impact to a CBRS unit.

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Under Alternative 2, construction activities would occur within a CBRS system unit P17. FEMA initiated consultation with USFWS under the CBRA on June 16, 2023 (Appendix E). As noted in this consultation, FEMA determined that the actions listed in the preferred alternative would be exempted under 16 U.S.C. 3505 (a)(6)(A) and 44 CFR § 206.345 (b)(5) regarding projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats and 16 U.S.C. 3505 (a)(6)(G) and 44 CFR § 206.345 (b)(6) regarding nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system.

FEMA based this determination on a variety of factors and found the action to be consistent with the three purposes of the Act. The restoration and fortification of the beach minimizes loss of human life by providing a barrier against storm surge and high velocity sea-waves which have the potential to destroy upland roads, damage homes, and directly place people at risk to the impacts of coastal flooding. Additionally, nourishment will minimize wasteful federal expenditures by preventing damage to roads and other upland infrastructure that may be inflicted due to future tidal events and hurricanes. Repair of the beach also benefits fishes, wildlife, and other naturally occurring fauna by restoring eroded habitat. Maintaining the natural habitat will support threatened and endangered species by allowing species, such as sea turtles, to continue coming ashore for nesting and provide habitat for terrestrial wildlife.

After the regulatory 60-day consultation window closed on August 24, 2023, there was no response from USFWS received; FEMA sent a follow-up correspondence to state concurrence would be assumed for the specific exemptions listed in the original consultation letter. Alternative 2 would have minor, long-term, beneficial impacts on coastal barrier resources. These impacts would not be significant.

## 5.4. BIOLOGICAL RESOURCES

### 5.4.1. FISH AND WILDLIFE

Biological resources include native or naturalized plants and animals and their habitats (e.g., wetlands, forests, and grasslands). This DSEA does not cover adverse impacts to species or habitats of concern over relatively large areas, or if disturbances cause reductions in population size or distribution. FEMA used potential physical impacts such as habitat loss, noise, and impacts to water quality to assess the effects of the Action Alternatives on biological resources.

The engineered sandy beaches on which the dunes are to be constructed serve as foraging and nesting habitat for numerous species. These include various species of shorebirds, wading birds, sea birds, crabs, mammals, and sea turtles. There are no seagrass habitats nor hardbottom and coral habitats located offshore in the vicinity of the project area.

#### Existing Conditions

The Region of Interest (ROI) includes all areas transited by dredging vessels and equipment, barges, and other vessels utilized including portions of the OCS, the offshore borrow area, nearshore borrow areas, and the waters in and around the barrier islands. The inlets separating the barrier islands give way to small bays and estuaries where Submerged Aquatic Vegetation (SAV), mangroves, and wetlands provide forage, nursery, and habitat for various life stages of managed species and their prey. Common amphibians known to occur within the ROI include various species of toads, frogs, and salamanders. Reptiles include alligator (*Alligator mississippiensis*), American crocodile (*Crocodylus acutus*), water snakes (*Nerodia spp.*), and other reptiles, to include various species of snakes, lizards, and terrapins. Mammals known to occur within the ROI include rodents (voles, mice, rats, squirrels, groundhogs, etc.), raccoons (*Procyon lotor*), black bears (*Ursus americanus*), opossum (*Didelphis virginiana*), armadillos (*Dasypus novemcinctus*), and whitetail deer (*Odocoileus virginianus*). Bird species include migratory shorebirds, wading birds, raptors, and songbirds, including whooping crane (*Gus americana*), brown pelican (*Pelecanus occidentalis*), and eastern bluebird (*Sialia sialis*).

Of the aquatic species or species groups managed in the Gulf of Mexico, the following species may occur within the ROI:

- Coastal Migratory Pelagics: cobia (*Rachycentron canadum*), Spanish mackerel (*Scombrus maculatus*), and King Mackerel (*Scomberomorus cavalla*).
- Penaeid Shrimp: this includes the brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus setiferus*), red royal shrimp (*Pleatycus robustus*), and pink shrimp (*Farfantepenaeus duorarum*).
- Coral Reef/Hardbottom: The ROI falls within the 65-foot contour of the West Florida shelf, making the corals within this region largely shallow water species including the following: Black corals, Hermatypic stony corals; some shallow water species contain symbiotic zooxanthellae. While deep water species contain zooxanthellae; some hydrozoan species, including fire corals

are included in this group. There are no reefs or hardbottom within or immediately adjacent to the Beach Fills or Borrow Areas.

- Reef Fish: There are 31 species of reef fishes within the ROI. The diverse assemblages of fishes found in and adjacent to the ROI is vital to the health of the marine ecosystem which supports commercial and recreational fishing as well as various ecotourism activities. Target species include bonefish (*Albula vulpes*), snook (*Centropomus undecimalis*), tarpon (*Megalops atlanticus*), permit (*Trachinotus falcatus*), blue crabs (*Callinectes sapidus*), stone crabs (*Menippe mercenaria*), snappers (*Lutjanidae*), groupers (*Serranidae*), grunts (*Haemulidae*), wahoo (*Acanthocybium solandri*), spadefish (*Chaetodipterus faber*), yellowtail snapper (*Ocyurus chrysurus*), Red Drum (*Sciaenops ocellatus*), invertebrates (Spiny Lobster (*Panulirus argus*) and Slipper lobster (*Scyllarides nodifer*), blue crabs, stone crabs, and bait shrimp), and baitfish (e.g., ballyhoo (*Hemiramphus brasiliensis*), Spanish sardines (*Sardinella aurita*), thread herring (*Opisthonemoa oglinum*), and pilchard (*Harengula jaguana*)).

## Potential Impacts and Proposed Mitigation

### **Alternative 1: No Action**

The No Action Alternative would not result in any construction activities; therefore, the No Action Alternative would have no direct impacts to fish and wildlife. However, species habitats would continue to decline due to continued erosion of the beach shoreline. This background erosion and future storm erosion could eventually lead to moderate long-term adverse impacts to the habitat of wildlife present on the beach. These impacts would be significant.

### **Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)**

Under Alternative 2, short-term changes in nearshore and offshore habitat areas may occur during construction activities. Dredging activities will increase noise and turbidity in and around the borrow areas disturbing local wildlife. It is anticipated that these actions will encourage flight of wildlife found in the immediate area, and harm to present species should be minimal. Similar impacts are to be expected within the Lovers Key and Bonita Beach extents undergoing nourishment activities. Noise from heavy machinery and workers should discourage wildlife from being within proximity of the work site. During periods of inactivity, nuisance, and opportunistic species such as racoons and opossum may forage the worksite due to the presence of food waste from construction workers. Regardless, harm to species around the work site is anticipated to be minimal. Fish 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 Essential Fish Habitat (EFH) and Migratory Bird Treaty Act (MBTA), including provisions in the applicable PBOs regarding shorebirds. Based on the review conducted, Alternative 2 would have minor short-term adverse impacts to fish and wildlife. These impacts would not be significant.

### 5.4.2. VEGETATION

Vegetation is a necessary component of a functioning coastal dune as the root system serve to keep the dunes structure intact and resistant to erosion caused by wind and storm surge. In addition, dune vegetation provides foraging and nesting habitat to animals such as shorebirds.

#### Existing Conditions

Vegetation is sparse in this zone, but similar to that of a mud flats; it is a rich feeding zone for wading and shorebirds that are able to probe below the surface for infaunal organisms that include isopods, amphipods, polychaetes, mollusks and crustaceans. These feeding grounds support nesting shorebird colonies. The benthic organisms also provide a good food source for animals that venture down from the uplands during low tide. The most observed species include sea oats (*Uniola paniculata*), sea purslane (*Sesuvium portulacastrum*), sea grape (*Coccoloba uvifera*), and salt-grass (*Distichlis spicata*). There is no SAV adjacent to the beach fills, and within or adjacent to the borrow areas.

#### Potential Impacts and Proposed Mitigation

##### ***Alternative 1: No Action***

With this alternative, continued erosion and overwash are expected to occur resulting in losses to vegetative resources. The No-action Alternative would have no direct causal impacts on vegetative resources. However, it can be expected that due to natural causes such as climate change and sea level rise erosion would continue to occur, and shoreline and back bay habitats would therefore be eroded away. This erosion would have moderate long-term negative impacts upon vegetation found within these habitats. These impacts would be significant.

##### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

For Alternative 2, it is anticipated that shoreline vegetation would be exposed to minor negative impacts from the deployment and use of heavy earth moving machinery. Additionally, shoreline vegetation may be exposed to additional foot traffic from workers accessing the construction areas. Lee County would replace approximately 82,400 pre-disaster dune plants with mature plants at a 2.5 multiplier to protect against future erosion from storm surge. Prior to Hurricane Ian, the plants were originally spaced, on average, 18 inches on center which is an equivalent to 4 plants per square yard. Due to these actions, the preferred alternative is anticipated to have a minor long-term beneficial impact on vegetation within the project area. This impact will not be significant.

### 5.4.3. THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agencies for implementing ESA are the USFWS and the NOAA National Marine Fisheries Service (NMFS). The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse



modification of designated critical habitat of such species. The law also prohibits any action that causes a “taking” of any listed species of endangered fish or wildlife. Take as defined under the ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Incidental take is an unintentional, but not unexpected, taking.

## Existing Conditions

In accordance with Section 7 of the ESA of 1973, the project was evaluated for the potential occurrences of federally listed threatened and endangered species. 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 September 29, 2023) and the NOAA Fisheries Species Directory (<https://www.fisheries.noaa.gov/species-directory>). The species likely to occur within the project area include: the federally endangered West Indian manatee (*Trichechus manatus*), the federally threatened eastern indigo snake (*Drymarcon corais couperi*), the federally threatened Piping Plover (*Charadrius melodus*), the federally threatened Red Knot (*Calidris canutus rufa*), the federally endangered Aboriginal prickly apple (*Harrisia aboriginum*), the federally threatened Wood Stork (*Mycteria americana*), the federally threatened green sea turtle (*Chelonia mydas*), the federally threatened loggerhead sea turtle (*Caretta caretta*), the federally endangered Kemp’s Ridley sea turtle (*Lepidochelys kempii*), the federally endangered leatherback sea turtle (*Dermochelys coriacea*), the federally endangered hawksbill turtle (*Eretmochelys imbricata*), the federally threatened Gulf sturgeon (*Acipenser oxyrinchus (oxyrhynchus) desotoi*), the federally endangered smalltooth sawfish (*Pristis pectinata*), and the federally threatened giant manta ray (*Manta birostris*). There is designated critical habitat for the Gulf sturgeon present within the Gulf of Mexico adjacent to the shoreline of the proposed project location.

## Potential Impacts and Proposed Mitigation

### **Alternative 1: No Action**

Alternative 1 does not include any sand collection or sand placement activities; therefore, there would be no direct impacts and no further responsibility under the ESA. Under the No Action Alternative, the Lovers Key and Bonita Beach shoreline would remain in its current state and sand would not be placed on the beach. Ongoing erosion would continue along the shoreline, impacting the existing beaches and dune systems. This could lead to a loss of nesting habitat for sea turtles and foraging area for piping plover. The no action alternative would have moderate long-term adverse impacts on endangered and threatened species and their habitats. These impacts would be significant.

### **Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)**

Under the preferred alternative, beneficial impacts to species along the shoreline environment are anticipated to occur due to the sand placement activities and revegetation of the dunes. If the sand placement and dune planting occur during sea turtle nesting season, the action may adversely affect

nesting sea turtles and hatchlings. Short-term adverse impacts may be expected to the piping plover due to disruption in foraging habitat during construction.

In preparation of its 2023 EA, the USACE and the BOEM evaluated potential impacts to federally listed threatened and endangered species that may be present in the project area using the NMFS' Biological Opinion to the U.S. Army Corps of Engineers for dredging of Gulf of Mexico navigation channels and sand mining ("Borrow") areas using hopper dredges by USACE Galveston, New Orleans, Mobile, and Jacksonville Districts, dated November 19, 2003, and subsequent revisions [commonly referred to as the Gulf of Mexico Regional Biological Opinion (GRBO)], and the USFWS' Statewide Programmatic Biological Opinion for Sand Placement (SPBO) for the U.S. Army Corps of Engineers (Corps) Civil Works and Regulatory sand placement activities in Florida, dated August 22, 2011. Specific species evaluations can be found within sections 3.4 and 4.4 of the USACE and the BOEM EA (Appendix A). A summary of the species impact determinations are as follows:

- West Indian manatee (*Trichechus manatus*) – May affect, not likely to adversely affect
- Piping plover (*Charadrius melodus*) – May affect, not likely to adversely affect
- Rufus red knot (*Calidris canutus rufa*) – May affect, not likely to adversely affect
- Aboriginal prickly apple (*Harrisia aboriginum*) – May affect, not likely to adversely affect
- Green sea turtle (*Chelonia mydas*) – Likely to adversely affect
- Loggerhead sea turtle (*Caretta caretta*) – Likely to adversely affect
- Kemp's Ridley sea turtle (*Lepidochelys kempii*) – Likely to adversely affect
- Leatherback sea turtle (*Dermochelys coriacea*) – Likely to adversely affect
- Hawksbill turtle (*Eretmochelys imbricata*) – Likely to adversely affect
- Gulf sturgeon (*Acipenser oxyrinchus (oxyrhyinchus) desotoi*) – Likely to adversely affect
- Smalltooth sawfish (*Pristis pectinata*) – May affect, not likely to adversely affect
- Giant manta ray (*Manta birostris*) – Likely to adversely affect

Two (2) additional threatened and endangered species not previously considered in the USACE and the BOEM EA were identified for consideration by accessing the USFWS IPaC database on September 23, 2023. As such, the Lovers Key and Bonita Beach project was also evaluated for potential impacts to the federally threatened Eastern indigo snake (*Drymarchon couperi*), and the federally threatened Wood stork (*Mycteria americana*). Lovers Key and Bonita Beach does not provide suitable habitat for these species, and they are unlikely to be found within the project area. As such, the preferred alternative would have no effect to the Eastern indigo snake or the Wood stork.

The USACE initiated formal consultation with the NMFS for potential effects the project may have on the Green sea turtle, Loggerhead sea turtle, Giant Manta Ray, and Smalltooth sawfish designated critical habitat Charlotte Harbor Estuary Unit 1. The NMFS responded with a Biological Opinion (BO), consultation number SERO-2023-00206 and SERO-2023-00268 dated August 25, 2023. The BO provided by the NMFS is stacked with the GRBO. Stacking means the use of an existing Opinion by reference to cover the majority of the proposed action in a new Opinion and addressing the portions of the proposed action not covered in the existing Opinion within the new Opinion to avoid authorization of duplicate impacts to ESA managed resources. Due to this, the project specific BO did not provide



an incidental take statement for Green sea turtle or Loggerhead sea turtle. An incidental take statement for these species can be found in GRBO. However, NMFS did provide an incidental take statement for the Giant manta ray. Included with this incidental take statement, NMFS provided “Reasonable and Prudent Measures” that are necessary and prudent to minimize impacts of the incidental take of Giant manta rays. The NMFS also included two “Conservation Recommendations” designed to minimize or avoid adverse effects of a proposed action on the ESA-listed species:

- NMFS recommends the USACE and BOEM conduct studies or support directed research to satellite (SPOT 6; Mini PAT) or acoustic tag giant manta rays in the action area. Data collected from tagging would be used evaluate residency and diel movement patterns, and purported nearshore nursery habitat along Florida east coast, which will inform future consultation and authorizations.
- NMFS recommends the USACE and BOEM require all personnel to report giant manta ray sightings to the giant manta ray recovery coordinator at NMFS Southeast Region Protected Resources Division. Giant manta ray’s observations should be photographed and include the latitude/longitude, date, and environmental conditions at the time of the sighting.

The USACE requested formal consultation with the USFWS for potential effects the project may have on the West Indian manatee, piping plover, loggerhead turtle, green turtle, leatherback turtle, Kemp’s ridley turtle, and hawksbill turtle on March 17, 2023. The USFWS responded by letter sent to the USACE along with USFWS Log No. 2023-0057472 on September 29, 2023, for Estero Island, and USFWS Log#: 2023-0038749, on November 16, 2023. The USFWS concurred that the project may affect, but is not likely to adversely affect, the Aboriginal prickly apple and the West Indian manatee. The USFWS concurred that the project may affect, but is not likely to adversely affect piping plover, and piping plover critical habitat. USFWS determined that the proposed project will not jeopardize the red knot and is not likely to destroy or adversely modify proposed Critical Habitat. The USFWS’ concurrence with these determinations for the West Indian manatee and piping plover is based on the implementation of the following conservation measures:

- (1) Implementing all conservation measures under the 2015 Statewide Placement Biological Opinion,
- (2) Implementing all reasonable and prudent measures and terms and conditions of the Piping Plover Programmatic Biological Opinion, and
- (3) Incorporation of Standard Construction Conservation Measures for Manatees into the project plans

The USFWS also concurred that the project may affect and is likely to adversely affect the North Atlantic Ocean distinct population segment of green sea turtle, hawksbill, Kemp’s Ridley, leatherback, Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles. The USFWS agreed that the USACE’s application of the 2015 SPBO to the project was appropriate.

The project will be required to meet the Reasonable and Prudent Measures, Terms and Conditions, Conservation Measures, and Incidental Take Statement of three (3) additional applicable USACE programmatic biological opinions to minimize impacts to listed species: the USFWS SPBO (Service Log 41910-2011-F-0170, dated March 13, 2015), the USFWS Programmatic Piping Plover Biological Opinion (Service Log 04EF1000-2013-F-0124, dated May 22, 2013), and the NMFS GRBO (Consultation Number F/SER/2000/01287, dated November 19, 2003). The project will also adhere to the Florida Standard Manatee Conditions for In-Water Work and Sea Turtle and Smalltooth Sawfish Construction Conditions as required by the Programmatic Biological Opinions (PBOs).

Upon implementation of the Conservation Measures, Reasonable and Prudent Measures, Terms and Conditions, and Incidental Take Statement included in the USFWS BO, SPBO and NMFS GRBO, as well as adherence to the USACE Individual Permit and FDEP JCP permit conditions, the project is not likely to jeopardize the continued existence of the Green or loggerhead sea turtles or the Giant manta ray. Environmental impacts to species along the shoreline are anticipated due to construction activities. Sea turtles and shorebirds would be impacted by the temporary disruption of the shore habitat. Pelagic marine species would be impacted by the temporary disruptions caused by dredging. The impacts to ESA-listed species would be temporary, and the species are expected to recover once construction has been completed. The preferred alternative would have minor short-term adverse impacts on threatened and endangered species. These impacts would not be significant.

#### **5.4.4. MIGRATORY BIRD TREATY ACT**

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.

#### **Existing Conditions**

The entire state of Florida is considered a flyway zone for migratory birds. According to the USFWS IPaC database accessed on September 29, 2023; 28 migratory bird species were identified as being potentially present within the project area, and 21 of the species have a designated breeding season which could occur within the project vicinity.

## Potential Impacts and Proposed Mitigation

### ***Alternative 1: No Action***

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. However, species habitats would further decline due to continuing erosion of the beach shoreline. This background erosion and future storm erosion could eventually lead to moderate long-term adverse impacts to the habitat of wildlife present on the beach. These impacts would be significant.

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

If the sand placement activities occur during breeding season, these actions may adversely affect nesting shore birds and their young. Additionally, the disruption in the foraging habitat during construction activities could cause short-term impacts for migratory bird species near the project area. Due to the moderate short-term impact, the proposed action would be required to follow the conditions from USFWS B0 ( Service Log # 2023-0057472, dated September 29, 2023), USFWS B0 (Service Log #2023-0038749, dated November 16, 2023), USFWS SPBO (Service Log 41910-2011-F-0170, dated March 13, 2015), the USFWS Programmatic Piping Plover Biological Opinion (Service Log 04EF1000-2013-F-0124, dated May 22, 2013), FDEP permit (No. 0311811-001-JC) and its permit modification (No. 0311811-004-JM), which includes shorebird conditions and requirements to mitigate impacts to migratory bird species. Once the project is complete, the coastal dune system would provide long-term positive effects by providing a restored habitat and foraging area for these species to the full design profile. Under Alternative 2, minor short-term adverse impacts to species within the project area would be anticipated. These impacts would not be significant.

#### **5.4.5. 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."

### **Existing Conditions**

According to the FWC Historical Bald Eagle Nesting Areas mapper and the Audubon Florida EagleWatch Nest Application, accessed on September 5, 2023, no documented eagle nests are located within the project area. However, there is a documented bald eagle nest located approximately 0.25 miles away from the project area within Lover's Key State Park. This nest was last known to be active in 2012. The general nesting season for bald eagles in the southeast is from approximately October 1 to May 15.

## Potential Impacts and Proposed Mitigation to Bald and Golden Eagles

### ***Alternative 1: No Action***

Under the no action alternative, no impacts to bald and golden eagles would occur.

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Golden eagles inhabit tundra, grasslands, forested and woodland-brushlands, and arid deserts. They 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. Additionally, considering the only known bald eagle nest within a mile of the project site has been dormant since 2012, bald eagles are not anticipated to be found within the project area. Based on these considerations, no impact is anticipated to bald or golden eagles.

## 5.5. CULTURAL RESOURCES

As a Federal agency, FEMA must consider the potential effects of its actions upon cultural resources prior to engaging in any undertaking. This obligation is defined in Section 106 of the National Historic Preservation Act (NHPA), as amended, and implemented by 36 CFR Part 800. The NHPA of 1966 defines a historic property as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register.” Eligibility criteria for listing a property on the National Register of Historic Places (NRHP) are found at 36 C.F.R. Part 60.

The Florida Division of Historical Resources (DHR) maintains a database of Florida’s historic properties, the Florida Master Site File (FMSF). The FMSF is regularly updated, in part, on the basis of reports prepared by cultural resources professionals in advance of construction projects that are subject to review by the State Historic Preservation Officer (SHPO), federal agencies, and FEMA’s Office of Environmental Planning & Historic Preservation (OEHP). Requirements for review include the identification and evaluation of significant cultural resources that may be impacted by the undertaking. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons.

Only those cultural resources determined to be potentially significant under NHPA are subject to protection from adverse impacts resulting from an undertaking. To be considered significant, a cultural resource must meet one or more of the criteria established by the National Park Service (NPS) that would make that resource eligible for inclusion in the National Register of Historic Places (NRHP). Significance is conveyed through the property’s retention of historic integrity. The seven (7) aspects of historic integrity that are identified and evaluated are: location, design, setting, materials, workmanship, feeling, and association. In order to retain historic integrity, a property must possess multiple, if not all, of the seven (7) aspects. Retention of the aforementioned aspects is crucial to conveying significance and while there is a subjective judgement in evaluating integrity, a property’s physical features shape the foundation for understanding and relating significance to the public. The

term “eligible for inclusion in the NRHP” includes all properties that meet the NRHP listing criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and National Park Service National Register Bulletin 15. Sites that have not been evaluated at the time of the undertaking may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties.

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources. Within the APE, impacts to cultural resources are evaluated prior to the undertaking for both Standing Structures (above ground resources) and Archaeology (below ground resources).

FEMA, the FL SHPO, the Florida Division of Emergency Management (FDEM), Alabama-Coushatta Tribe of Texas, The Choctaw Nation of Oklahoma, Mississippi Band of Choctaw Indians, and the Advisory Council on Historic Preservation (ACHP) have executed a Statewide Programmatic Agreement dated September 10, 2014, and amended (3) September 1, 2023, to streamline the Section 106 review process. Per the guidelines outlined in the Programmatic Agreement, the undertaking does not meet the allowances agreed upon in Appendix B and, therefore, required consultation with interested parties.

### Existing Conditions

FEMA determined that the APE for the Lovers Key and Bonita Beach Nourishment project is a total of 10,100 linear feet split across two different extents of beach: the Lovers Key portion and the Bonita Beach portion. The Lovers Key extent is approximately 6,200 LF between Range Monument Marker R-214.5 (26.39437, -81.88391) to R-221 (26.38100, -81.871036). The Bonita Beach portion is approximately 3,900 LF, from R-226A (26.36431, -81.86300) to R-230 (26.35475, -81.85762). The APE for both beach extents include a 500-meter-wide buffer. The sand for the nourishment activities will be sourced from three different borrow areas: an offshore borrow area, and two nearshore borrow areas located within the ebb tidal shoal of Big Carlos Pass. The offshore borrow area is located within a polygon of these coordinates: (26.388827778, -82.364825000), (26.378513889, -82.353647222), (26.369555556, -82.363836111), and (26.379866667, -82.375013889). The first nearshore borrow area is located within a polygon of these coordinates: (26.401231218, -81.902697296), (26.399334813, -81.898918087), (26.395530577, -81.901271911), and (26.397426921, -81.905051036). The second nearshore borrow area is located within a polygon of these coordinates: (26.398061632, -81.896314966), (26.395963921, -81.892025432), (26.390644083, -81.895232863), and (26.392733501, -81.899517711).

FEMA identified potential cultural resources in the APE utilizing the NPS NRHP Geographic Information System (GIS) resource, data from the FMSF, historic aerial imagery and topographic maps, and information from previously conducted cultural resource investigations, including the *Phase I Submerged Cultural Resource Analyses for the Lovers Key Beach Nourishment Sand Search Lee County, Florida*; *Historic Resources Survey of Bonita Spring*; and *Inventory and Assessment of Cultural Resources on the Estero Bay Aquatic and Estero Bay Buffer Preserves, Lee County, Florida*. FEMA’s review identified no historic structures, buildings, objects, or districts within the APE of the Lovers Key

and Bonita Beach Restoration project area. FEMA's NHPA review, completed by Secretary of the Interior qualified archaeologists and historians, found there are no historic properties listed or eligible for listing in the NRHP, National Historic Landmarks (NHLs), or known historic buildings, objects, sites, or districts within either of the locations proposed APE. Four (4) historic structures were identified within the 500-meter buffer of the Bonita Beach APE. The closest historic structure is a private residence built circa 1951, located approximately 605.07-ft. east of the APE at 26385 Hickory Boulevard (LL02260). The other three historic structures are located at 26411 Hickory Boulevard (LL02261), 26435 Bay Road (LL02262), and 26451 Bay Road (LL02263). Respectively, these sites lie 860.31 feet east, 1,057.44 feet east, and 1,154.22 east of the project APE. No archaeological resources were identified during the referenced cultural resource assessment survey of the Lovers Key and Bonita Beach project area; however, one (1) potential archaeological resource was previously identified approximately 143.25 feet south of the Lovers Key APE. The site (LL02017) consisted of one (1) skull fragment and was considered an isolated find with no further archaeological resources being located nearby. It was determined that the skull fragment could possibly be human in origin.

### 5.5.1. HISTORIC (STANDING) STRUCTURES

#### Potential Impacts and Proposed Mitigation to Standing Historic Structures

##### ***Alternative 1: No Action***

Under the no action alternative, no impacts to historic structures, buildings, objects, or districts would occur.

##### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

The Lovers Key and Bonita Beach project area and proposed borrow area were previously subjected to a Cultural Resource Assessment Survey (CRAS) and submerged remote sensing survey. No historic structures, buildings, objects, or districts were identified within the APE of the Lovers Key and Bonita Beach Restoration project. The closest historic structure, 26385 Hickory Boulevard (LL02260) was identified 605.07 feet east of the Bonita Beach APE. Based on their distance from the Bonita Beach restoration project's APE, and the professional opinion of Secretary of the Interior (SOI) qualified historians that the low profile of the sand deposits and the sand transportation will not impact the historic viewshed or structures, FEMA determined that the proposed sand restoration will have no effect on these historic structures.

Based on these findings, FEMA made the determination of No Historic Properties Affected for this undertaking, in accordance with 36 CFR 800.4(d)(1). On June 20, 2023, and August 14, 2023, USACE initiated consultation with the FL SHPO and six (6) Tribes with ancestral interest in Lovers Key and Bonita Beach, Lee, Florida: Seminole Tribe of Florida, The Seminole Nation of Oklahoma, Poarch Band of Creek Indians, Muscogee (Creek) Nation, Miccosukee Tribe of Indians of Florida, and Alabama-Quassarte Tribal Town. No responses to the proposed project were received by the six (6) Tribes with

ancestral interest in Lovers Key and Bonita Beach. FL SHPO concurred with the determination of No Historic Properties Affected on September 27, 2023.

## 5.5.2. ARCHAEOLOGICAL RESOURCES

### Potential Impacts and Proposed Mitigation, Archaeological Resources

#### ***Alternative 1: No Action***

Under the no action alternative, no impacts to archaeological resources would occur.

#### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

The Lovers Key and Bonita Beach APE and proposed borrow area were previously subjected to three CRAS. One (1) historic archaeological resource was previously identified 143.25 feet south of the APE at Lovers Key. No further archaeological resources have been identified within the project APE and the proposed borrow area. The *Phase I Submerged Cultural Resources Analyses for the Lovers Key Beach Nourishment Sand Search Lee County, Florida* found no further information that a submerged cultural resource or area that could be archaeologically significant were located within the project APE. No archaeological resources were identified during the referenced cultural resource assessment survey of the Lovers Key and Bonita Beach project area, while one (1) potential archaeological resource was previously identified approximately 143.25 feet south of the Lovers Key APE. The site (LL02017) consisted of one (1) potentially human skull and was considered an isolated find with no further archaeological resources being located nearby. The proposed Lovers Key and Bonita Beach Restoration project would have no effect on these potential historic archaeological resources. FEMA has made a determination of No Historic Properties Affected for the Lovers Key and Bonita Beach Restoration project.

There have been no other finds associated with this site along Lovers Key; therefore, based on the limited cultural materials found at this site, FEMA has determined that the proposed sand restoration will have no effect on this archaeological site. While heavy equipment (excavators, bulldozers, front loaders, etc.) are expected to be used within the project area for distributing and shaping the sourced sand, it is not expected to result in excavation below the representative beach profile. Furthermore, the replenishment sand will be dredged from one (1) offshore borrow area, that was surveyed for cultural resources prior to its utilization for nourishment in 2023, and two nearshore borrow areas located within the ebb tidal shoal of Big Carlos Pass. The two nearshore borrow areas have been utilized before for nourishment of Lovers Key and Bonita Beach in 1995, 2004, and 2014. The offshore borrow area was previously surveyed under the *Phase I Submerged Cultural Resource Analyses for the Lovers Key Beach Nourishment Sand Search Lee County, Florida*. There are two methods proposed for excavation of the offshore borrow area: using a hydraulic cutterhead dredge/scow barge method or the hopper dredge method. Three CRAS have been performed in the past: *Phase I Submerged Cultural Resource Analyses for the Lovers Key Beach Nourishment Sand Search Lee County, Florida* in 2021, *Historic Resources Survey of Bonita Springs* in 2004, and



*Inventory and Assessment of Cultural Resources on the Estero Bay Aquatic and Estero Bay Buffer Preserves, Lee County, Florida* in 1997. None of these CRAS have found any new or previously unknown historic structures or archaeological sites with the Lovers Key or Bonita Beach APE that would have been affected by beach nourishment activities.

In June of 2020, James Schmidt conducted a Phase I CRAS, *Phase I Submerged Cultural Resource Analyses for the Lovers Key Beach Nourishment Sand Search Lee County, Florida*, of the approximately 10,100 linear feet Lovers Key and Bonita Beach Restoration project area for R. Christopher Goodwin & Associates, Inc. (RCGA) on behalf of Lee County. Archaeological survey methods employed consisted of reconnaissance survey, sub-bottom profile data, marine magnetometer data, and side scan sonar, as well as vibracore sampling conducted by American Vibracore Services. Tracklines were spaced 1,000 ft apart in parallel lines. Throughout the survey, some tracklines extended into six (6) borrow areas, and additional lines were added. The determination of “No historic properties affected” was recommended as the outcome of this Phase I CRAS. The FL SHPO concurred with the methods and results documented in the survey report in a letter to RCGA dated June 30, 2022. Upon its review of historic and archaeological data, and information collected from previously conducted cultural resource investigations, FEMA concurs with the determination of No Historic Properties Affected.

Based on these findings, FEMA made the determination of No Historic Properties Affected for this undertaking, in accordance with 36 CFR 800.4(d)(1). On June 20, 2023, and August 14, 2023, the USACE initiated consultation with the FL SHPO and six (6) Tribes with ancestral interest in Lovers Key and Bonita Beach, Lee, Florida: Seminole Tribe of Florida, The Seminole Nation of Oklahoma, Poarch Band of Creek Indians, Muscogee (Creek) Nation, Miccosukee Tribe of Indians of Florida, and Alabama-Quassarte Tribal Town. FL SHPO concurred with the determination of No Historic Properties Affected on September 27, 2023, and no responses have been received from the six (6) Tribes with ancestral interest in Lovers Key and Bonita Beach.

## **5.6. SOCIOECONOMIC RESOURCES**

### **5.6.1. LAND USE AND PLANNING**

Local regulatory bodies, such as municipalities or counties, utilize zoning as a planning tool for controlling and regulating the function of real estate markets within their jurisdiction. This is typically achieved by dividing land into sections within a jurisdiction and limiting land uses based on categories dictated by a regulatory body. Examples of these categories include residential, commercial, industrial, agricultural, etc. Through zoning, local regulatory authorities, and city planners, can dictate the particular use, layout, and permitting of cities to control present use and plan future development. In most cases, the development of comprehensive plans through a public participation process, as approved by publicly elected officials, will capture local values and attitudes of planning and future development. Zoning ordinances and land use regulations vary throughout the United States.



## Existing Conditions

The project areas, Lovers Key and Bonita Beach, consist of approximately 1.9 miles of engineered beach, beach berm, and dune systems in Lee County, Florida. Lovers Key is within a Florida State Park and development is limited to the park infrastructure. Bonita Beach is developed and includes single family, multi-family, condominium residences, a county beach park, and a natural beach on the south end. Lee County has a management agreement with the State of Florida to maintain the beach on the Lovers Key State Park, and an Interlocal Agreement with the City of Bonita Springs to maintain Bonita Beach. Lovers Key and Bonita Beach are not federally constructed shorelines under the specific authority of the USACE.

## Potential Impacts and Proposed Mitigation

### ***Alternative 1: No Action***

Under the no action alternative, the beach system would not undergo repairs and would remain in a diminished state. This may impact the beach's intended use as a maintained recreational park. Continued erosion during future similar events, if unaddressed, could fully impair the facility from functioning as an area for recreation, residential, tourism, and ecological utilization. The no action alternative would have moderate long-term adverse impacts on the intended land use of the Bonita Beach and Lovers Key system. These impacts would be significant.

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

During construction activities the beach would be inaccessible to beachgoers due to safety considerations. The preferred alternative would not permanently alter the intended land use of the beach system. Once construction activities are complete, the beach would facilitate recreation, residential, tourism, and ecological use, similar to the intended pre-construction land use. The preferred alternative would have minor short-term adverse impacts on the land use of Bonita Beach and Lovers Key. These impacts would not be significant.

## 5.6.2. TRANSPORTATION

The Florida Department of Transportation (FDOT) is the jurisdictional authority for traffic and transportation in the state of Florida. FDOT was created pursuant to Section 20.23, Florida Statutes, which sets forth the legal structure and general description of FDOT. FDOT's mission is to provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of Florida's environment and communities. FDOT's goal is to make travel in Florida safer and more efficient.

The Lee County Department of Transportation (DOT) works with local, State, and Federal partners to enhance the roadways throughout the region. Lee County DOT is responsible for providing safe and efficient transportation and stormwater systems for the residents of Lee County.

## Existing Conditions

The project consists of a beach and nearshore coastal saltwater system. The beaches within the system, Lovers Key and Bonita Beach, are publicly accessible. The main route to access Bonita Beach consists of taking Exit 116 on I-75 South to merge on onto County Road 865. Stay straight for approximately 8 miles to arrive at Beach Access #10, with Bonita Beach on the left. The main route to access Lovers Key consists of taking Exit 116 on I-75 South to merge onto County Road 865. Stay straight for approximately 10 miles, then take the first left into the park entrance for Lovers Key. Both locations can be accessed through public transit and public parking options are available. Traffic circulation for Hickory Boulevard and Estero Boulevard leading to the project areas experience routine traffic patterns throughout the week, with an increase in congestion during morning and evening hours, particularly on weekends and holidays. Both locations support commercial and residential land and water use.

## Potential Impacts and Proposed Mitigation

### ***Alternative 1: No Action***

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

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

The proposed work for Alternative 2 would utilize existing roads in the area and no new transportation features would be constructed. The land-based work would be conducted using upland sand truck hauls, bulldozers, excavators, front-end loaders, dump trucks, and off-road vehicles. A temporary increase of traffic is anticipated resulting from construction equipment and staff accessing the project areas. During the restoration period, road access may be limited or restricted to aid in beach access for heavy machinery. Temporary pedestrian access routes and fencing at the project areas may be required, however no road or waterway closures are expected during restoration that would impact the local and commercial community. The temporary pedestrian access routes and fencing will aide in maintaining pedestrian traffic to Lovers Key and Bonita Beach. The in-water work will be conducted using barge/vessel-based heavy equipment with no blasting. Nearshore navigation of small recreational and commercial vessels may be limited or restricted to prevent accidental entanglements with dredging or sediment transportation equipment. As beach sections are completed and accepted, they will be turned over for public use. The preferred alternative would have minor short-term adverse impacts on transportation within the project area. These impacts would not be significant.

### **5.6.3. PUBLIC SERVICES AND UTILITIES**

This section evaluates the potential impacts of the Action Alternatives on public utilities. A public utility is an organization that maintains the infrastructure for a public service. The interruption of public utilities can cause public health concerns. A reduction in the reliability of public utility services affects

all areas of daily life. The threshold level for significant impact to public services and utilities would be an exceedance of the existing utility service capacity.

### Existing Conditions

Lovers Key State Park public services and utilities includes a public transit bus stop at the entrance of the park, inter-park tram service, sheltered pavilions, and temporary public restrooms. Bonita Beach includes public parking and temporary public restrooms. There are no existing public services or utilities in the vicinity of the project area that would be impacted by the restoration project.

### Potential Impacts and Proposed Mitigation

#### *Alternative 1: No Action*

Under the no action alternative, there would be no construction activities, thus, this alternative would not have an impact on existing public services or utilities.

#### *Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)*

Under Alternative 2, the restoration activities would not require the installation of new public services or utilities, nor would it involve any replacement, repair, or modification to existing public services and utilities in the area. Alternative 2 would have no impact on public services or utilities.

#### 5.6.4. PUBLIC HEALTH AND SAFETY

Public Health and Safety hazards could include chemical (e.g., lead or fumes), biological (infectious water or hazardous biota), or physical (machinery, noise, or debris) hazards that arise in or from the work area that could impair health and well-being of the public. Public health and safety concerns could affect both workers and the public near or within the project areas. Erosion of coastal areas could trigger increased vulnerability to extreme weather events that could result in impacts on both water and land systems, potentially affecting tourism-based economy, general well-being, and an increase in biological hazards. The threshold level for significant impacts to public health and safety would be the byproducts of project construction causing either an imminent, significant, or demonstrable threat or impact to public health or safety.

### Existing Conditions

The Gulf Coast shoreline is heavily eroded along Lovers Key and Bonita Beach on Little Hickory Island. The coastal areas of Lovers Key and Bonita Beach play a role in socio-economic and ecological importance that aides in providing a wide range of services to the community, including contributing to well-being, health, and safety. Due to coastal degradation, the project areas are less resilient against flooding which could exacerbate ecosystem decline and inland public health and safety risks due to impacts from potential future flooding.

## Potential Impacts and Proposed Mitigation

### ***Alternative 1: No Action***

Under the no action alternative, there would not be any construction activities, thus, this alternative would have no direct impact on public health and safety within the project area.

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Public health and safety hazards would include those common to construction activities, including loud noise, hazardous material used or encountered, and air quality. To minimize the potential public health and safety risks, BMPs during and after the restoration process would be adhered to, according to permitting requirements for both USACE and FDEP. Alternative 2 would have minor short-term adverse impacts on public health and safety from the project's restoration activities. These impacts would not be significant.

## 5.6.5. ENVIRONMENTAL JUSTICE

On February 11, 1994, President Clinton signed EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, which 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.

## Existing Conditions

In order to provide context for the EJSCREEN Standard Report and the US Census Bureau QuickFacts reports, a demographic analysis was undertaken. The first step was to define the relevant Communities of Concern. The Communities of Concern were determined through what areas will be affected by both the No Action and Proposed Action. The proposed beach nourishment project is planned for the eroded Gulf Coast shoreline along Lovers Key State Park and Bonita Beach in Bonita Springs, Florida. Bonita Springs had an estimated population of 56,370 in 2022, according to the United States Census Bureau QuickFacts website.

The total population within a mile buffer of Lovers Key and Bonita Beach areas are approximately 270 and 656, respectively, according to the EJSCREEN Community Report, accessed August 17, 2023. Lovers Key and Bonita Beach have a people of color population of 4% and 7% compared to the State's average of 45%. Lovers Key and Bonita Beach have a low-income population of 23% and 15% compared to the State's average of 33%. The people of color and low-income populations of both areas are below the average of the state. The United States Census Bureau QuickFacts website states that the 2017 to 2021 median household income for Bonita Springs, Florida, was \$78,347. Of the 13

Environmental Variables documented in the EJSscreen report, the *Wastewater Discharge (toxicity-weighted concentration/m distance)* variable is in the 84th and 80th percentile for Lovers Key and Bonita Beach respectively, which is considered as a high national percentile range (greater than 80%). The full EJSscreen report is attached to this SEA (Appendix H).

## Potential Impacts and Proposed Mitigation

### ***Alternative 1: No Action***

Under the no action alternative, the continued erosion of Lovers Key and Bonita Beach would eventually render them unusable for recreation, tourism, and ecological purposes. However, based upon the demographics of the surrounding area, no disproportionate impacts on minority or low-income populations would be anticipated.

### ***Alternative 2: Repair Engineered Beaches and South Bonita Beach Concurrently with Previously Scheduled Maintenance Project (Preferred Alternative)***

Under the preferred alternative, the beach will be restored to its engineered beach profile with no changes to the existing design and footprint. The project benefits would be to all population members. No disproportionate impacts or adverse impacts to minority or low-income populations would be anticipated.

## 5.7. CUMULATIVE IMPACTS

Per the CEQ regulations, cumulative impacts are the impacts on the environment which “results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non- Federal) or person undertakes such other actions. 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 SEA considered the combined effect of the preferred alternative and other actions occurring or proposed in the vicinity of the proposed project site.

Both Lovers Key and Bonita Beach are located on the Florida Gulf Coast in southern Lee County. Lovers Key is a state park and the entirety of this portion of the project area is within a CBRA System Unit, P17. As such, this area is protected from future development, however, FEMA determined the restoration of this beach is exempt under CBRA. The area surrounding Lovers Key can be characterized as a relatively undeveloped conservation area with a public access point for the beach. A parking and gift shop area is located on Black Island off of Estero Boulevard. Bonita Beach is located on Little Hickory Island and is characterized by high-density, multi-family buildings, including hotels, condominiums, and timeshares. The beach and island are accessible by only one road, Hickory Boulevard. Both Lovers Key and Bonita Beach are openly accessible to the public. It is not anticipated that the proposed project or future maintenance actions will have an impact on the existing upland uses of Lovers Key or Bonita Beach or in the vicinity due to the nature of the existing area.

Lovers Key and Bonita Beach have undergone multiple nourishment and maintenance activities since their original construction in 1994 and 2003 and are projected to undergo several more maintenance events within the next 15 years. Due to both direct and indirect human actions, the planet is currently undergoing a climate shift. This shift in the global climate has caused a crisis that has a disproportionate impact on coastal communities. Continued rises in surface temperatures in the Atlantic Ocean have led to the increase in the intensity of tropical events. Due to this, tropical storms and hurricanes making landfall in the United States have had more severe impacts on human health and safety, and improved property. Nine of the costliest tropical disasters in the history of the United States have occurred within the past 20 years, with six of those occurring in the past decade. As this trend of increasingly damaging storms continues, the shoreline along Bonita Beach and Lovers Key is expected to be subject to damages which may result in presidential declarations. As an engineered and maintained facility, future restorations due to storm or background erosion are expected.

Nourishment and maintenance activities, such as those described within the preferred alternative, are designed to maintain the general profile of a natural beach, with modest changes to accommodate climate change, including sea level rise. It can be argued that restoration of beach systems encourages coastal encroachment through human development leading to increased negative impacts upon the natural resources associated with beaches. According to the United States Census Bureau 29.1 percent of all Americans live within a coastal County, a number that has continued to grow over the past several decades. Gulf Coastal communities alone have experienced a 26.1 percent increase in population over the past 17 years. This human encroachment upon the beaches enabled decreased and deteriorated habitat for threatened and endangered species, an increase in nearshore and offshore ocean pollution, and placed human lives at greater risk to tropical events with ever-increasing severity. Still, it is unlikely that foregoing maintenance activities on the shoreline will discourage the continued growth of these beach communities. Furthermore, allowing unaddressed erosion to the beach will eventually lead to greater long-term negative impacts upon the health and safety of community members and their private property. Abandonment of these communities through coastal retreat will have a profound impact on the cultural and economic fabric of the country at large and is thus not practical. Therefore, maintenance of the coasts must be considered.

The preferred alternative of maintaining beaches through the placement of beach compatible sand to an engineered beach profile represents a practicable compromise to the alternatives of coastal retreat and hardened coastal defense systems. The impacts of hardened coastal defense systems such as seawalls, groins, and jetty's can be observed in a similar environment on the west coast of the Gulf of Mexico in Galveston, TX. These structures limit or restrict habitat opportunities for nearshore and shore species. Additionally, they stymie natural sedimentation activities and disrupt natural replenishment of beaches. As coastal communities continue to grapple with the effects of a changing global climate, there will be an increasing need to choose solutions that incorporate ecological priorities, along with those priorities of the community. Maintaining beaches through the placement of beach compatible sand represents such a solution. While there may still be impacts from humans living within such proximity to these resources, the preferred alternative is less invasive compared to other engineering methods. In some respects, this solution constitutes positive impacts for the human and natural environment. Restoring the beach maintains habitat for fauna and flora typically found along the

coastline. While there may be initial, short-term negative impacts upon the habitat and species found in the project area, the project will ultimately benefit the health of the beach ecosystem in the long term.

The project and anticipated future actions in the area will likely have short-term impacts to commercial and recreational usage, and ecological resources of the shoreline and associated borrow area due to construction efforts. However, it is anticipated there will be no associated long-term impacts to commercial fisheries, and beneficial long-term impacts are expected to occur immediately as a result of the restoration of the engineered beach. The Lovers Key and Bonita Beach shoreline has tangible recreational value and generates tourism that contributes significantly to the local and state economy, and continued maintenance of the engineered beach will ensure that tourism and its recreational value persist. Based on the review conducted, when added to past, present, and reasonably foreseeable actions, the proposed action is not expected to have significant adverse cumulative impacts on any resource within the natural and human environment.

## 6. Permits and Project Conditions

1. Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
2. This review does not address all federal, state, and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state, and local laws. Failure to obtain all appropriate federal, state, and local environmental permits and clearances may jeopardize federal funding.
3. If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
4. Under Alternative 2, Lee County would follow the conditions below set forth by the Florida SHPO:
  - a. If human remains or intact archaeological deposits (e.g., arrowheads, pottery, glass, metal, etc.) 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 subrecipient 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 subrecipient's contractor will provide immediate notice of such discoveries to the applicant. The applicant shall 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 SHPO, Tribes, and other consulting parties as necessary. 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 Florida Statutes, Section 872.05.



- b. Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way.
  - c. Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.
5. 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.
6. All debris staging sites shall be authorized by FDEP. Lee County shall ensure that all debris is separated and disposed at permitted facilities or at a disposal site or landfill authorized by FDEP. Lee County is responsible for ensuring contracted staging and disposal of debris also follows these guidelines.
7. Under Alternative 2, the applicant must comply with the terms and conditions, including the Special Conditions, of USACE Permit No. SAJ-2012-00198 (IP-MJD) and associated guidance. The subrecipient must obtain permit modifications as necessary. Failure to comply with these conditions may jeopardize FEMA funding; verification of compliance will be required at project closeout.
8. Under Alternative 2, the applicant must comply with all conditions in the FDEP JCP and Sovereign Submerged Lands Lease Authorization (No. 0311811-004-JM), and obtain any additional modifications as needed. Failure to comply with this condition may jeopardize FEMA funding; verification of compliance will be required at project closeout.
9. Under Alternative 2, Lee County must adhere to the Conservation Measures and Terms and Conditions of the following Biological Opinions (BO): USFWS Programmatic Piping Plover BO (Service Log 04EF1000-2013-F-0124, dated May 22, 2013), the USFWS SPBO (Service Log 41910-2011-F-0170, dated March 13, 2015), the NMFS GRBO (Consultation Number F/SER/2000/01287, dated November 19, 2003 and amended on January 09, 2007 with Revision 2), the NMFS BO for Lovers Key and Bonita Beach (NMFS Tracking Number SERO-2023-00206, dated August 25, 2023), the Biological Opinion for Estero Island Beach Nourishment FWS Log #2023-0057472, and the Biological Opinion for Lovers Key and Bonita Beach FWS Log # 2023-0038749. The subrecipient must also adhere to the attached Sea Turtle and Smalltooth Sawfish Construction Conditions (Revised March 23, 2006) and Standard Manatee Conditions for In-Water Work (2011). Failure to comply with these conditions may jeopardize FEMA funding; verification of compliance will be required at project closeout.

## 7. Agency Coordination and Public Involvement

FEMA issued a disaster-wide initial public notice for Hurricane Ian on September 29, 2023, to notify the public of projects under the Public Assistance program that may be occurring within floodplains. FDEP maintains a list of JCP projects, including beach restoration projects, under construction in the given month at: <https://floridadep.gov/rcp/beaches-inlets-ports/content/jcp-projects-status>. The



public was notified that the drafted FEMA DSEA was available for review and comment, by posting the public notice on the FDEM’s, Lee County, and on FEMA’s website. (Appendix K)

Appendices are available for review upon request to: [fema-r4ehp-florida@fema.dhs.gov](mailto:fema-r4ehp-florida@fema.dhs.gov).

Several of the findings of the USACE were adopted per Unified Federal Review. The following agencies and organizations were contacted by USACE and/or FEMA:

**Table 7.0.1: Agencies and Organizations Contacted by USACE or FEMA**

Agency or Organization
U.S. Fish and Wildlife Service (USFWS) North Florida Ecological Services Field Office
National Marine Fisheries Service (NMFS)
U.S. Army Corps of Engineers (USACE), Jacksonville District
Bureau of Energy and Oceanic Management (BOEM)
Florida Division of Historical Resources (DHR), State Historic Preservation Office (SHPO)
Alabama-Quassarte Tribal Town
Miccosukee Tribe of Indians
The Muscogee (Creek) Nation
Poarch Band of Creek Indians
The Seminole Nation of Oklahoma
Seminole Tribe of Florida

## 8. List of Preparers

**Table 8.0.1: List of Lovers Key and Bonita Beach Restoration Project SEA Preparers**

Preparer	Title
Scott Fletcher	Acting Regional Environmental Officer (REO)
Kristin Morris	Environmental Planning and Historic Preservation Advisor
Elijah Lipps	Environmental Floodplain Specialist
Kelley Thomas	Environmental Protection Specialist
Amandie Laurens	Environmental Floodplain Specialist
Nnandi Massac	Environmental Protection Specialist

Preparer	Title
Jorge Parellada Jr.	Reviewer, Historic Preservation Specialist Lead
Zane Reitman	Reviewer, Historic Preservation Specialist

## 9. References

USACE, 2014. MEMORANDUM FOR RECORD: Department of the Army Environmental Assessment and Statement of Finding for Permit Application SAJ-2003-10496 (SP-TSH).

EPA (June 2023); “Environmental Justice Screening and Mapping Tool (Version 2.2)”; EJSCREEN tool accessed on August 17th, 2023. Retrieved from: <https://www.epa.gov/ejscreen>

EPA (February 2023); “NEPAssist”; Accessed on August 17<sup>th</sup>, 2023, Retrieved from: <https://nepassisttool.epa.gov/nepassist/nepamap.aspx>

FDEP (2023); “Experiences and Amenities”; *Florida State Parks*. Retrieved from: <https://www.floridastateparks.org/parks-and-trails/lovers-key-state-park/experiences-amenities-0>

Lee County Board of County Commissioners (2022); “Future Land Use and Zoning”; Accessed on August 17th, 2023. Retrieved from: <https://www.leegov.com/dcd/zoning>

Lee County (2023); “Bonita Beach Park” *Parks and Recreation*. Retrieved from: <https://www.leegov.com/parks/Pages/FacilitySP.aspx?UrlSuffix=bonitabeach>

Nathan J. Bennett, Juan José Alava, Caroline E. Ferguson, Jessica Blythe, Elisa Morgera, David Boyd, Isabelle M. Côté; *Environmental (in)justice in the Anthropocene ocean*; Marine Policy, Volume 147, 2023, 105383, ISSN 0308-597X, Retrieved from: <https://doi.org/10.1016/j.marpol.2022.105383>.

U.S. Census Bureau (2022); “Quick Facts Bonita Springs city, Florida”; Accessed on August 17th, 2023. Retrieved from: <https://www.census.gov/quickfacts>

EPA (April 2023); “How’s My Waterway”; Accessed on August 29, 2023. Retrieved from: <https://www.epa.gov/waterdata/hows-my-waterway>

EPA (May 2023); “Map of Sole Source Aquifer Locations”; Accessed on August 29, 2023. Retrieved from: <https://www.epa.gov/dwssa/map-sole-source-aquifer-locations>

U.S. Census Bureau (2019); “Coastline America”; Accessed on September 6, 2023, Retrieved from: <https://www.census.gov/content/dam/Census/library/visualizations/2019/demo/coastline-america.pdf>

Lee County Visitors & Conventions Bureau (2022); “2022 Annual Summary”; Accessed on August 30, 2023, Retrieved from: <https://www.visitfortmyers.com/lee-vcb/education-and-resources/statistics/annual-visitor-profile-summary-reports>

Florida Department of Environmental Protection (2023); “Who Processes 404 Applications”; Accessed on September g, 2023, Retrieved from: <https://floridadep.gov/water/submerged-lands-environmental-resources-coordination/content/who-processes-404-applications>

USGS (1990); “Ground Water Atlas of the United States” Accessed on August 31, 2023, Retrieved from: [HA 730-G Intermediate aquifer system text \(usgs.gov\)](#)