OCTOBER 2019

FINAL SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

DUNES AND OTHER RESILIENCY DESIGN REFINEMENTS

SHORE PROTECTION PROJECTS

NASSAU, DUVAL, ST. JOHNS, AND BREVARD COUNTIES, FLORIDA

U.S. Army Corps
of Engineers
JACKSONVILLE DISTRICT

FINDING OF NO SIGNIFICANT IMPACT

DUNES AND OTHER RESILIENCY DESIGN REFINEMENTS SHORE PROTECTION PROJECTS

NASSAU, DUVAL, ST. JOHNS, AND BREVARD COUNTIES, FLORIDA

The U.S. Army Corps of Engineers, Jacksonville District (Corps), has prepared a Supplemental Environmental Assessment (SEA) in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, and its implementing regulations to evaluate design changes to incorporate resiliency features, such as sand dunes, into existing Federal Shore Protection Projects (SPP) located in Nassau, Duval, St. Johns, and Brevard counties, Florida. Brevard County is inclusive of two projects, North Reach segment and South Reach segment. In addition to a "no action" alternative, the SEA evaluated various alternative design refinements to increase project robustness, resiliency, and/or reliability. The Preferred Alternatives recommend minor design changes within existing project authority, as follows:

1) Dune Construction with Vegetation (Nassau, Duval, St. Johns, Brevard)
2) Pedestrian Access Modifications with Sand Fencing (Nassau, Duval, St. Johns)
3) Vehicle Access Modifications (Nassau, Duval, St. Johns, Brevard)

As described herein, the design changes each have independent utility and can be implemented separately, if needed.

I have reviewed the SEA, incorporated herein by reference. The analysis performed and the information presented in the SEA is summarized below:

a. The Preferred Alternatives is in compliance with Section 7 of the Endangered Species Act of 1973, as amended. The Corps has determined that the Preferred Alternatives may affect nesting sea turtles and initiated consultation with the U.S. Fish and Wildlife Service (USFWS) by letter dated August 9, 2019. The Corps also determined that the Preferred Alternatives may affect, but are not likely to adversely affect the threatened piping plover, threatened red knot, and the endangered Anastasia Island beach mouse. The Corps determined that the Preferred Alternatives would have no effect on gopher tortoise, which is a candidate for possible future Federal listing. Coordination with the USFWS regarding these species is complete and within the scope of the State Programmatic Biological Opinion and Programmatic Piping Plover Biological Opinion.

b. The Preferred Alternatives are being coordinated with the State of Florida, and all applicable water quality standards will be met. A water quality certification pursuant to section 401 of the Clean Water Act (CWA) of 1972, as amended, will be obtained from the Florida Department of Environmental Protection (FDEP) prior to construction, if necessary. Pursuant to the CWA of 1972, as amended, the discharge of dredged or fill material associated with the Preferred Alternatives is compliant with the section 404(b)(1) Guidelines (40 CFR 230). In addition, a determination of consistency with the Florida Coastal Zone Management program pursuant to the Coastal Zone Management Act of 1972 was obtained from the State of Florida on October 11, 2019 (Appendix B).

c. Consultation regarding the Preferred Alternatives is complete with the Florida State Historic Preservation Officer and the appropriate federally recognized Tribes. Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the Corps determined that the Preferred Alternatives would have no effect on historic properties. SHPO concurrence of no adverse effects to historic properties was provided in a letter dated June 14, 2019.

d. There are no effects to Essential Fish Habitat. However, the Preferred Alternatives have been coordinated with the National Marine Fisheries Service (NMFS) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. NMFS has no comments for these projects per correspondence dated September 9, 2019 (Appendix B).

e. The Preferred Alternatives have been evaluated pursuant to the Migratory Bird Treaty Act. The Jacksonville District's Migratory Bird Protection procedures will be implemented.

f. Benefits to the public will include dunes and design refinements that contribute to and supplement the erosion damage reduction provided by the existing project berm.

In view of the above and the attached SEA, and after consideration of public and agency comments received, I conclude that the Preferred Alternatives would not result in a significant effect on the quality of the human environment and is not contrary to the public interest, therefore preparation of an Environmental Impact Statement is not required.

23 OCT 2019

Andrew D. Kelly, Jr.
Colonel, U.S. Army
District Commander

Date

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1 PROJECT PURPOSE AND NEED.

1.1 Introduction.

The U.S. Army Corps of Engineers, Jacksonville District (Corps), is considering design changes to increase the robustness, resiliency, and/or reliability of existing Federal Shore Protection Projects (SPP) in Nassau, Duval, St. Johns, and Brevard counties, Florida. Detailed descriptions of these projects can be found within the National Environmental Policy Act (NEPA) reports listed in **Table 1** and are incorporated herein by reference.

The Corps, in partnership with local sponsors, has been implementing beach nourishment projects in Florida since 1969. The designs for most of these projects were developed in the 1960s through the 1980s. These projects were designed to control beach erosion and prevent the landward retreat of the shoreline that would cause property and infrastructure damage. The general understanding at the time was that the best way to address the problem of landward erosion was to build a wider beach berm. Dunes were often investigated as an alternative in the plan formulation process for these projects, but typically were eliminated from further consideration. Dunes were thought only to protect against storm surge flooding and vertical erosion which were not considered to be significant problems along the coast in the project areas. Beach recreation was also an important consideration in the development of these projects. The general understanding at the time was that wider beach berms would increase recreational opportunities while dunes would take up beach space that could otherwise provide recreational value.

This SEA considers a range of alternative design modifications that could increase project resiliency, including dune construction with vegetation, vegetation only, sand fencing, pedestrian access modifications, vehicle access modifications, and outfall pipe modifications. To assist in this analysis, the Corps evaluated the performance of existing dunes, including reducing erosion and inundation damages, elongating nourishment intervals, decreasing nourishment volumes, and incidental environmental benefits. A generalized dune template was developed for comparison to the existing beach template; the dune template could include elongation of existing dunes, closure of existing gaps in the dune line, realignment of the current dune line, or creation of dunes in areas where they do not currently exist. As noted above, the Corps also analyzed vegetation-only and sand fencing design alternatives, which can further enhance dune stability and beach accretion rates.

The state of the science of coastal engineering has evolved to recognize that dunes are integral components of a beach system and play a critical role in landward erosion. Observations regarding how beaches with dunes have performed during recent storm events, as well as research conducted by the Corps Engineer Research and Development Center (ERDC) and others, have led to an improved understanding of how the dune and beach function as one interconnected system and the role that dunes

play in storm response and overall beach morphology. It is now understood that dunes not only address storm surge flooding issues, but that they contribute to erosion control above and beyond the erosion control provided by a beach berm alone. It is also now understood that vegetated dunes with established root systems better withstand erosion than dunes consisting only of sand. When the beach is actively eroded during storms, sand removed from the dunes is deposited onto the beach, serving as an immediate natural sand source. They also serve as the ultimate line of defense against storm surge inundation by acting as a natural buffer to protect inland infrastructure. In addition to being integral to a beach's storm damage reduction function, dunes provide important habitat for many plants and animals. The below excerpt from New Jersey Sea Grant Consortium Dune Manual describes how dunes and beaches evolve in response to small and large magnitude storms.

"Coastal sand dunes act as reservoirs of sand that help the beach maintain its equilibrium and preserve the ability of the beach to respond naturally to storm events. Beaches evolve during a storm by taking on a more dissipative state that causes waves to break farther offshore, reducing the wave energy near the shoreline. During this transition, the beach slope is reduced and one or more sand bars may form. The bars are formed as sand is transported offshore during the peak of the storm and is deposited near the region of most intense wave breaking. During smaller storms, the waves don't reach the base of the dune, and the erosion is limited to the beach face (berm) itself. The dunes only become active during moderate to large storms when the dissipation created by the bars is insufficient to prevent the waves from attacking the base of the dune. As a dune erodes, it releases a portion of its built-up reservoir of sand into the littoral system, where it contributes to bar formation and the development of a more dissipative profile, ultimately reducing damage to inland infrastructure. Larger dunes can withstand more wave activity and therefore provide more protection to areas behind them. In the simplest terms, the sand stored in a dune buys time and provides protection from severe storms." – (Wooton, et al 2016 New Jersey Sea Grant Consortium Dune Manual)

Duval and Brevard Counties SPPs include borrow areas located in the Outer Continental Shelf (OCS) which fall under the jurisdiction of the Bureau of Ocean Energy Management (BOEM). Beach-quality sand from these borrow areas may be used in the future to construct dunes. BOEM is authorized under Public Law 103-426 [43 United States Code (U.S.C.) 1337(k)(2)] to negotiate on a non-competitive basis the rights to OCS sand resources for SPPs. BOEM's proposed action is to issue a negotiated agreement authorizing the use of sand resources at the request of the local sponsors and the Corps to support the construction. The placement of material to add or modify sand dunes is an associated authorization of the sand extracted from the OCS; therefore, BOEM is serving as a cooperating agency in the preparation of this SEA, specifically as it relates to sand from Duval and Brevard Counties' borrow areas.

Table 1. Federal studies relevant to this project.

Project Name	Federal Projects
Nassau County	1999 (Revised 2004 and Revised 2006) Nassau County Florida Shore Protection Project General Reevaluation Report with Final Environmental Assessment
Duval County	1974 Beach Erosion Control Project Duval County, Florida Environmental Statement 1990 Duval County, Florida, from St. Johns River to the Duval-St. Johns County Line, Shore Protection Project, 934 Study and Reevaluation Report with Environmental Assessment 1993 Duval County Shore Protection Project Third Renourishment for Reaches 2-3-4 Duval County Florida 2005 Environmental Assessment, Duval County Beach Erosion Control Project New Borrow Area and Finding of No Significant Impact 2015 Final Supplemental Environmental Assessment, New Borrow Area – Duval County Shore Protection Project, Duval County, Florida
St. Johns County	1998 St. Johns County Florida Shore Protection Project General Reevaluation Report with Environmental Assessment
Brevard County (North Reach and South Reach)	1996 Brevard County, Florida Shore Protection Project Review Study, Feasibility Report with Final Environmental Impact Statement modified by the 1999 Limited Reevaluation Report

1.2 Project Authority.

The Corps proposes to evaluate potential design changes to increase the robustness, resiliency, and/or reliability of the following authorized shore protection projects: Nassau County, Florida Shore Protection Project; Duval County, Florida Shore Protection Project; St. Johns County, Florida Shore Protection Project, and Brevard County, Florida Shore Protection Project. For the Brevard County Project, two separable elements of shore protection were evaluated: the North Reach and the South Reach. The existing authorities for these projects include initial construction and continuing Federal participation in periodic nourishment (**Table 2**). Renourishment is periodically completed to replenish eroded material. Because Federal participation is ongoing, these SPPs remain in continuing construction. In accordance with Engineer Regulation 1105-2-100, Planning Guidance Notebook, at 3-20 (April 22, 2000), “in accordance with Public Law 826 of 1956 (Beach Nourishment), when the Chief of Engineers determines that the most suitable and economical remedial measures would be provided by a periodic nourishment project, the Chief may consider the periodic nourishment as continuing construction for the length of time that the Chief specifies. Classifying the periodic nourishment as continuing construction establishes the Federal interest in cost sharing renourishments, usually for the economic life of the project.” Considering renourishment of SPPs to be part of continuing construction is consistent with recent Corps guidance on implementing the supplemental appropriations: “A shore protection project that has received funding for initial construction, or for a cycle of periodic renourishment, in one of these fiscal years, is eligible for funding to complete that initial

construction, or that particular cycle of periodic renourishment, respectively, as an 'ongoing construction project.'" See Policy Guidance on Implementation of Supplemental Appropriations in the Bipartisan Budget Act of 2018 at pages 6-7, 9 August 2018.

Table 2. Summaries of prior Federal authorized studies relevant to this project.

Project Name	Project Segment	Authority	Agreement(s) Governing Continuing Construction (Periodic Nourishment)	Authorized Reports	Federal Participation Period
Nassau County, Florida Shore Protection Project		Section 3(a)(3) of WRDA 1988 (P.L. 100-676), as modified by Section 314 of WRDA 1999 (P.L. 106-53)	Project Cooperation Agreement Between the Department of the Army and the City of Fernandina Beach for Construction of the Nassau County, Florida Shore Protection Project dated 28 September 2007	Chief of Engineer's Report dated 19 May 1986 Nassau County Florida Shore Protection Project General Reevaluation Report with Final Environmental Assessment dated April 1999 (Revised September 2004 and April 2006), and approved by the Commander, South Atlantic Division on 6 December 2006	Initiation of construction in 2008. Federal participation through 2058 per Section 314 of WRDA 1999 (P.L. 106-53).

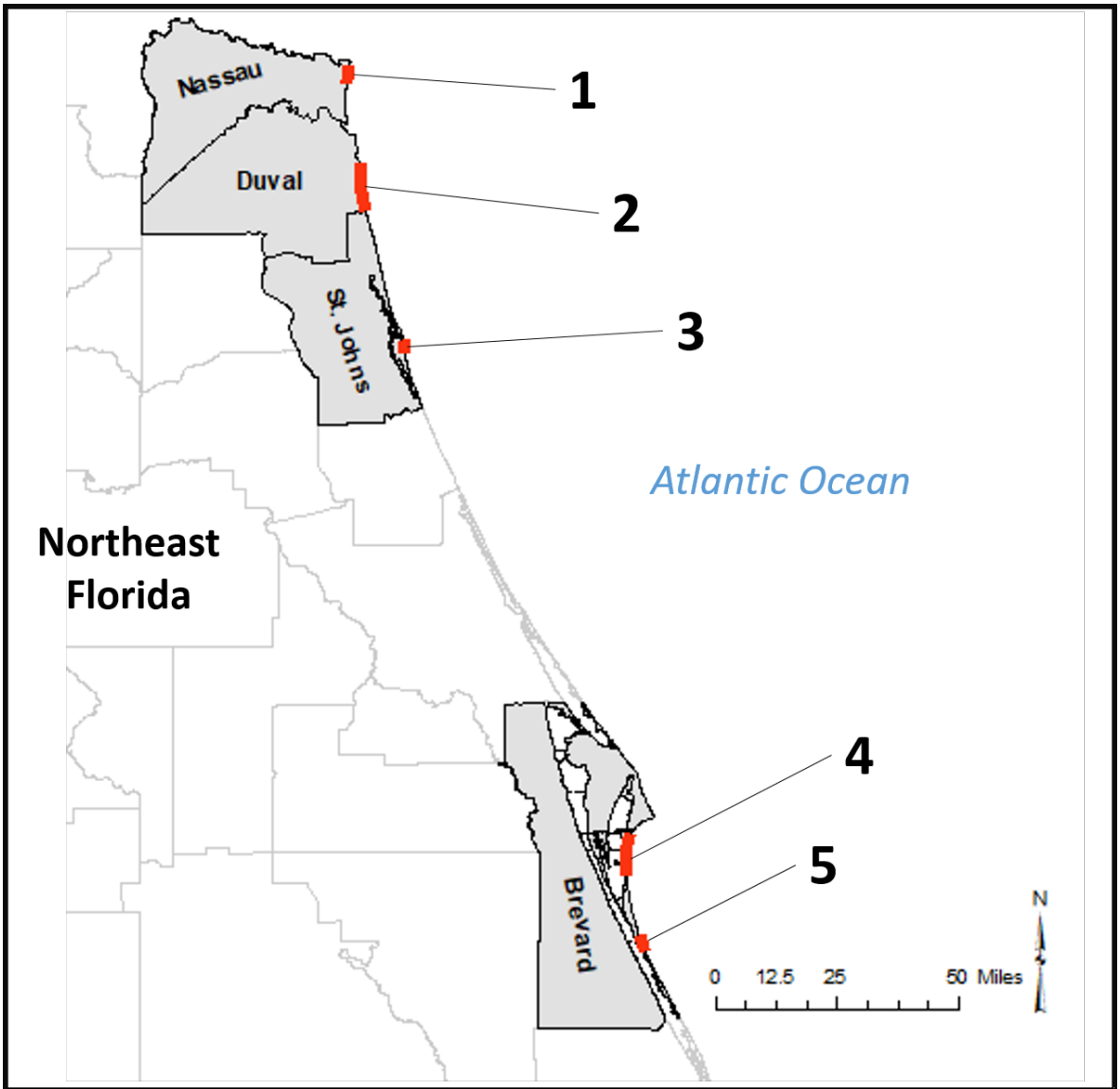
Project Name	Project Segment	Authority	Agreement(s) Governing Continuing Construction (Periodic Nourishment)	Authorized Reports	Federal Participation Period
Duval County, Florida Shore Protection Project		Section 301 of the River and Harbor Act of 1965 (P.L. 89-298)	Project Cooperation Agreement Between the Department of the Army and the City of Jacksonville for Extension of Federal Participation in Construction of the Duval County, Florida Shore Protection Project dated 7 July 1994	Chief of Engineer's Report dated 2 June 1965 Duval County, Florida, from St. Johns River to the Duval-St. Johns County Line, Shore Protection Project, Section 934 study and Reevaluation Report with Environmental Assessment dated October 1990 (Section 934 Study), and approved by the Assistant Secretary of the Army (Civil Works) on 3 February 1992	Initiation of construction in 1978. Federal participation through 2028 per Section 934 of WRDA 1986 (P.L. 99-662) and the ASA (CW)'s 1992 approval memorandum.

Project Name	Project Segment	Authority	Agreement(s) Governing Continuing Construction (Periodic Nourishment)	Authorized Reports	Federal Participation Period
St. Johns County, Florida Shore Protection Project	St. Augustine Beach	Section 501(a) of the WRDA 1986 (P.L. 99-662), as modified by Section 316 of WRDA 1999 (P.L. 106-53)	Project Cooperation Agreement Between the Department of the Army and St. Johns County, Florida for Construction of the St. Johns County, Florida Shore Protection Project dated 24 August 2000	Chief of Engineer's Report dated 26 February 1980 St. Johns County, Florida Shore Protection Project General Reevaluation Report with Environmental Assessment, dated March 1998 and approved by the Assistant Secretary of the Army (Civil Works) on 15 December 1998	Initiation of construction in 2001. Federal participation through 2051 per Section 316 of WRDA 1999 (P.L. 106-53).

Project Name	Project Segment	Authority	Agreement(s) Governing Continuing Construction (Periodic Nourishment)	Authorized Reports	Federal Participation Period
Brevard County, Florida Shore Protection Project	North Reach and South Reach	Section 101(b)(7) of WRDA 1996 (P.L. 104-303), as modified by Section 310 of WRDA 1999 (P.L. 106-53)	Project Cooperation Agreement Between the Department of the Army and Brevard County, Florida for Construction of the Brevard County, Florida Shore Protection Project dated 20 April 2000 Amendment No. 1 to the Project Cooperation Agreement Between the Department of the Army and Brevard County, Florida for Construction of the Brevard County, Florida Shore Protection Project dated 8 August 2013 Amendment No. 2 to the Project Cooperation Agreement Between the Department of the Army and Brevard County, Florida for Construction of the Brevard County, Florida Shore Protection Project dated 31 August 2016	Chief of Engineer's Report dated 23 December 1996 Brevard County, Florida Shore Protection Project Review Study, Feasibility Report with Final Environmental Impact Statement, dated September 1996 and approved by the Chief of Engineers on 23 December 1996 as modified by the Limited Reevaluation Report dated October 1999 and approved by the Chief, Planning and Environmental Division, Directorate of Engineering and Technical Services, South Atlantic Division on 26 January 2000	Initiation of construction in 2002. Federal participation through 2052 per Section 101(b)(7) of WRDA 1996 (P.L. 104-303).

1.3 Project Location.

Figure 1 shows the locations of the five existing Federal SPPs in Nassau, Duval, St. Johns, and Brevard counties, Florida, where the addition or modification of sand dunes may occur.



Map ID	County	Project Name	Segment	Length (mi)
1	Nassau	Nassau County, FL Shore Protection Project	na	3.9
2	Duval	Duval County, FL Shore Protection Project	na	10
3	St. Johns	St. Johns County, FL Shore Protection Project	St. Augustine Beach	2.5
4	Brevard	Brevard County, FL Shore Protection Project	North Reach	9.4
5	Brevard	Brevard County, FL Shore Protection Project	South Reach	3.4

Figure 1. Location Map for SPPs in Nassau, Duval, St. Johns, and Brevard Counties.

1.4 Project Need or Opportunity.

The project need or opportunity is to increase project robustness, resiliency, and reliability through minor design refinements. Engineering and Construction Bulletin 2018-2, Implementation of Resilience Principles in the Engineering & Construction Community of Practice, January 25, 2018, provides the policy and guidance for applying the Corps principles of resilience – Prepare, Absorb, Recover, and Adapt – to engineering and construction efforts.

It is now recognized that dunes are integral components of a beach system and play a critical role in reducing damages to the project and infrastructure. Based on the definition of resilience and PARA principles described in ECB 2018-2, it is possible to apply design refinements to incorporate dunes for increased resilience to authorized beach nourishment projects.

1.5 Agency goal or Objective.

Each SPP shall be evaluated to determine additional details associated with each design modification alternative, including an estimate of the volume of sand needed to incorporate the design change and the associated costs. The proposed design changes are expected to be only minor and technical in nature, with no addition or change to project purpose.

1.6 Related Documents.

This supplemental EA complements the NEPA documents referenced in **Table 1**. Please use the following link to access current environmental documentation for the Federal projects:

https://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/

1.7 Decisions to be Made

The decision to be made upon completion of this SEA is whether the proposed resiliency design refinements within the referenced projects would result in significant environmental effects on the quality of the human environment. The need for mitigation measures or best management practices (BMPs) to reduce any potentially adverse effects, particularly in regard to associated activities, is also a decision to be made. If no significant impacts are identified during the NEPA process for the Preferred Alternatives, the Corps will make the decision to sign a Finding of No Significant Impact (FONSI) and move forward with the Preferred Alternatives. Additionally, a report is being prepared by the Corps that identify the decisions/recommended plans for each of the five SPP projects. The project specific recommendations are located in Appendix C. This SEA supports these decisions/recommended plans for the SPP's. If significant impacts are identified, the Corps will decide to implement mitigation measures to reduce the impacts to a lower-than-significant threshold, proceed with the Notice of Intent (NOI)

to prepare an Environmental Impact Statement (EIS), or not implement the Preferred Alternatives.

1.8 Scoping and Issues.

1.8.1 Issues Evaluated.

The following issues were identified to be relevant to the proposed modification and/or addition of resiliency design refinements to the Federal projects: (1) general environmental setting; (2) native beach and offshore sand composition; (3) nesting sea turtles; (4) piping plover; (5) red knot; (6) Anastasia beach mouse; (7) gopher tortoise; (8) migratory birds; (9) other wildlife resources; (10) cultural, historic, and archeological resources; (11) water quality; (12) aesthetics; (13) recreation; (14) hazardous, toxic, radioactive waste (HTRW); (15) air quality; (16) noise; (17) energy requirements and conservation; (18) natural or depletable resources; (19) Native Americans; (20) reuse and conservation potential.

Please use the following link to access the current environmental documentation for the Federal projects.

https://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/

1.8.2 Public Interest Factors.

While the Corps does not process and issue Corps permits for its own activities, pursuant to 33 CFR 336.1, the Corps authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including public notice, opportunity for public hearing, and application of the section 404(b)(1) guidelines. As part of its review, the Corps evaluates the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. All factors that may be relevant to the proposed action must be considered, including the cumulative effects thereof. The public interest factors are listed in **Subsection 1.8.1** and evaluated in **Section 4** and **Table 14**. As stated in **Section 1.4**, the project need or opportunity is to increase project robustness, resiliency, and reliability through minor design refinements. Specifically, the refinements described in this document would help control beach erosion and the landward retreat of the shoreline that would cause property and infrastructure damage. A range of alternatives to accomplish this are described in Chapter 2. Effects resulting from the proposed alternatives were evaluated and, where appropriate, environmental protection measures shall be implemented in order to balance the project need with all of the stated public interest factors. For the reasons discussed in **Section 4** and **Table 14**, the Corps concludes that the proposed design refinements are clearly in the public interest.

1.9 Permits, Licenses, and Entitlements.

Information on permits, licenses, and entitlements are available in the prior referenced environmental documents that pertain specifically to each of the Federal authorized projects for Nassau, Duval, St. Johns, and Brevard counties (**Table 2**).

2 ALTERNATIVES.

This section describes the no-action alternative and the various action alternatives. Other reasonable alternatives were evaluated within the aforementioned environmental documents and are incorporated herein by reference. The Preferred Alternatives were selected based on the information and analysis presented in the Affected Environment and Environmental Effects sections of this SEA.

2.1 Description of Alternatives.

In accordance with NEPA and its implementing regulations, the Corps considered a reasonable range of alternative engineering design refinements, including a no-action alternative. For each project, the Corps analyzed implementing the following engineering design refinements:

1. Dune construction with vegetation
2. Vegetation only
3. Sand fencing
4. Pedestrian access modifications
5. Vehicle access modification
6. Outfall pipe modifications to increase the project's resiliency.

These design refinements could be added or modified as standalone design changes or could be implemented in conjunction with dune construction and other design refinements.

Although there are potentially a very large number of alternatives that could be formulated through different combinations of project refinements to improve the project's resiliency, in **Table 3** through **Table 7**, the Corps focused on a reasonable number of alternatives that collectively reflect consideration of the full range of possible refinements and their potential environmental impacts. The design changes each have independent utility and can be implemented separately, or through various combinations, if needed.

Certain alternatives were eliminated from detailed study. Structural alternatives such as wooden vehicle ramps, seawalls, and gates that close during storm events were considered during the analysis but ultimately rejected. Wooden vehicle ramps are more costly than any of the modifications and would require a greater level of design. These structures are also typically less aesthetically pleasing compared to the natural appeal of vegetated dunes and repair costs would likely be more expensive than the other alternatives, both of which are concerns of the local sponsors. Gates to close during storm events are also not desirable because they require frequent maintenance to ensure that they are functioning properly, especially in a marine environment. Seawalls used to close gaps in the dune were also rejected because they would only provide inundation protection benefits and would also require a greater level of design.

2.1.1 No-action Alternative (Status Quo).

Authorized projects would continue to be implemented over the period of Federal participation in accordance with existing authorities. Periodic renourishment of the projects' existing design templates typically occur every (5-10) years. During major storm events, there could be increased damages to infrastructure and loss of dune habitat if the proposed resiliency modifications were not performed for those projects that currently have a dune system.

2.1.2 Action Alternatives.

In order to develop action alternatives, the Corps evaluated the performance of existing dunes, including reducing erosion and inundation damages, elongating nourishment intervals, decreasing nourishment volumes, and incidental environmental benefits.

Recommended alternatives considered to increase project resilience include:

Alternative 1: Dune Construction with Vegetation

Alternative 2: Vegetation Only

Alternative 3: Sand Fencing

Alternative 4: Pedestrian Access Modifications

Alternative 5: Vehicle Access Modifications

Alternative 6: Outfall Pipe Modification

These alternatives are more fully described in **subsection 2.2** below. **Table 3** through **Table 7** in **subsection 2.4** include the recommended alternatives for each of the five proposed projects.

2.2 Issues and Basis for Choice.

The action alternatives consider several design changes that can increase project resiliency including the construction of dunes and other design refinements.

Dune construction consists of incorporating a dune template as part of the project in future nourishment events. The dune construction template may adopt the dimensions of existing dunes, modify the dimensions of existing dunes, or add a new dune where dunes do not currently exist. The dune construction template will be considered part of the project's construction template and the volume of material needed to construct the dune will be considered part of the project's advanced fill volume. The authorized design template on which benefits are based will not be changed by dune construction nor will the authorized advance fill volume be changed. The same volume of advanced fill would be placed such that a portion of that volume would be used in the dune. Potential sand sources will comply with State of Florida statutes and meet all applicable criteria based on consultation with FDEP.

The dune template heights and slopes were selected to mimic the natural dunes in or adjacent to the project areas. The Corps Coastal Engineering Manual (CEM) and Natural and Constructed Coastal Foredunes Fact Sheet (USACE, 2018) from the Corps Engineer Research and Development Center (ERDC) were consulted in the design of the proposed dunes in order to ensure that the proposed dunes designs are consistent with existing technical guidelines.

Design refinements were considered in order to support dune stability including vegetation, sand fencing, pedestrian access, vehicle access, and storm water outfall pipes. These design refinements could be added or modified as standalone design changes or could be implemented in conjunction with dune construction and other design refinements.

Planting **vegetation** helps to anchor sand dunes and promotes dune growth. The roots and stems of sea oats and other native coastal plants trap wind-blown sand. As the sand piles up around the plants, new roots develop on the recently buried stems while new stems emerge from the sand's surface. This traps even more sand and grows the dune. In general, vegetation should be planted on all newly constructed dunes.

An additional way to enhance dune growth is through the installation of **sand fencing** Sand fencing is a relatively low cost option that works similarly to dune vegetation to help support sand dune growth by trapping and collecting wind-driven sand.

Pedestrian access modifications could include signage encouraging beachgoers to stay off dunes and to use designated access points, rope fencing to keep people off of the dunes, or constructing dune walkovers to allow beach access without impacting the dune. These measures prevent dune vegetation, and the dune itself, from being trampled and degraded by foot traffic, which could reduce the function of the dune.

Vehicle access modifications could include changing the angle at which the vehicle access cuts through the dune so that during a storm the gap through the dune would erode in on itself. Mats or ramps could be used to allow vehicles to drive over the dune and prevent the degradation of the dunes in these areas. Sand stockpile areas could be designated for filling in the dune gaps when a storm is approaching.

Modifications at Storm Water Outfalls. Areas where storm water outfall pipes intersect dunes and release storm water onto the project footprint could be modified with revetment sections or the pipes could be re-routed in order to prevent degradation of the dune in these areas caused by outfall scour.

2.3 Project-specific Design Considerations.

Table 3 through **Table 7** show the project-specific considerations relevant to each alternative design change. See **Section 4** for a more detailed discussion regarding the potential environmental impacts of the alternatives. The design changes have independent utility and can be implemented separately or in various combinations, if needed.

Table 3. Nassau County SPP – Alternatives.

Design Change	Project-specific Considerations
No Action	No change to the existing project.
Dune Incorporation	Dunes have not been directly constructed in the SPP area, however dunes have formed naturally within the project footprint and enhance the protection benefits of the SPP along most of the project shoreline. There are two small areas at Main Beach where dunes could be constructed to close the gap in the natural dune.
Vegetation	Dune vegetation is well established along much of the existing dune in the project area. As such, the dune areas generally do not currently require vegetation planting. However, future dune construction should include planting of native vegetation.
Sand Fencing	In the absence of dune construction, sand fencing could be strategically placed to help trap sand in small dune gaps such as at dune walkthroughs. This approach proved successful at several areas south of the Federal project limits.
Pedestrian Access Modifications	There are 31 public pedestrian beach access points in the project area. Just a few of these access points have boardwalks extending over the existing dunes. The remaining access points have footpaths over and/or through the dune that can result in degradation of the dune over time at these locations. These locations could benefit from boardwalks over the dune or from sand fencing placed in a manner that would guide foot traffic on a dedicated path and collect windblown sand in the vicinity of the footpath. The advantage of boardwalks compared to walkthroughs is that the boardwalks allow people to access the berm without impacting the dune. Dune walkthroughs let people walk directly on top of the dune which can cause erosion to the path over time. This erosion can become significant if the access is heavily used and if the elevation of the walkthrough is eroded enough. Other potential impacts include damage to habitat and vegetation. These impacts can be exacerbated if the walkthroughs are not well-defined and people are not careful to stay within them.

Design Change	Project-specific Considerations
Vehicle Access Modifications	There are 2 vehicle beach access points in the project area that cut through the dune leaving vulnerable gaps. The Dolphin Avenue vehicle access is used for emergency vehicles and construction equipment to access the beach. It consists of a straight cut through the dune and could be made more resilient by constructing a ramp, being angled, or by designating an emergency stockpile of sand to be used for closing the dune as a storm approaches. The Sadler Road vehicle access is used for the public to drive and park on the beach. This access point has a relatively small footprint which would make it difficult to modify with a ramp or by angling. Line of sight for drivers entering and exiting the beach though this dune cut through also need to be considered. Vehicle access modifications will be limited to the footprint of the vehicle access parcel.
Modifications at Storm Water Outfalls	There are no outfall pipes affecting dunes in the project area.

Table 4. Duval County SPP -- Alternatives.

Design Change	Project-specific Considerations
Dune Incorporation	Dune construction has recently taken place within the project footprint to rebuild existing dunes that were eroded by Hurricane Matthew (2016) and Hurricane Irma (2017). This work has been locally funded. The sponsor has acquired a consent of use over sovereign submerged lands from the State of Florida for the dune construction. No easements are required as the dune footprint is seaward of the ECL. Incorporating dunes as part of the SPP allows for reconstruction following a significant storm event; thus immediately enhancing the project's ability to reduce storm damages.
Vegetation	Dune vegetation is well established along much of the project area. The recently constructed portions of the dune are scheduled to be planted with native vegetation; primarily sea oats. Future dune construction should include planting of native vegetation.
Sand Fencing	Sand fencing should not be placed onto the berm seaward of the existing dune as this could cause dune encroachment onto the berm which could have negative impacts on recreational beach use. Sand fencing could be strategically placed to help trap sand in small gaps such as at dune walk-throughs. Sand fencing was successfully used to close a small gap in the dune at Hopkins Street in Neptune Beach adjacent to a boardwalk.

Design Change	Project-specific Considerations
Pedestrian Access Modifications	There are 115 public pedestrian beach access points in the project area. Less than half of these access points have boardwalks extending over the existing dunes. The remaining access points have footpaths over and/or through the dune that could result in degradation of the dune over time. These locations could benefit from sand fencing placed in a manner that would guide foot traffic towards a dedicated path and collect windblown sand in the vicinity of the footpath. There are an additional 7 pedestrian access points along the NS Mayport shoreline that all have boardwalks over the existing dunes.
Vehicle Access Modifications	There are 18 vehicle beach access points in the project area. Over half of the access points currently consist of a gap through the dune that is vulnerable to backside dune erosion due to flanking, upland erosion, and inundation. The access points are all used by emergency vehicles and cannot be permanently closed. Modifications that could be made include angling the path through the dune, ramping over the dune, or designating stockpiles of sand that could be used to close off the dune gap when a storm is approaching. Local interests would prefer not to use Mobi-mat® style ramps due to turtle issues and concerns about pedestrians slipping on the mats. Vehicle access modifications will be limited to the footprint of the vehicle access parcel.
Modifications at Storm Water Outfalls	There are 29 outfall pipes in the Jacksonville Beach portion of the project area that create weak points in the dune. The City of Jacksonville Beach is working on extending the outfall pipes as funding opportunities allow to prevent storm surge or washout of the dunes through the pipes during large rain events.

Table 5 St. Johns County SPP – Alternatives.

Design Change	Project Specific Considerations
Dune Incorporation	Dunes have not been directly constructed as part of the SPP, however they have formed naturally within the project footprint and enhance the protection benefits of the SPP. The area around the fishing pier is likely too erosive to support dune construction, as discussed in Section 6-2, below. Incorporating dunes as part of the SPP allows for reconstruction of the dunes following a significant storm event; thus immediately enhancing the projects ability to reduce storm damages.
Vegetation	Dune vegetation is well established along much of the project area. As such, the dune areas generally do not currently require vegetation planting. However, future dune construction should include planting of native dune vegetation.
Sand Fencing	In the absence of dune construction, sand fencing could be strategically placed to help trap sand in small dune gaps such as at walk-throughs. Sand fencing could also be used to direct foot traffic through designated pedestrian beach accesses.

Design Change	Project Specific Considerations
Pedestrian Access Modifications	There are 29 public pedestrian beach access points in the project area. A few of these access points have boardwalks extending over the existing dunes. The remaining access points have footpaths over and/or through the dune or wooden ramps that end within the dune with a footpath that continues onto the berm. The footpaths could result in degradation of the dune over time at these locations. These locations could benefit from sand fencing placed in a manner that would guide foot traffic on a dedicated path and collect windblown sand in the vicinity of the footpath. Note that if existing paths through the dune are to be re-oriented, then beach mice relocation may be required.
Vehicle Access Modifications	There are 5 vehicle beach access points in the project area. Most of the access points currently consist of a gap through the dune that is vulnerable to backside dune erosion due to flanking, upland erosion, and inundation. Most of these access points are used by emergency vehicles and cannot be permanently closed. The 'A' street access point is used for public beach driving. Modifications that could be made include angling the path through the dune, ramping over the dune, or designating a stockpile of sand that could be used to close off the dune gap when a storm is approaching. Vehicle access modifications will be limited to the footprint of the vehicle access parcel.
Modifications at Storm Water Outfalls	There are no outfall pipes affecting dunes in the project area.

Table 6. Brevard County North Reach SPP – Alternatives.

Design Change	Project Specific Considerations
Dune Incorporation	Dunes have formed naturally within the project footprint in both the north and south reaches of the project. Incorporating dunes as part of the SPP allows for reconstruction of the dunes following a significant storm event; thus immediately enhancing the project's ability to reduce storm damages.
Vegetation	Dune vegetation is well established along much of the project area. There are no dune areas currently in need of vegetation, however future dune construction should include planting of vegetation.
Sand Fencing	Sand fencing could be strategically placed to help trap sand in small dune gaps such as at dune walkthroughs. It could also be used to direct foot traffic through designated paths. Sand fencing is not preferable to the project sponsor.

Design Change	Project Specific Considerations
Pedestrian Access Modifications	The pedestrian access points in the project area include boardwalks extending over the existing dunes or footpaths over and/or through the dune. The footpaths can result in degradation of the dune over time. These locations could benefit from sand fencing placed in a manner that would guide foot traffic on a dedicated path and collect windblown sand in the vicinity of the footpath. Sand fencing is not preferable to the project sponsor and degradation of the dunes at footpaths has not been observed to be occurring to a large extent.
Vehicle Access Modifications	There are 6 vehicle beach access points in the project area that cut through the dune leaving gaps. Modifications that could be made include angling the path through the dune, a ramp over the dune, or a designated stockpile of sand that could be used to close off the dune gap when a storm is approaching. Secondary dune islands could be constructed in front of the gaps to create a partition that would still allow vehicles to use the access. Vehicle access modifications will be limited to the footprint of the vehicle access parcel. Several of the vehicle accesses are already at a high elevation and may not require modifications.
Modifications at Storm Water Outfalls	There are some storm outfall pipes within the south reach project area, however the sponsor does not wish to pursue any modifications to the dunes adjacent to these features.

Table 7. Brevard County South Reach SPP – Alternatives

Design Change	Project Specific Considerations
Dune Incorporation	Dunes have formed naturally within the project footprint in both the north and south reaches of the project. Incorporating dunes as part of the SPP allows for reconstruction of the dunes following a significant storm event; thus immediately enhancing the projects ability to reduce storm damages.
Vegetation	Dune vegetation is well established along much of the project area. There are no dune areas currently in need of vegetation, however future dune construction should include planting of dune vegetation.
Sand Fencing	Sand fencing could be strategically placed to help trap sand in small dune gaps such as at dune walkthroughs. It could also be used to direct foot traffic through designated paths. Sand fencing is not preferable to the project sponsor.

Design Change	Project Specific Considerations
Pedestrian Access Modifications	The pedestrian access points in the project area include boardwalks extending over the existing dunes or footpaths over and/or through the dune. The footpaths can result in degradation of the dune over time from foot traffic. These locations could benefit from sand fencing placed in a manner that would guide foot traffic on a dedicated path and collect windblown sand in the vicinity of the footpath. Sand fencing is not preferable to the project sponsor and degradation of the dunes at footpaths has not been observed to be occurring to a large extent.
Vehicle Access Modifications	There are 6 vehicle beach access points in the project area that cut through the dune leaving gaps. Modifications that could be made include angling the path through the dune, a ramp over the dune, or a designated stockpile of sand that could be used to close off the dune gap when a storm is approaching. Secondary dune islands could be constructed in front of the gaps to create a partition that would still allow vehicles to use the access. Vehicle access modifications will be limited to the footprint of the vehicle access parcel. Several of the vehicle accesses are already at a high elevation and may not require modifications.
Modifications at Storm Water Outfalls	There are some storm outfall pipes within the south reach project area, however the sponsor does not wish to pursue any modifications to the dunes adjacent to these features.

2.4 Preferred Alternatives.

The Corps developed Preferred Alternatives based on a consideration of potential environmental impacts and an evaluation of the performance of existing dunes, including reducing erosion and inundation damages, elongating nourishment intervals, decreasing nourishment volumes, and incidental environmental benefits. All of the proposed action alternatives would increase project resilience, including dune construction with vegetation, sand fencing, pedestrian access modifications, and vehicle access modifications (including sand stockpile areas). The proposed Preferred Alternatives for each of the Federal authorized projects are summarized in **Table 8** through **Table 11**.

2.4.1 Nassau County Preferred Alternatives.

The design changes recommended to increase resilience for the Nassau County SPP include dune construction with vegetation, pedestrian access modifications with sand fencing and boardwalks, and vehicle access modifications. The Preferred Alternative would incorporate dunes into the Federal project with a crest elevation of 15 ft. NAVD88. In contrast, the design template berm elevation in the Nassau County SPP's authorizing reports, referenced in **Table 2**, is +9.6 ft. NAVD88. The proposed dune template is consistent with the natural characteristics of existing dunes in the project area.

There are two locations between Dolphin Avenue and Atlantic Avenue with sizable gaps in the existing, naturally occurring dune. At both of these locations, the proposed dune construction includes closing the gaps. The northernmost of the two sites is located directly in front of FDEP R-monument R-21 at Wolf Park. The gap in the existing dune at this location is approximately 75 ft. long and currently allows pedestrian access from a boardwalk onto the berm. However, this gap in the dune is not an official public access point. The elevation of the ground within this gap is approximately 12 ft. NAVD88, so the proposed dune construction will raise the elevation of this point by about 3 ft. The second gap in the existing dune is located just to the south of Wolf Park in front of the parking lot at the end of Atlantic Avenue. This gap is approximately 330 ft. long. It is located north of the Sandbar & Kitchen Restaurant, and in front of the restaurant itself. The elevation of the ground within this gap is approximately 11 ft. NAVD88, so the proposed dune construction will raise the elevation by about 4 ft.

Table 8 provides a summary of the recommended design changes. For more information, including descriptions and locations of the proposed vehicle and pedestrian access modifications, see **Appendix C**.

Table 8. Nassau County Summary of Recommended Design Changes.

Design Change	Summary of Recommendation
Dune Construction with Vegetation	Dune incorporation is recommended along the entire length of the project. Dunes could be constructed as part of the project in the event that the existing dune becomes eroded in the future. The volume of sand to be placed in the dune template, should it erode, would be treated as part of the project's advanced fill volume. Existing dune gap closures could be constructed separately.
Vehicle Access Modifications	Modifications for vehicle access points that include raising elevations, a vehicle mat, and an emergency stockpile are recommended.
Pedestrian Access Modifications with Sand Fencing	Placing sand fencing along the side of each walkthrough is recommended to trap material in the access and help it maintain a higher elevation. Approximately 50 ft. of wooden sand fence would be needed at each access point to be modified. Two boardwalks are recommended at the Dolphin Avenue and Atlantic Avenue parking lots.

2.4.2 Duval County Preferred Alternatives.

The design changes recommended to increase resilience for the Duval County SPP include dune construction with vegetation, pedestrian access modifications with sand fencing, and vehicle access modifications. The Preferred Alternative would incorporate dunes into the Federal project with a crest elevation of 14.5 ft. NAVD88. In contrast, the design template berm elevation in the Duval County SPP's authorizing reports, referenced in **Table 2**, is +8 ft. NAVD88. The proposed dune template is consistent with the natural characteristics of existing dunes in the project area.

There are two access points located at the end of Beach Blvd (R-66.5 and R-66.6). The northernmost of these two access is used exclusively by the Jacksonville Beach lifeguards, which have a garage at this location. The lifeguard garage entrance is facing the gap in the existing dune in order to allow for the vehicles to move directly onto the beach. Due to this configuration, the local sponsor would prefer to keep the access open. However, due to the proximity of the access at the end of Beach Blvd, the Preferred Alternative includes dune construction to close the gap for the lifeguard access and re-routing the lifeguard vehicles to the Beach Blvd entrance. This gap is approximately 20 ft. wide. The ground elevation at this gap is approximately 11 ft. NAVD88, and the proposed dune construction will raise the elevation by about 4 ft.

At 8th Avenue North, if the storm outfall pipe is extended by the City of Jacksonville in the future, the Preferred Alternative would fill the outfall corridor in order to narrow the gap in the access from 75 ft. to 40 ft. Finally, at 20th Avenue South, there is an official vehicle access point that is currently closed by an existing dune; the proposed design changes would include dune construction at this location, thus permanently closing this access point.

Table 9 provides a summary of the recommended design changes for this project. For more information, including descriptions and locations of the proposed vehicle and pedestrian access modifications, see **Appendix C**.

Table 9. Duval County Summary of Recommended Design Changes.

Design Change	Summary of Recommendation
Dune Construction with Vegetation	Dune incorporation is recommended along the entire length of the project. Dunes could be constructed as part of the project in the event that the existing dune becomes eroded in the future. The volume of sand to be placed in the dune template, should it erode, would be treated as part of the project's advanced fill volume.
Vehicle Access Modifications	Modifications for vehicle access points that include raising elevations, vehicle mats, emergency stockpiles, and partial dune closure are recommended.
Pedestrian Access Modifications with Sand Fencing	Placing sand fencing along the side of each walkthrough is recommended to trap material in the access and help it maintain a higher elevation. Approximately 40 feet of wooden sand fence would be needed at each access point to be modified.

2.4.3 St. Johns County Preferred Alternatives.

The design changes recommended to increase resilience for the St. Johns County SPP, St. Augustine Beach Segment, include dune construction with vegetation, pedestrian access modifications with sand fencing, and vehicle access modifications. The Preferred Alternative would incorporate dunes into the Federal project with a crest elevation of between +16 ft. NAVD88 (in the Southern portion of project) and +17 ft. NAVD88 (in the Northern portion of the project). In contrast, the design template berm

elevation in the St. Johns County SPP's authorizing reports, referenced in **Table 2**, is +9 ft. NAVD88. The proposed dune template is consistent with the natural characteristics of existing dunes in the project area.

Three changes are proposed for the existing dune at Pope Road. First, the dune from the state park would be continued along the north side of the parking lot to protect the parking lot from inundation. The constructed dune would tie into the existing dune system and also serve to prevent flanking of the existing dune. The proposed dune recommended north of the parking lot is smaller than the typical dune template for the northern reach of the project in order to prevent the dune from protruding out onto the berm which would make it more susceptible to erosion. The proposed dune has a dune crest width of 10 ft., an elevation of 4 ft. above the existing grade (about 10 ft. NAVD88), and 1V:4H slopes. Next, a dune with an estimated volume of 115 cy is recommended in front of the existing access. This dune would not seal the access but would serve to deflect wave energy away from the opening. This would protect the street entrance from direct wave impacts while still allowing a corridor for emergency vehicles to access the berm. Finally, an emergency stockpile (approximately 50 cy of volume) of material would be placed behind the new dune in front of the access. The local sponsor can use this emergency stockpile in extreme water elevation situations to close the gap in the dunes by pushing the sand from the stockpile into the access in order to form a continuous dune.

At "A" Street, the proposed design changes include raising the ground elevation from approximately 9 ft. NAVD88 to 12 ft. NAVD88 and modifying the dunes on either side of the access to narrow the gap as shown in **Appendix C.**

Table 10 provides a summary of the recommended design changes. For more information, including descriptions and locations of the proposed vehicle and pedestrian access modifications, see **Appendix C**.

Table 10. St. Johns County Summary of Recommended Design Changes.

Design Change	Summary of Recommendation
Dune Construction with Vegetation	Dune incorporation is recommended along the entire length of the project. Dunes could be constructed as part of the project in the event that the existing dune becomes eroded in the future. The volume of sand to be placed in the dune template, should it erode, would be treated as part of the project's advanced fill volume.
Vehicle Access Modifications	Modifications for vehicle access points that include raising elevations, a vehicle mat, an emergency stockpile, and filling in dune gaps are recommended.
Pedestrian Access Modifications with Sand Fencing	Placing sand fencing along the side of each walkthrough is recommended to trap material in the access and help it maintain a higher elevation. Approximately 60 feet of wooden sand fence would be needed at each access point to be modified.

2.4.4 Brevard County North Reach Segment and South Reach Segment Preferred Alternatives.

The design changes recommended to increase resilience for the Brevard County SPP North and South Reaches include, dune construction with vegetation and vehicle access modifications. The Preferred Alternative would incorporate dunes into the Federal project with a crest elevation of 13 ft. NAVD88. In contrast, the design template berm elevation in the Brevard County SPP's authorizing reports, referenced in **Table 2**, is +7.4 ft. NAVD88. The proposed dune template is consistent with the natural characteristics of existing dunes in the project area.

To the south of the Cocoa Beach Pier, proposed dune construction includes adding sand to the area with existing sand fencing to raise the elevation to 13 ft. NAVD88, and adding a dune that starts from the pier and continues past the existing sand fencing area. This will cause the access to be offset and prevent direct wave action from directly penetrating through the access. This proposed dune will have an elevation of 13 ft. NAVD88, a crest width of 20 ft., and 1V:3H slope.

At Washington Avenue, the proposed design changes include adding a vegetated dune with a crest elevation of 9-10 ft. NVD88 in front of the vehicle access. Similarly, at Minutemen Causeway, a secondary, vegetated dune is proposed with a crest elevation of 11 ft. NAVD88 in front of the vehicle access. These proposed secondary dunes will have a lateral extent beyond the dimensions of the vehicle entrances, while not impacting vehicle traffic

Table 11 provides a summary of the recommended design changes. For more information, including descriptions and locations of the proposed vehicle and pedestrian access modifications, see Appendix C.

Table 11. Brevard County North Reach Segment and South Reach Segment Summary of Recommended Design Changes.

Design Change	Summary of Recommendation
Dune Construction with Vegetation	Dune incorporation is recommended along the entire length of the North Reach and South Reach. Dunes could be constructed as part of the project in the event that the existing dune becomes eroded in the future. The volume of sand to be placed in the dune template, should it erode, would be treated as part of the project's advanced fill volume.
Vehicle Access Modifications	Modifications for vehicle access points that include raising elevations, secondary dune additions, and access reorientation are recommended.

Table 12. Summary of Direct and Indirect Impacts.

Refer to **Table 3** *through* **Table 7** *for county-specific preferred alternatives.*

Alternative Environmental Factor	No Action* (Status Quo)	Alternative 1: Dune Construction with Vegetation	Alternative 2: Vegetation Only	Alternative 3: Sand Fencing	Alternative 4: Pedestrian Access Modifications	Alternative 5: Vehicle Access Modifications	Alternative 6: Outfall Pipe Modification
GENERAL ENVIRONMENTAL SETTING	Shoreline would continue to erode at its present rate.	Minor short-term effects during construction activities relative to the alternative may temporarily affect the environmental setting.	Minor short-term effects during construction activities relative to the alternative may temporarily affect the environmental setting.	Minor short-term effects during construction activities relative to the alternative may temporarily affect the environmental setting.	Minor short-term effects during construction activities relative to the alternative may temporarily affect the environmental setting.	Minor short-term effects during construction activities relative to the alternative may temporarily affect the environmental setting.	Minor short-term effects during construction activities relative to the alternative may temporarily affect the environmental setting.
VEGETATION	Existing dune vegetation would be impacted by continued beach and dune erosion.	Vegetation would be planted after placement of the dune material, as needed. Planted vegetation would expand either by rhizome or seed and would result in a fully vegetated dune system. A limited amount of natural recruitment is expected.	Vegetation only would be planted as needed on dunes. Planted vegetation would expand either by rhizome or seed and would result in a fully vegetated dune system. A limited amount of natural recruitment is expected.	There will be no impact to vegetation during construction activities relative to the sand fencing alternative.	There will be no impact to vegetation during construction activities relative to the pedestrian access modifications alternative.	There will be no impact to vegetation during construction activities relative to the vehicle access modifications alternative.	There will be no impact to vegetation during construction activities relative to the sand fencing alternative.
PROTECTED SPECIES: NESTING SEA TURTLES	There would be less habitat for nesting sea turtles if the proposed dune system were not constructed or modified.	Construction activities related to this alternative may affect nesting sea turtles. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Vegetation planting activities related to this alternative may affect nesting sea turtles. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Sand Fencing activities related to this alternative may affect nesting sea turtles. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Pedestrian access modification activities related to this alternative may affect nesting sea turtles. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Vehicle access modification activities related to this alternative may affect nesting sea turtles. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Outfall pipe modification activities related to this alternative may affect nesting sea turtles. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.

Alternative Environmental Factor	No Action* (Status Quo)	Alternative 1: Dune Construction with Vegetation	Alternative 2: Vegetation Only	Alternative 3: Sand Fencing	Alternative 4: Pedestrian Access Modifications	Alternative 5: Vehicle Access Modifications	Alternative 6: Outfall Pipe Modification
PIPING PLOVER	There would be less habitat for piping plovers if the proposed dune system were not constructed or modified.	Construction activities related to this alternative may affect, but are not likely to adversely affect the plover. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	There would be minimal impact to piping plover planting vegetation in already constructed dunes. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Impacts to piping plover will be minimal as a result of the installation of sand fencing to help support sand dune growth by trapping and collecting wind-driven sand. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Pedestrian access modification activities related to this alternative may affect, but are not likely to adversely affect the plover. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Impacts to piping plover as a result of vehicle access modifications will be minimal. Usage of these vehicle access points will be limited to those agencies that need access to the beach area (i.e. public works). Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Impacts to piping plover as a result of storm water outfall pipe modifications would include a minor increase in beach habitat and would reduce erosion. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.
RED KNOT	There would be less habitat for red knots if the proposed dune system were not constructed or modified.	Construction activities related to this alternative may affect, but are not likely to adversely affect the red knot. Use of offshore sand or an upland sand source would result in similar effects, i.e. potential temporary disturbance and alteration of the beach face (foraging habitat). Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	There would be minimal impact to piping plover planting vegetation in already constructed dunes. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Impacts to red knot will be minimal as a result of the installation of sand fencing to help support sand dune growth by trapping and collecting wind-driven sand. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Pedestrian access modification activities related to this alternative may affect, but are not likely to adversely affect the red knot. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Impacts to piping plover as a result of vehicle access modifications will be minimal. Usage of these vehicle access points will be limited to those agencies that need access to the beach area (i.e. public works). Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.	Impacts to piping plover as a result of storm water outfall pipe modifications would include a minor increase in beach habitat and would reduce erosion. Work would be performed in compliance with the terms and conditions of the applicable biological, e.g. the Programmatic Piping Plover Biological Opinion (2013) and FDEP Joint Coastal permit requirements.

Alternative Environmental Factor	No Action* (Status Quo)	Alternative 1: Dune Construction with Vegetation	Alternative 2: Vegetation Only	Alternative 3: Sand Fencing	Alternative 4: Pedestrian Access Modifications	Alternative 5: Vehicle Access Modifications	Alternative 6: Outfall Pipe Modification
ANASTASIA BEACH MOUSE	There would be less habitat for the beach mouse if the proposed dune system were not constructed or modified.	Construction activities related to this alternative may affect, but are not likely to adversely affect the Anastasia Beach Mouse found in St. Johns County. There is no effect to the beach mouse from action alternatives proposed in other Counties. Dune construction in St. Johns County would only occur in areas where dunes do not currently exist or if existing dunes were significantly damaged or altered. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Vegetation planting activities related to this alternative may affect, but are not likely to adversely affect the Anastasia Beach Mouse found in St. Johns County. There is no effect to the beach mouse from action alternatives proposed in other Counties. Vegetation of the dunes in St. Johns County would only occur in areas where dunes do not currently exist or if existing dunes were significantly damaged or altered. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Sand fencing activities related to this alternative may affect, but are not likely to adversely affect the Anastasia Beach Mouse found in St. Johns County. There is no effect to the beach mouse from action alternatives proposed in other Counties. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Pedestrian access modification activities related to this alternative may affect, but are not likely to adversely affect the Anastasia Beach Mouse found in St. Johns County. There is no effect to the beach mouse from action alternatives proposed in other Counties. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Vehicle access modification activities related to this alternative may affect, but are not likely to adversely affect the Anastasia Beach Mouse found in St. Johns County. There is no effect to the beach mouse from action alternatives proposed in other Counties. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.	Outfall pipe modification activities related to this alternative may affect, but are not likely to adversely affect the Anastasia Beach Mouse found in St. Johns County. There is no effect to the beach mouse from action alternatives proposed in other Counties. Work would be performed in compliance with the terms and conditions of the applicable biological opinion, e.g. Statewide Programmatic Biological Opinion (2015) and FDEP Joint Coastal permit requirements including sand quality.
GOPHER TORTOISE	There would be less habitat for gopher tortoises if the proposed dune system were not constructed or modified.	No effect. Gopher tortoises shall be avoided within the dune habitat.	No effect. Gopher tortoises shall be avoided within the dune habitat.	No effect. Gopher tortoises shall be avoided within the dune habitat.	No effect. Gopher tortoises shall be avoided within the dune habitat.	No effect. Gopher tortoises shall be avoided within the dune habitat.	No effect. Gopher tortoises shall be avoided within the dune habitat.

Alternative Environmental Factor	No Action* (Status Quo)	Alternative 1: Dune Construction with Vegetation	Alternative 2: Vegetation Only	Alternative 3: Sand Fencing	Alternative 4: Pedestrian Access Modifications	Alternative 5: Vehicle Access Modifications	Alternative 6: Outfall Pipe Modification
MIGRATORY BIRDS	There would be less habitat for migratory birds if the proposed dune system were not constructed or modified.	Minor short-term effect. Standard migratory bird protection protocols will be incorporated into the project plans and specifications. The contractor will be required to abide by those protocols and all monitoring timeframes as specified by all applicable licenses and permits.	Minor short-term effect. Standard migratory bird protection protocols will be incorporated into the project plans and specifications. The contractor will be required to abide by those protocols and all monitoring timeframes as specified by all applicable licenses and permits.	Minor short-term effect. Standard migratory bird protection protocols will be incorporated into the project plans and specifications. The contractor will be required to abide by those protocols and all monitoring timeframes as specified by all applicable licenses and permits.	Minor short-term effect. Standard migratory bird protection protocols will be incorporated into the project plans and specifications. The contractor will be required to abide by those protocols and all monitoring timeframes as specified by all applicable licenses and permits.	Minor short-term effect. Standard migratory bird protection protocols will be incorporated into the project plans and specifications. The contractor will be required to abide by those protocols and all monitoring timeframes as specified by all applicable licenses and permits.	Minor short-term effect. Standard migratory bird protection protocols will be incorporated into the project plans and specifications. The contractor will be required to abide by those protocols and all monitoring timeframes as specified by all applicable licenses and permits.
OTHER WILDLIFE RESOURCES	There would be less habitat for other wildlife resources if the proposed dune system were not constructed or modified.	Minor and short-term effect to other wildlife resources such as macro invertebrates.	Minor and short-term effect to other wildlife resources such as macro invertebrates.	Minor and short-term effect to other wildlife resources such as macro invertebrates.	Minor and short-term effect to other wildlife resources such as macro invertebrates.	Minor and short-term effect to other wildlife resources such as macro invertebrates.	Minor and short-term effect to other wildlife resources such as macro invertebrates.
CULTURAL, HISTORIC, AND ARCHAEOLOGICAL RESOURCES	There would be no effect to cultural, historic, and archaeological resources if the proposed dune system were not constructed.	The dunes afford protection to coastal cultural, historic, and archaeological resources. Sand sources will require survey to ensure no impacts to historic properties.	The accretion and stabilization of dunes through vegetation will protect coastal cultural, historic, and archaeological resources.	The accretion and stabilization of dunes using sand fencing afford protection to coastal cultural, historic, and archaeological resources.	The modification of pedestrian access locations will afford protection to coastal cultural, historic, and archaeological resources by reducing erosion	The stabilization of the dunes through modifying the vehicle access points will afford protection to coastal cultural, historic, and archaeological resources by limiting erosion.	The modification of pipe outfalls will potentially lead to less erosion of the coast, protecting to coastal cultural, historic, and archaeological resources.
WATER QUALITY	There would be no effect to water quality if the proposed dune system were not constructed.	Activities related to this alternative would be required to meet State (acceptance) criteria. All work would be consulted with FDEP and be in compliance with any applicable permits.	Activities related to this alternative would be required to meet State (acceptance) criteria. All work would be consulted with FDEP and be in compliance with any applicable permits.	Activities related to this alternative would be required to meet State (acceptance) criteria. All work would be consulted with FDEP and be in compliance with any applicable permits.	Activities related to this alternative would be required to meet State (acceptance) criteria. All work would be consulted with FDEP and be in compliance with any applicable permits.	Activities related to this alternative would be required to meet State (acceptance) criteria. All work would be consulted with FDEP and be in compliance with any applicable permits.	Activities related to this alternative would be required to meet State (acceptance) criteria. All work would be consulted with FDEP and be in compliance with any applicable permits.

Alternative Environmental Factor	No Action* (Status Quo)	Alternative 1: Dune Construction with Vegetation	Alternative 2: Vegetation Only	Alternative 3: Sand Fencing	Alternative 4: Pedestrian Access Modifications	Alternative 5: Vehicle Access Modifications	Alternative 6: Outfall Pipe Modification
AESTHETICS	Aesthetic impacts associated with unabated beach and dune erosion and attendant damage to existing shorefront structures.	Offshore sand and upland sand used relative to this alternative would maintain existing beach aesthetics by preserving or improving sand dune and beach conditions.	This alternative would maintain existing beach aesthetics by preserving or improving sand dune and beach conditions.	This alternative would maintain existing beach aesthetics by preserving or improving sand dune and beach conditions.	This alternative would maintain existing beach aesthetics by preserving or improving sand dune and beach conditions.	This alternative would maintain existing beach aesthetics by preserving or improving sand dune and beach conditions.	This alternative would maintain existing beach aesthetics by preserving or improving sand dune and beach conditions.
RECREATION	There would be a minor effect to recreation resources if the proposed dune system were not constructed.	Temporary minor short-term effects/disruption and/or localized suspension of recreation during construction activities.	Temporary minor short-term effects/disruption and/or localized suspension of recreation during construction activities.	Temporary minor short-term effects/disruption and/or localized suspension of recreation during construction activities.	Temporary minor short-term effects/disruption and/or localized suspension of recreation during construction activities.	Temporary minor short-term effects/disruption and/or localized suspension of recreation during construction activities relating to this alternative.	Temporary minor/short-term effects/disruption and/or localized suspension of recreation during construction activities.
HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)	There would be no effects associated with HTRW if the proposed dune system were not constructed.	No effect.	No effect.	No effect.	No effect.	No effect.	No effect.
AIR QUALITY	There would be no effects to air quality if the proposed dune system were not constructed.	Short-term impact to air quality from emissions by construction equipment associated with activities.	Short-term impact to air quality from emissions by construction equipment associated with activities.	Short-term impact to air quality from emissions by construction equipment associated with activities.	Short-term impact to air quality from emissions by construction equipment associated with activities.	Short-term impact to air quality from emissions by construction equipment associated with activities.	Short-term impact to air quality from emissions by construction equipment associated with activities.
NOISE	There would be no effects associated with noise if the proposed dune system were not constructed.	Construction generated noise would temporarily raise the noise level during the construction activities.	Construction generated noise would temporarily raise the noise level during the construction activities.	Construction generated noise would temporarily raise the noise level during the construction activities.	Construction generated noise would temporarily raise the noise level during the construction activities.	Construction generated noise would temporarily raise the noise level during the construction activities.	Construction generated noise would temporarily raise the noise level during the construction activities.
ENERGY REQUIREMENTS AND CONSERVATION	Energy requirements associated with clean-up after storm events would continue to increase concurrent with realized damages.	Expenditure of energy resources (fuel) would be required for construction activities.	Expenditure of energy resources (fuel) would be required for construction activities.	Expenditure of energy resources (fuel) would be required for construction activities.	Expenditure of energy resources (fuel) would be required for construction activities.	Expenditure of energy resources (fuel) would be required for construction activities.	Expenditure of energy resources (fuel) would be required for construction activities.

Alternative Environmental Factor	No Action* (Status Quo)	Alternative 1: Dune Construction with Vegetation	Alternative 2: Vegetation Only	Alternative 3: Sand Fencing	Alternative 4: Pedestrian Access Modifications	Alternative 5: Vehicle Access Modifications	Alternative 6: Outfall Pipe Modification
NATURAL OR DEPLETABLE RESOURCES	Natural or depletable resources would not be affected if the proposed dune system were not constructed.	Offshore and upland sand are the only natural and depletable resource associated with this alternative.	This alternative will not negatively impact natural or depletable resources.	This alternative will not negatively impact natural or depletable resources.	This alternative will not negatively impact natural or depletable resources.	This alternative will not negatively impact natural or depletable resources.	This alternative will not negatively impact natural or depletable resources.
NATIVE AMERICANS	Native Americans would not be affected if the proposed dune system were not constructed.	There are no lands belonging to Native Americans in the project area.	There are no lands belonging to Native Americans in the project area.	There are no lands belonging to Native Americans in the project area.	There are no lands belonging to Native Americans in the project area.	There are no lands belonging to Native Americans in the project area.	There are no lands belonging to Native Americans in the project area.
REUSE AND CONSERVATION POTENTIAL	Reuse and conservation potential would not be affected if the proposed dune system were not constructed	There is no potential for reuse or conservation with this alternative.	There is no potential for reuse or conservation with this alternative.	There is no potential for reuse or conservation with this alternative.	There is no potential for reuse or conservation with this alternative.	There is no potential for reuse or conservation with this alternative.	There is no potential for reuse or conservation with this alternative.

*Additional information can be found within the current environmental documents using the following link:

https://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/

3 AFFECTED ENVIRONMENT.

The Affected Environment section succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented. This section describes only those environmental resources that are relevant to the decision to be made. It does not describe the entire existing environment, but only those environmental resources that would be affected by the alternatives if they were implemented. This section, in conjunction with the description of the "no-action" alternative forms the base line conditions for determining the environmental impacts of the proposed action and reasonable alternatives.

It is noteworthy to mention, that prior to Hurricane Dorian emergency preparations were put into place for Nassau County, Duval County and Saint Johns County prior to potential impacts of the hurricane. These temporary preparations included closing gaps between access points and closing gaps between dunes.

3.1 General Physical Features.

This subsection contains a current description of each of the five projects and their current respective dune features, if any.

3.1.1 Nassau County Shore Protection Project, Nassau County, Florida.

The design template berm elevation is +13.0 feet mean low water and would result in a pre-project mean high water extension of 40 feet. The design reflect the natural existing conditions of 1Vertical (V) on 15Horizontal (H) feet to mean low water and thence 1V on 25H to existing ground. The volume of advanced nourishment is approximately 1,472,000 cubic yards (cy) every five years, based on an annual erosion rate of 294,400 cy/year (yr.) The project area is comprised of the 3.6 miles of Nassau County shoreline located between Florida Department of Environmental Protection (FDEP) monuments R-13 through R-33; starting approximately 0.7 miles south of the south jetty for St. Mary's Entrance Channel and proceeding 3.6 miles to the south, terminating near Sadler Road, as shown in **Figure 2**.

Dunes were investigated as an alternative during the plan formulation phase of the project documented in the 1985 Beach Erosion Control Study, which supported the 1986 Chief’s Report. This report notes that, “Hurricane surge protection in the form of a sand dune was eliminated from consideration as the populated areas are of sufficient elevation to withstand such a surge. Low-lying areas most vulnerable to flooding are located inland where the primary threat is from the Amelia River and such areas would be afforded no protection by a dune.” Dunes were not recommended by the 1986

Chief’s Report, and the 1999 GRR and 2006 GRRs did not investigate adding dunes to the project.

Initial construction of the SPP took place in 2008, placing approximately 1.9 million cy from the South Channel Borrow area, immediately south of the St. Mary's Entrance Channel, located approximately 2 miles from the center of the project area. Material from the Kings Bay Entrance Channel (KBEC) navigation project has been placed in the northern portion of the project area in 2011 and then every year from 2013-2017. The first periodic nourishment was recently completed in 2019 with material from the KBEC being place in the southern part of the project area. This latest event was a joint effort using FCCE, SPP, and NAV funding.

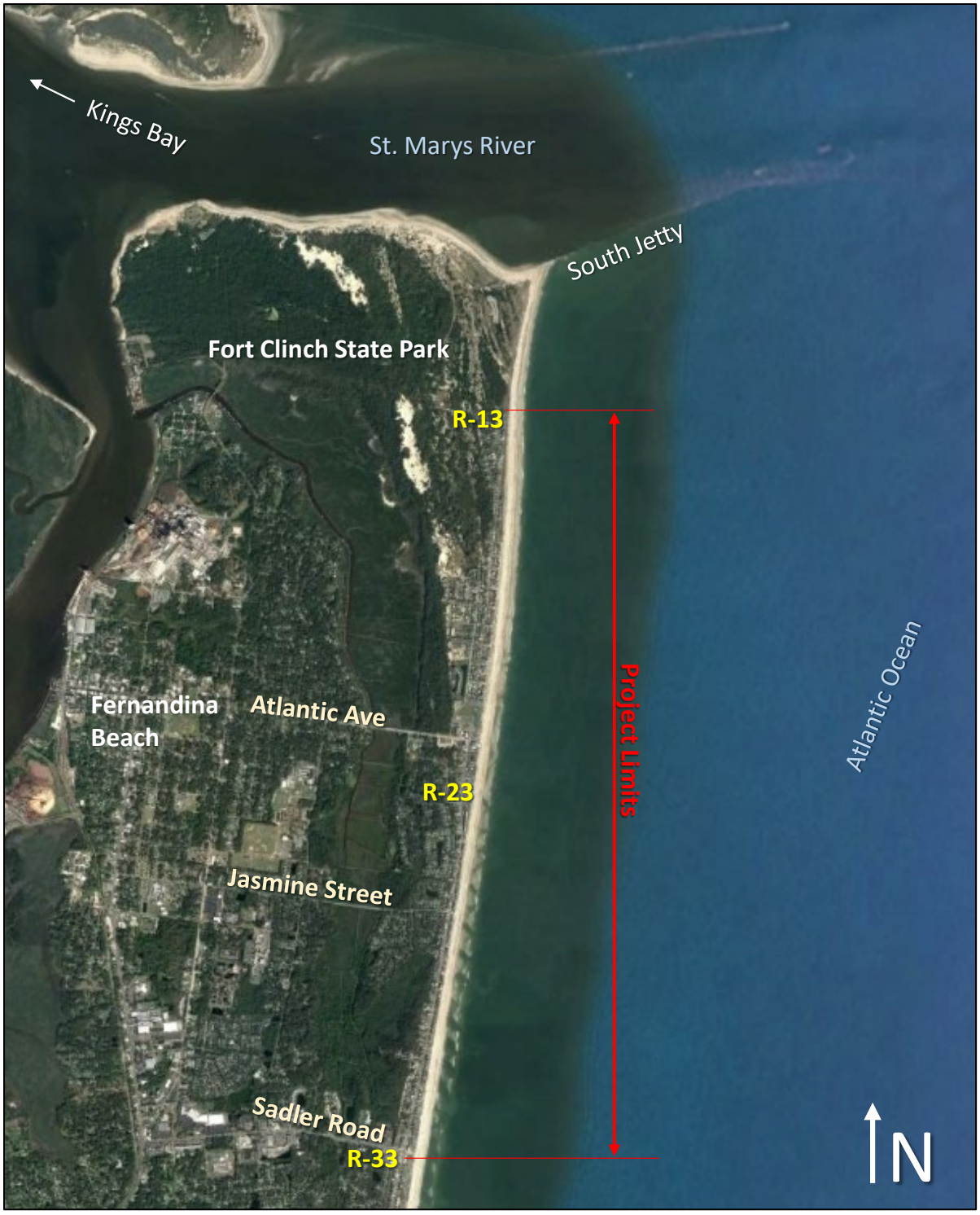


Figure 2. Location Map for Nassau County SPP.

3.1.2 Duval County Shore Protection Project, Duval County, Florida.

This project was designed to provide protection against beach erosion control, hurricane protection, and related purposes along the length of the project and to maximize primary NED net benefits. The authorized design consists of a 60-foot wide berm at elevation +11 feet in reference to Mean Low Water (MLW), with front slopes of 1V on 20H from elevation +11 ft. to Mean High Water (MHW), then 1V on 30H from MHW to MLW, then 1V on 45H from MLW to existing bottom. The construction template includes additional fill material for advanced maintenance. The volume of advanced nourishment is approximately 748,000 cubic yards (cy) every four years, based on an annual erosion rate of 187,000cy. The project limits extend from the south jetty of the St. Johns River to the north to the Duval County-St. Johns County line, shown in **Figure 3**.

Dunes were considered in the original formulation of the project documented in the 1964 Beach Erosion Control Study. At that time the main problem being observed in the project area was beach erosion impacting the recreational beach and damaging infrastructure and property. Dunes at that time were only thought of as a measure to protect against flooding so they were determined not to be warranted and were not recommended.

Initial construction was completed in two contracts between 1977 and 1979. The first phase of initial construction placed approximately 1.3 million cy. The second phase of initial construction placed approximately 1.22 million cy. Six periodic nourishments have been completed since the initial construction. The 7th periodic nourishment is currently underway and was completed in February 2019.

Sand fencing and dune vegetation for the formation of a beach dune were justified as a project feature for renourishments by the 1984 GDM Addendum I. These features of the Federal project were implemented by the non-Federal sponsor during the 1986 renourishment. These features were successful in controlling losses due to windblown sand. Previously, large volumes of fine-grained sand were blown into upland area, covering oceanfront yards, pool decks, roads, etc. Over time, through natural accretion of sand trapped by the vegetation and fencing, dunes formed above the 11 foot MLW Federal berm.

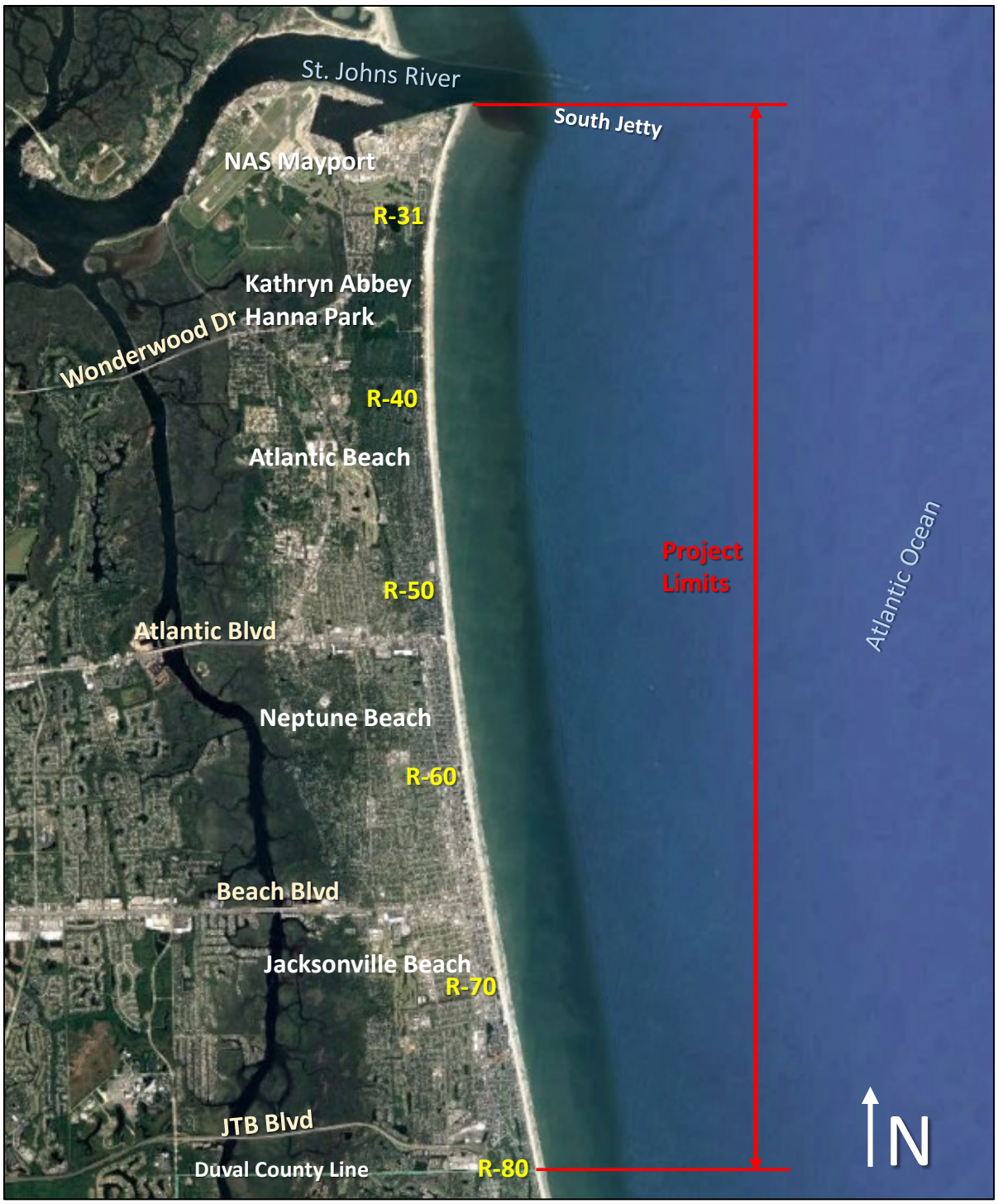


Figure 3. Location Map for Duval County SPP.

3.1.3 St. Johns County Shore Protection Project, St. Johns County, Florida.

The project was designed to provide beach erosion control against storm-induced damages. Erosion and long-term shoreline recession have rendered upland development in St. Johns County increasingly vulnerable to damage from storms, which has been exacerbated by the St. Augustine Inlet Federal navigation project. The authorized project consists of 2.5 miles of shoreline restoration, consisting of a 60-foot wide berm at 12 feet elevation above mean low water, and provides for initial construction and periodic renourishment. Tapers of 600 feet to the north and south are included in the design. The construction template includes additional fill material for advanced maintenance. The volume of advanced nourishment is approximately 1,625,000 cy every five years, based on an annual erosion rate of 325,000 cy/yr. The project limits, shown in **Figure 4**, start approximately 2.7 miles south of the St. Augustine Inlet and extend south approximately 2.5 miles.

Dunes were investigated as an alternative during the initial formulation of the project documented in the 1979 BEC study referenced by the 1980 Chiefs report. This report lists "Hurricane surge protection - sand dune" and "Stabilization of beaches and dunes by vegetation" as possible measures considered. These dune measures were screened out with little explanation other than noting that, "Stabilization of the beaches and adjacent dunes with vegetation is, for the most part, not applicable in the present situation. Dunes will not be constructed and beach grassing would be unsightly, unnecessary, and deprive the area of a recreational beach."

Initial construction was completed in 2003 placing approximately 3.8 million cy. At this same time an additional 400,000 cy were placed just to the north of the project in Anastasia State Park at the request of FDEP. Three periodic nourishments have been completed since the initial construction.

Figure 4. Location Map for St. Johns County SPP.

3.1.4 Brevard County North Reach Shore Protection Project, Brevard County, Florida.

The North Reach project limits is comprised of 9.4 miles of shoreline extending from R-1 adjacent the Canaveral harbor south jetty to the northern limit of Patrick Air Force Base at R-53 (**Figure 5**). The authorized design as per the 1996 Chief of Engineers Report provides for a 0-foot berm extension referenced to the pre-project mean high water (MHW) shoreline. The design berm is to be established at an elevation of +10.0 feet above MLW. The design berm is to tie into the pre-project +10.0 foot contour. The project design section is to transition from the location of MHW at a slope of 1/5 out to MLW, thence a slope of 1/50 to the existing bottom. The construction template includes additional fill material for advanced maintenance. The volume of advanced nourishment is approximately 516,000 cy every six years.

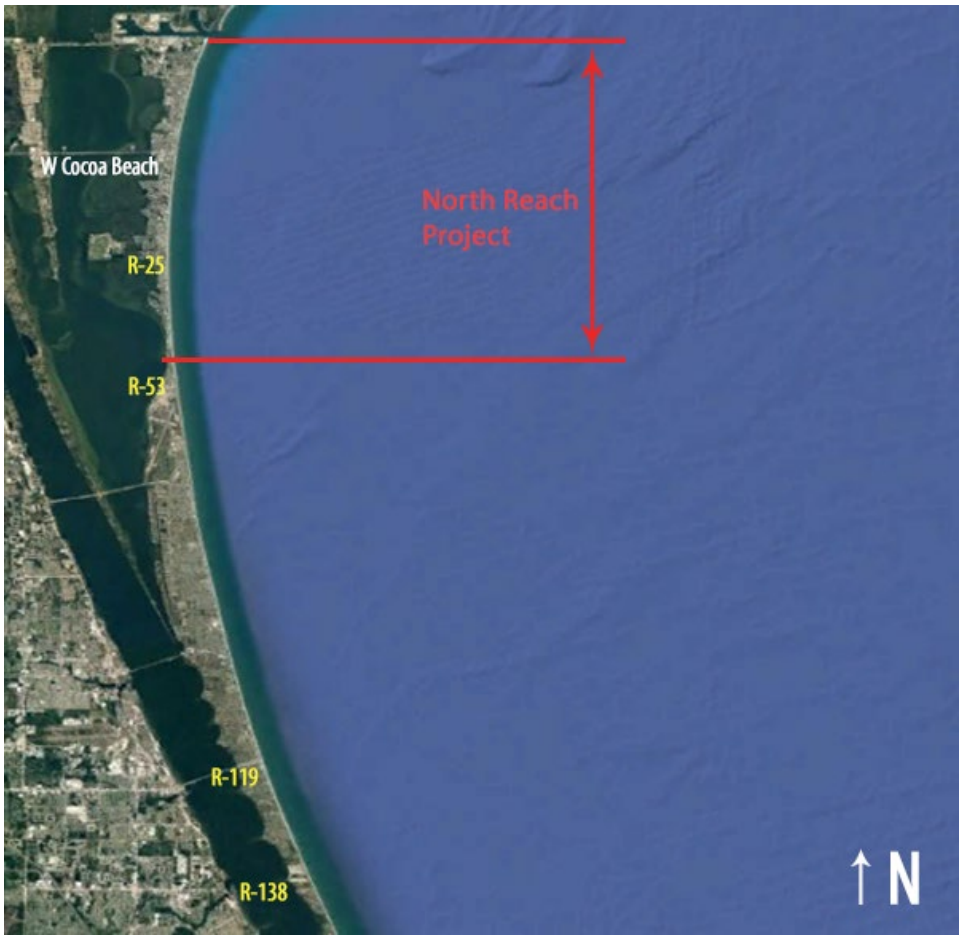


Figure 5. Location Map for Brevard County, North Reach, SPP.

3.1.5 Brevard County South Reach Shore Protection Project, Brevard County, Florida.

The South Reach extends 3.4 miles from R-119 along the coast of Indialantic to Melbourne Beach at R-138 (**Figure 6**). This project was designed to provide protection against erosion along the length of the project and to maximize primary NED net benefits. The authorized design as per the 1996 Chief of Engineers Report provides for a 0-foot berm extension referenced to the pre-project mean high water (MHW) shoreline. The design berm is to be established at an elevation of +10.0 feet above MLW. The design berm is to tie into the pre-project +10.0 foot contour. The project design section is to transition from the location of MHW at a slope of 1/5 out to MLW, thence a slope of 1/50 to the existing bottom. The construction template includes additional fill material for advanced maintenance. The volume of advanced nourishment is approximately 601,000 cy every six years.

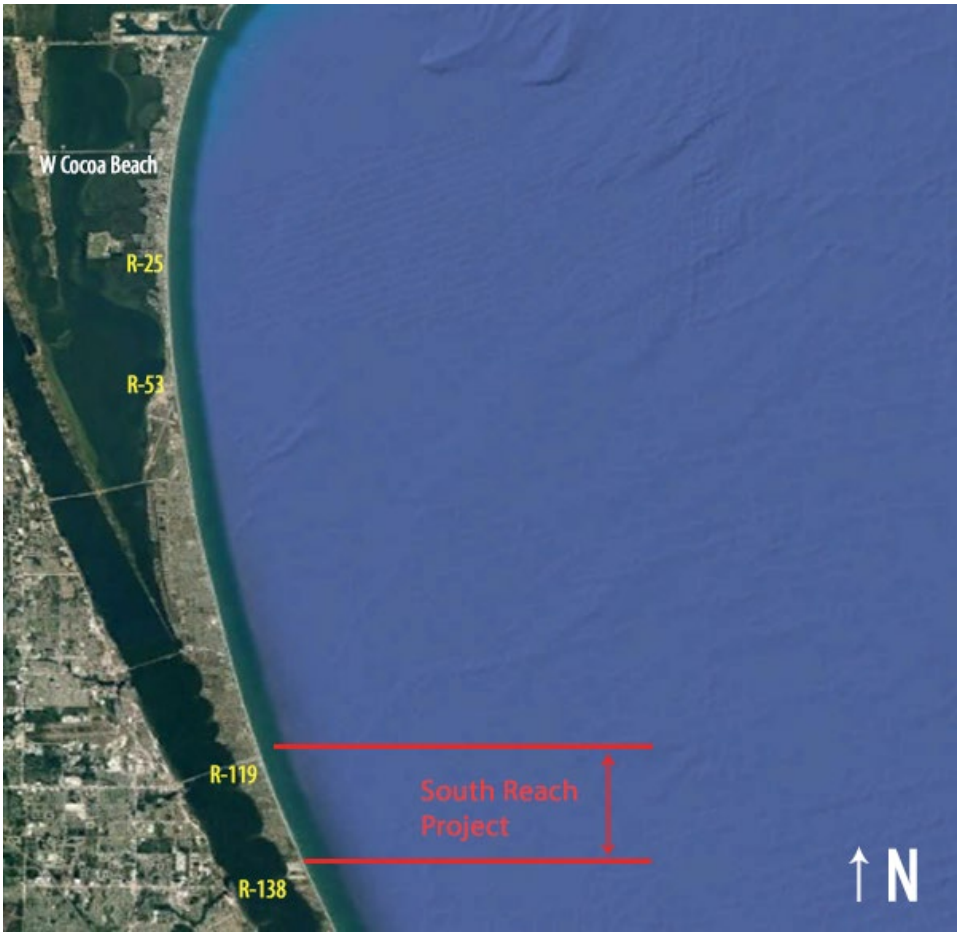


Figure 6. Location Map for Brevard County, South Reach, SPP.

3.2 Dune Vegetation.

Where dunes exist, they are generally narrow and characterized as coastal strand. The coastal strand is typically vegetated with sea oats (*Uniola paniculata*), dune grass (*Ammophila breviligulata*), sea grape (*Coccoloba uvifera*), sea rocket (*Cakile edentula*), cacti (*Opuntia compressa*), croton (*Croton puntatus*), pennywort (*Hydrocotyle bonariensis*), beach elder (*Iva imbricate*), sea purslane (*Susuviam portulacustrum*), wild bean (*Strophostyles helvola*), and morning glory (*Ipomea purpurescens*) (**Figure 7** and **Figure 8**). Additional information on dune vegetation have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference.

Figure 7. Dune Vegetation.

Figure 8. Dune Vegetation.

3.3 Native Beach Sediment Composition.

Native beach sediment compositions have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.4 Threatened and Endangered Species.

3.4.1 Nesting Sea Turtles.

The loggerhead, green, leatherback and Kemp's ridley sea turtles are known to nest along the East Coast of Florida (**Table 13**). They are also known to occur in coastal waters off the East Coast of Florida. Sea turtle nesting data have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**). These species may nest immediately adjacent to dunes or within dune systems.

Table 13. Sea turtle species that may nest along the east coast of Florida's Nassau, Duval, St. Johns, and Brevard counties.

Species are listed in order of relative abundance.

Common and Scientific Names	Status[a]	Life Stages Present	Abundance within the Project Area
Loggerhead sea turtle (*Caretta caretta*)	T	Adults, subadults, juveniles, and hatchlings	Abundant
Green sea turtle (*Chelonia mydas*)	T	Adults, subadults, juveniles, and hatchlings	Common
Leatherback sea turtle (*Dermochelys coriacea*)	E	Adults, subadults, juveniles, hatchlings	Rare
Kemp's ridley sea turtle (*Lepidochelys kempii*)	E	Adults, subadults, juveniles, and hatchlings	Rare

[a] Status: E = endangered, T = threatened under the Endangered Species Act of 1973.

3.4.2 Piping plover.

Classified federally as Threatened, the piping plover (*Charadrius melodus*) is a small shorebird that may occasionally occur along the East Coast of Florida during spring and fall migrations, as well as winter months. Critical habitat has been designated for this species, but does not overlap with the project area.

3.4.3 Red Knot.

The red knot (*Caladris canutus rufa*) is a small shorebird that is federally threatened and may occasionally occur along the East Coast of Florida during spring and fall migrations, as well as winter months. Critical habitat has not been designated for this species.

3.4.4 Beach Mouse.

The Endangered Anastasia Island beach mouse may have ranged from Florida's St. Johns River in Duval County, south to Anastasia Island in St. Johns County. The beach mouse currently occurs on Anastasia Island, primarily on the north (Anastasia State Park) and south (Fort Matanzas National Monument) ends of the island. In 1992, mice from these two populations were reintroduced into suitable historical habitat between

Ponte Vedra Beach and South Ponte Vedra Beach in north St. Johns County at the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR). The reintroduced population is surviving, although in low numbers. The Anastasia beach mouse may occur within this dune habitat (USFWS, 2015).

3.4.5 Gopher Tortoise.

The eastern population of the gopher tortoise *(Gopherus polyphemus),* including Florida, is a candidate species for possible future listing as federally threatened or endangered (USFWS, 2015e). It occurs throughout sandy and scrub habitats, including disturbed habitat. This species may occur within dune habitat.

3.5 Migratory Birds.

Migratory birds have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**). These species may nest immediately adjacent to dunes or within dune systems, or utilize this habitat for foraging or roosting.

3.6 Other Wildlife Resources.

Other Wildlife Resources have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.7 Cultural, Historic, and Archaeological resources.

Cultural, historic, and archaeological resources have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.8 Water Quality.

Water quality has been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.9 Aesthetic Resources.

Aesthetic resources have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.10 Recreation Resources.

Recreation resources have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.11 Hazardous, Toxic, and Radioactive Waste.

There are no known sources of hazardous, toxic, or radioactive wastes (HTRW) within or adjacent to these projects: Nassau, Duval, St. Johns, and Brevard counties. HTRW concerns have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.12 Air Quality.

Air quality has been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties, and are incorporated herein by reference (**Table 1**).

3.13 Noise.

Ambient noise levels has been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.14 Energy Requirements and Conservation.

Energy requirements and conservation has been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.15 Natural or Depletable Resources.

Natural or depletable resources have been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

3.16 Native Americans.

There are no lands which belong to Native Americans within the Federal authorized project areas (**Table 1**).

3.17 Reuse and Conservation Potential.

Reuse and conservation potential has been described in prior NEPA documents for each of the SPPs in Nassau, Duval, St. Johns, and Brevard counties and are incorporated herein by reference (**Table 1**).

4 ENVIRONMENTAL EFFECTS.

This section is the scientific and analytic basis for the comparisons of the alternatives. See **Table 12** in **Section 2.0** for a summary of impacts. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects. Additional information on environmental effects associated with the authorized projects and No-action Alternatives can be found in the corresponding environmental documents.

4.1 General Environmental Effects.

It is now recognized that dunes are integral components of a beach system and play a critical role in reducing damages to the project and infrastructure. The following excerpts from the Hurricane Sandy Coastal Projects Performance Evaluation Study and the New Jersey Sea Grant Consortium Dune Manual demonstrate the importance of dunes and how they can increase resilience on beach nourishment projects.

"Dunes can significantly contribute to the volumes of sediment available for redistribution along the shoreline during a storm, reducing the potential for undermining and exposure of land-based infrastructure, and impeding the landward reach of storm tides." – 2013 Hurricane Sandy Coastal Projects Performance Evaluation Study.

"Dunes can provide protection for a relatively small volume of sand both on the ocean and bay shorelines. Conventionally, dunes should be constructed along with a protective beach. At the time of construction, dunes should be actively vegetated to reduce loss from wind-blown sand transport and increase their resistance to erosion." – 2013 Hurricane Sandy Coastal Projects Performance Evaluation Study.

"Coastal sand dunes act as reservoirs of sand that help the beach maintain its equilibrium and preserve the ability of the beach to respond naturally to storm events. Beaches evolve during a storm by taking on a more dissipative state that causes waves to break farther offshore, reducing the wave energy near the shoreline. During this transition, the beach slope is reduced and one or more sand bars may form. The bars are formed as sand is transported offshore during the peak of the storm and is deposited near the region of most intense wave breaking. During smaller storms, the waves don't reach the base of the dune, and the erosion is limited to the beach face (berm) itself. The dunes only become active during moderate to large storms when the dissipation created by the bars is insufficient to prevent the waves from attacking the base of the dune. As a dune erodes, it releases a portion of its built-up reservoir of sand into the littoral system, where it contributes to bar formation and the development of a more dissipative profile, ultimately reducing damage to inland infrastructure. Larger dunes can withstand more wave activity and therefore provide more protection to areas behind them. In the simplest terms, the

sand stored in a dune buys time and provides protection from severe storms." – 2016 New Jersey Sea Grant Consortium Dune Manual.

Information for beach-quality sand that is to be placed on the five currently Federal authorized projects for Nassau, Duval, St. Johns, and Brevard counties is discussed by reference in the prior environmental documents (**Table 1**). Effects of the proposed projects are discussed below and assumed to be similar in effect for each of the SPPs unless otherwise noted.

Specific dune features including construction of dunes with vegetation, vegetation only, sand fencing, pedestrian access points, vehicle access areas, and storm water outfall pipes could also be added or modified in order to increase project resilience. **Figure 9** shows how the advanced fill placement on a typical nourishment project could be adapted to include a dune feature with the same total advanced fill volume. The resilience profile shown in **Figure 10** theoretically demonstrates how a dune would increase project resilience based on the project's function being directly linked to the volume of sand available along the beach profile to maintain the authorized design template and protect upland development over time.

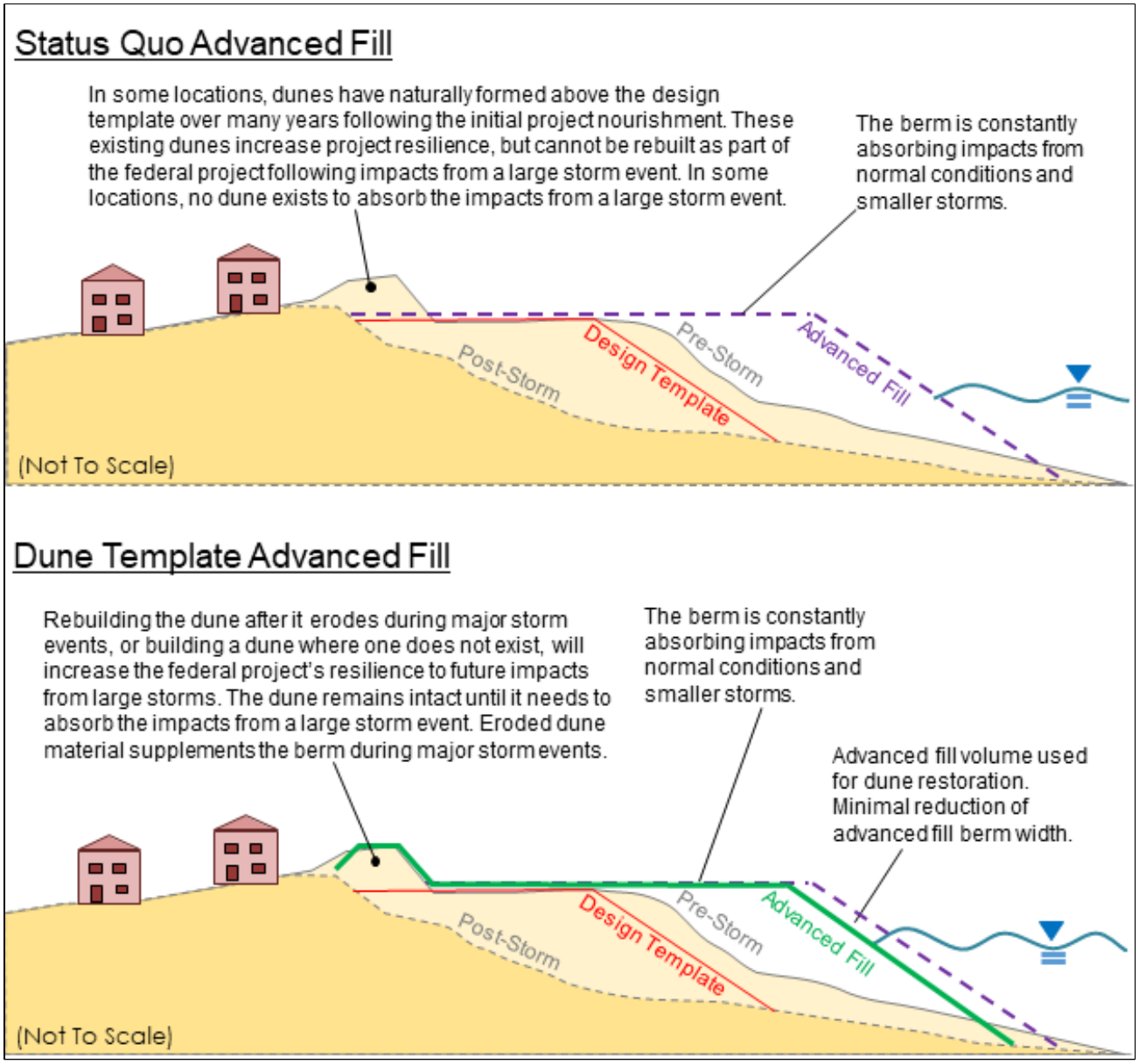


Figure 9. Adapted Advanced Fill Nourishment Template to include a Dune.

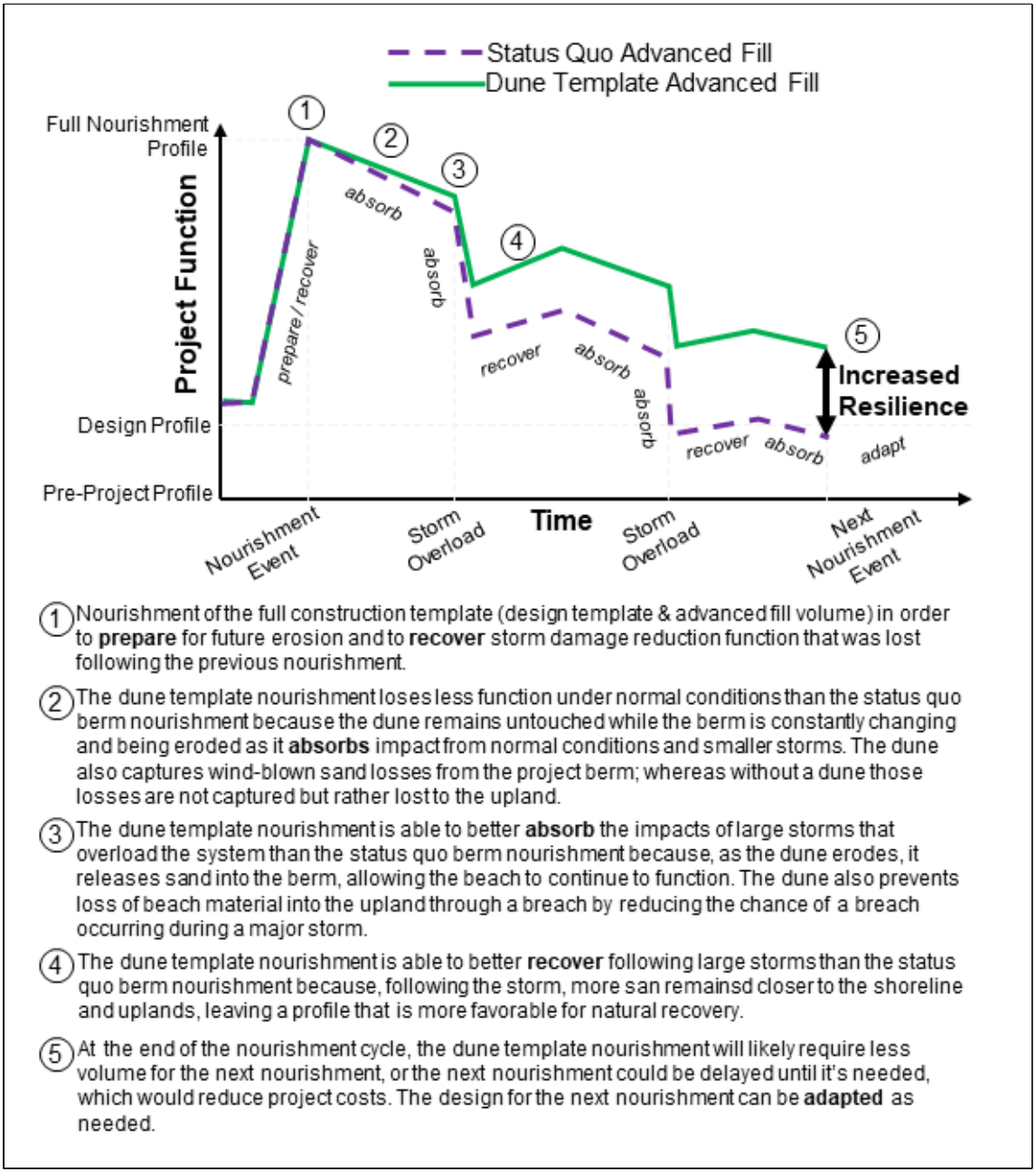


Figure 10. Resilience Profile Demonstrating How a Dune Contributes to Increased Resilience.

For this SEA, a generalized dune template was developed for comparison to the existing construction template. This shape could be based on existing dunes for projects where such dunes have been shown to provide benefits. In other cases, the design could be a modification of existing dunes or based on adjacent beaches where dunes

exist. The Corps also analyzed vegetation only and sand fencing design alternatives, which can enhance dune stability and accretion rates with minimal effort and cost. Pedestrian access modifications, vehicle access modifications, and outfall pipe modifications were also considered.

4.1.1 Alternative 1: Dune Construction with Vegetation.

The presence of dunes is essential if a beach is to remain stable and able to accommodate the stress from unpredictable storms and extreme conditions of wind, wave, and elevated sea surfaces. Dunes maintain a sand repository that, during storms, provides sacrificial sand before structures would be damaged. The dune system provides a measure of public safety and property protection. Proper vegetation on dunes increases sand-erosion resistance by binding the sand together via extensive root masses penetrating deep into the sand. Further, such vegetation promotes dune growth through its sand-trapping action when significant wind action transports substantial quantities of sand. This measure would include placement of beach-compatible material from upland, offshore, or other sources, in a dune feature adjacent to any existing dune. Vegetation would be planted after placement of the dune material, as needed.

4.1.2 Alternative 2: Vegetation Only.

Dunes currently present in the project area with no vegetation planted will need to be stabilized with vegetation. Refer to **subsection 4.1.1** for more information on dune stabilization with vegetation.

4.1.3 Alternative 3: Sand Fencing.

The installation of sand fencing helps to support sand dune growth by trapping and collecting wind-driven sand.

4.1.4 Alternative 4: Pedestrian Access Modifications.

Pedestrian access modifications could include signage encouraging beachgoers to stay off dunes and to use designated access points, rope fencing to keep people out of the dunes, or constructing dune walkovers to allow beach access without impacting the dune. These measures prevent dune vegetation and the dune itself from being trampled and degraded by foot traffic, which could reduce the function of the dune.

4.1.5 Alternative 5: Vehicle Access Modifications.

Vehicle access modifications could include changing the angle at which the vehicle access cuts through the dune so that, during a storm, the gap through the dune would

erode in on itself. Mats or ramps could be used to allow vehicles to drive over the dune and prevent the degradation of the dunes in these areas. Sand stockpile areas could be designated for filling in the dune gaps when a storm is approaching (see **Appendix C** for images of sand stockpile areas).

4.1.6 Alternative 6: Outfall Pipe Modifications.

Storm water outfall pipes that intersect dunes and release storm water onto the dune footprint could be modified with revetment sections, or the pipes could be re-routed in order to prevent degradation of the dune in these areas caused by outfall scour.

4.1.7 No-action Alternative (Status Quo).

The existing dune system would not be modified or a new dune system would not be constructed. Otherwise the effects determination for the no-action alternative would be as disclosed under prior NEPA documents specific to each project.

4.2 Dune Vegetation.

Proper vegetation on dunes increases sand erosion resistance by binding the sand together via extensive root masses penetrating deep into the sand. Further, such vegetation promotes dune growth through its sand-trapping action when significant wind action transports substantial quantities of sand.

4.2.1 Alternative 1: Dune Construction with Vegetation.

Vegetation would be planted after placement of the dune material, as needed. Planted vegetation would expand either by rhizome or seed, and would result in a fully vegetated dune system. A limited amount of natural recruitment is expected.

4.2.2 Alternative 2: Vegetation Only.

Vegetation would only be planted as needed on dunes. Planted vegetation would expand either by rhizome or seed, and would result in a fully vegetated dune system. A limited amount of natural recruitment is expected.

4.2.3 Alternative 3: Sand Fencing.

There will be no impact to vegetation due to sand fencing.

4.2.4 Alternative 4: Pedestrian Access Modifications.

There will be no impact to dune vegetation due to pedestrian access modifications.

4.2.5 Alternative 5: Vehicle Access Modifications.

There will be no impact to dune vegetation due to vehicle access modification. Sand stockpile areas which may be designated for filling in the dune gaps when a storm is approaching will not be placed onto the dune vegetation. (See **Appendix C** for images of sand stockpile areas.)

4.2.6 Alternative 6: Outfall Pipe Modifications.

There will be no impact to dune vegetation due to outfall pipe modifications.

4.2.7 No-action Alternative (Status Quo).

There would be less dune vegetation if the proposed dune systems were not constructed or modified. Otherwise the effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.3 Threatened and Endangered Species.

The USACE has determined that placement of sand on the Federally authorized projects may affect nesting sea turtles and may affect, but is not likely to adversely affect, the piping plover, red knot, and Anastasia beach mouse. All placement activities would be performed in compliance with the terms and conditions of the Statewide Programmatic Biological Opinion (2015) and the Programmatic Piping Plover Biological Opinion (2013) issued by the U.S. Fish and Wildlife Service (USFWS). The USACE final determination relative to project impacts as well as the need for reasonable and prudent measures has been consulted with the USFWS and received concurrence for these projects by correspondence dated October 22, 2019 (Appendix B).

4.3.1 Nesting Sea Turtles, Piping Plover, Red Knot, Beach Mouse, and Gopher Tortoises.

The placement of sand into a dune system may affect nesting sea turtles by altering the beach face, resulting in potential adverse impact to nesting and hatching success (including effects from grade changes, sediment material, compaction, escarpment formation, and artificial lighting during construction). Compatibility of off-shore borrow areas with the native beach is one of the requirements of the 2015 USFWS Statewide Programmatic Biological Opinion (SPBO), which states that “beach-compatible fill shall be placed on the beach or in any associated dune system. Beach-compatible fill must be sand that is similar to a native beach in the vicinity of the site that has not been affected by prior sand placement activity. The fill material must be similar in both coloration and grain size distribution to that native beach. Beach-compatible fill is material that maintains the general character and functionality of the material occurring

on the beach and in the adjacent dune and coastal system. Fill material shall comply with FDEP requirements pursuant to the Florida Administrative Code (FAC), subsection 62b-41.008 (1)(k) 4.b. If a variance is requested from FDEP, the USFWS must be contacted to discuss whether the project falls outside of the biological opinion. A quality control plan shall be implemented pursuant to FAC rule 62b-41.008(1) (k) 4.b."

The placement of sand into a dune system may affect, but is not likely to adversely affect, the piping plover and red knot. Effects may include the disturbance of normal activities such as feeding and roosting during construction; degradation of wintering habitat or habitat used during migration by altering the natural sediment composition; and depressing the invertebrate base in some areas. For eroded beaches, sand placement may also have a beneficial effect on the habitat's ability to support the plover and the knot. Placement activities for a dune system would be performed in compliance with biological opinions issued by the USFWS, and this includes the use of compatible fill material that has been evaluated in prior NEPA documents.

The placement of sand into a dune system may modify beach mouse habitat resulting in a may affect, but is not likely to adversely affect the beach mouse. Dune construction in St. Johns County would only occur in areas where dunes do not currently exist or if existing dunes were significantly damaged or altered. In accordance with the 2015 SPBO reasonable and prudent measures, beach mouse habitat will be avoided to the maximum extent possible when selecting sites for access corridors, storage, and staging of equipment. Beach-quality sand for beach mouse burrow construction shall be used for sand placement. Measurements to minimize impacts to the beach mouse may be minimized or avoided through monitoring and relocation conducted by permitted personnel.

Per Florida Fish and Wildlife Conservation Commission's (FWC) gopher tortoise permitting guidelines, if gopher tortoises are located in the dune system of the project site, a 25-foot buffer zone in all directions from the mouth of the burrow will be placed around burrows prior to construction to avoid impacts to the burrows. If gopher tortoises must be relocated, coordination with FWC will also be implemented per the FWC gopher tortoise permitting guidelines (FWC 2008; Revised 2017).

4.3.2 Alternative 1: Dune Construction with Vegetation.

Impacts to threatened and endangered species as a result of dune construction with vegetation will be minimal. *Sea Turtles*: During construction activity to build the dunes and plant the vegetation, nesting of sea turtles may be minimized in these locations. Management measures like dune creation/remediation are opportunities to protect natural habitat for sea turtles, shore birds, etc. The presence of dunes is a benefit that will absorb beachfront lighting. Beachfront lighting is a deterrent for sea turtles nesting on the beach. It is also a constraint in causing hatchlings to become disoriented when they emerge from the

nest chamber. *Anastasia Beach Mouse*: Prior to the construction period, beach mouse surveys would need to be conducted on existing dunes in the designated dune habitat of the St. Johns County SPP. *Gopher Tortoise*: Additionally, gopher tortoise surveys would need to be conducted in existing dunes prior to construction.

4.3.3 Alternative 2: Vegetation Only.

There would be minimal impact to threatened and endangered species planting vegetation in already constructed dunes.

4.3.4 Alternative 3: Sand Fencing.

Impacts to threatened and endangered species will be minimal as a result of the installation of sand fencing to help support sand dune growth by trapping and collecting wind-driven sand. The barrier created by the sand fencing causes an accretion of sand to build up over a period of time.

Management measures like sand fencing are opportunities to protect natural habitat for sea turtles, shore birds, etc. While some natural functions, such as sea turtle nesting, may be disrupted during construction activities, there is an opportunity for long-term benefits in preserving the beach habitat through the use of sand fencing.

4.3.5 Alternative 4: Pedestrian Access Modifications.

Impacts to threatened and endangered species as a result of pedestrian access modifications will be minimal. An increase in foot traffic through these access points during nighttime hours may increase and deter sea turtles from nesting in these areas. However, the benefit of these access points is that pedestrians will have more localized areas to access the beach instead of walking onto the beach from unspecified locations.

4.3.6 Alternative 5: Vehicle Access Modifications.

Impacts to threatened and endangered species as a result of vehicle access modifications will be minimal. Usage of these vehicle access points will be limited to those agencies that need access to the beach area (e.g., public works).

4.3.7 Alternative 6: Outfall Pipe Modifications.

Impacts to threatened and endangered species as a result of storm water outfall pipe modifications would include a minor increase in beach habitat and would reduce erosion. During storm events, sea turtle nests that are in these locations will be washed out. However, management measures like outfall pipe modifications are necessary and are an opportunity for achieving long-term benefits in preserving the beach habitat for nesting sea turtles.

4.3.8 No-action Alternative (Status Quo).

There would be less habitat for threatened and endangered species if the proposed dune system were not constructed or modified. Otherwise the effects determination for the no-action alternative would be as disclosed under prior NEPA documents specific to each project.

4.4 Migratory Birds.

The placement of sand for a dune system would result in minor short-term effects on migratory birds. Appropriate monitoring and protection measures would be required during the nesting season to ensure that construction activities remain compliant with the Migratory Bird Treaty Act and do not result in the destruction of eggs, chicks, or adult birds.

During the placement of sand on the beach there may be some interruption of foraging and resting activities for shorebirds that utilize the project area. This impact would be short-term and limited to the immediate area of disposal and time of construction. There would be sufficient beach area north and south of the renourishment sites that can be used by the displaced birds while construction takes place. Increased foraging opportunities for some species, such as sea gulls, may also occur as a result of the discharge activity. Elevated turbidity levels within the immediate vicinity of the discharge site may interfere with foraging by sight feeders such as the brown pelican (*Pelecanus occidentalis*). However, increased turbidity levels would be limited to a small portion of the shoreline and should not result in significant impacts to foraging activities.

4.4.1 Alternative 1: Dune Construction with Vegetation.

Impacts to migratory birds during dune construction with planting of vegetation will be minimal and limited to during this construction period. Management measures like dune construction with vegetation is an opportunity for long-term benefits in preserving the beach habitat for migratory shorebirds.

4.4.2 Alternative 2: Vegetation Only.

Impacts to migratory birds during planting of vegetation will be minimal and limited to the planting activity. Management measures like planting of vegetation is an opportunity for long-term benefits in preserving the beach habitat for migratory shorebirds.

4.4.3 Alternative 3: Sand Fencing.

Impacts to migratory birds during construction of sand fencing will be minimal and limited to the construction period.

4.4.4 Alternative 4: Pedestrian Access Modifications.

Impacts to migratory birds during construction of pedestrian access points will be minimal and limited to during this construction period.

4.4.5 Alternative 5: Vehicle Access Modifications.

Impacts to migratory birds during construction of vehicle access points will be minimal and limited to during this construction period.

4.4.6 Alternative 6: Outfall Pipe Modifications.

Impacts to migratory birds during construction of outfall pipe modifications will be minimal and limited to during this construction period.

4.4.7 No-action Alternative (Status Quo).

There would be less habitat for migratory bird species if the proposed dune system were not constructed or modified. Otherwise the effects determination for the no-action alternative would be as described in previously reviewed and disclosed under prior NEPA documents specific to each project.

4.5 Other Wildlife Resources.

The placement of sand for the dune system would result in minor short-term effects on other wildlife resources. Sand placement activities would result in sedimentation and temporary turbidity which would affect macroinvertebrates (e.g., arthropods [sand fleas] and mollusks [clams]) that inhabit the beach. Recovery should occur in phase with normal seasonal recruitment patterns documented for the project area (Lacharmoise et al).

Nelson (1989) reviewed the literature on the effects of beach nourishment projects on sand beach fauna and concluded that minimal biological effects resulted from beach renourishment. Nelson reviewed several studies on the most common beach invertebrates of the southeastern U.S., including the mole crab (*Emerita talpoida*), the surf clam, (*Donax sp.*) and the ghost crab (*Ocypode quadrata*). None of the studies cited by Nelson (1989) showed significant or lasting impacts to any of the above species resulting from beach nourishment. Hackney et al. (1996) provide a more recent review of the effects of beach restoration projects on beach infauna in the southeastern U.S. They also reviewed studies on the above species and agree with the conclusions set forth by Nelson (1989), with the suggestion that construction should take place in winter months to minimize potential effects, and that the sand used should be a close match to native beach sand. In review of past studies, there was a considerable short-

term reduction in the abundances of mole crabs, surf clams, and ghost crabs attributable to direct burial. Recruitment and immigration were generally sufficient to re-establish populations within one year of construction. No long-term adverse effects are anticipated to the intertidal macroinfaunal community due to placement activities (Deis et al. 1992, Nelson 1985, Gorzelany 1983).

4.5.1 Alternative 1: Dune Construction with Vegetation.

Impacts to other wildlife resources during construction of dunes and planting of vegetation will be minimal. Re-establishment of populations is anticipated within one year of construction. Management measures like dune construction with planting of vegetation is an opportunity for long-term benefits in preserving the beach habitat and decreasing threats for wildlife resources.

4.5.2 Alternative 2: Vegetation Only.

Impacts to other wildlife resources during the planting of vegetation only will be minimal. Re-establishment of populations is anticipated within one year of construction. Management measures like vegetation planting on the dunes is an opportunity for long-term benefits in preserving the beach habitat and decreasing threats for wildlife resources.

4.5.3 Alternative 3: Sand Fencing.

Impacts to other wildlife resources during construction of sand fencing will be minimal. Management measures like sand fencing is an opportunity for long-term benefits in preserving the beach habitat and decreasing threats to wildlife resources.

4.5.4 Alternative 4: Pedestrian Access Modifications.

Impacts to other wildlife resources during construction of pedestrian access points will be minimal. Re-establishment of populations is anticipated within one year of construction.

4.5.5 Alternative 5: Vehicle Access Modifications.

Impacts to other wildlife resources during construction of vehicle access points will be minimal. Re-establishment of populations is anticipated within one year of construction.

4.5.6 Alternative 6: Outfall Pipe Modifications.

Impacts to other wildlife resources during construction of outfall pipe modifications will be minimal.

4.5.7 No-action Alternative (Status Quo).

There would be less habitat for other wildlife resources if the proposed dune system were not constructed or modified. Otherwise the effects determination for the no-action alternative would be as disclosed under prior NEPA documents specific to each project.

4.6 Cultural, Historic, and Archaeological Resources.

The placement of sand for the dune system in areas of constructed shoreline protection projects will not result in adverse effects to cultural, historic, and archaeological resources. Each of the projects has been subject to prior nourishment within the proposed footprints. The extent of the shoreline within the projects is a product of the shoreline protection projects. The proposed sand placement activities fall within areas that are exposed beach, the surf zone, and water in historic aerial photography and maps. The dunes in Duval and St. Johns counties are a result of the shoreline protection projects and management by non-Federal actors.

The projected benefits of this project would protect cultural resources on the landward side of the dunes from erosion and wave attack. The potential increased resiliency of the shoreline may provide an additional benefit by requiring fewer sand borrowing events, reducing the potential to affect cultural resources by dredging or sand mining. By matching the existing and historic dune levels in each Shoreline Protection Project, there is no significant change to the viewshed.

4.6.1 Alternative 1: Dune Construction with Vegetation.

This alternative has no adverse effects to cultural, historic, and archaeological resources if final plans include previously established buffer zones, as defined in past coordination.

4.6.2 Alternative 2: Vegetation Only.

This alternative has no adverse effects to cultural, historic, and archaeological resources if final plans include previously established buffer zones, as defined in past coordination.

4.6.3 Alternative 3: Sand Fencing.

This alternative has no adverse effects to cultural, historic, and archaeological resources if final plans include previously established buffer zones, as defined in past coordination.

4.6.4 Alternative 4: Pedestrian Access Modifications.

This alternative has no adverse effects to cultural, historic, and archaeological resources if final plans include previously established buffer zones, as defined in past coordination.

4.6.5 Alternative 5: Vehicle Access Modifications.

This alternative has no adverse effects to cultural, historic, and archaeological resources if final plans include previously established buffer zones, as defined in past coordination.

4.6.6 Alternative 6: Outfall Pipe Modifications.

This alternative has no adverse effects to cultural, historic, and archaeological resources if final plans include previously established buffer zones, as defined in past coordination.

4.6.7 No-action Alternative (Status Quo).

There would be no effect to cultural, historic, and archaeological resources if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.7 Water Quality.

The placement of sand within the proposed project areas would result in minor short-term effects on water quality (i.e. temporary turbidity in nearshore waters). Turbidity would be monitored per any applicable State permit requirements.

4.7.1 Alternative 1: Dune Construction with Vegetation.

Impacts of water quality from turbidity during construction of dunes will be minimal. Turbidity would be monitored per any applicable State permit requirements. There will be no effect from water quality during the planting of vegetation.

4.7.2 Alternative 2: Vegetation Only.

There will be no effect from water quality during the planting of vegetation.

4.7.3 Alternative 3: Sand Fencing.

There will be no effect from water quality during construction of sand fencing.

4.7.4 Alternative 4: Pedestrian Access Modifications.

There will be no effect from water quality during the construction of pedestrian access points.

4.7.5 Alternative 5: Vehicle Access Modifications.

There will be no effect from water quality during the construction of vehicle access points.

4.7.6 Alternative 6: Outfall Pipe Modifications.

There will be no effect from water quality during the construction of outfall pipe modifications.

4.7.7 No-action Alternative (Status Quo).

There would be no effect to water quality if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.8 Aesthetic Resources.

The aesthetics of the construction of a dune system would be temporarily adversely impacted during construction due to the presence of construction equipment on the beach. Increases to the noise level will be a result of the construction activities and will be localized and minor. There will only be a temporary reduction in aesthetics and no expectation of adverse effect to the environment as a result of construction-related noise. Aesthetics of the sand source locations would also experience temporary adverse impacts due to the presence of dredge equipment during construction. The long-term impact is the possibility of viewshed being affected by the construction of the dunes.

4.8.1 Alternative 1: Dune Construction with Vegetation.

The construction activity associated with building a dune system with planting of vegetation would result in minor short-term effects on aesthetics due to construction equipment on the beach and construction-related noise. The long-term impact is the possibility of the viewshed being affected by building the dunes or by closing gaps in existing dunes. Some gaps would be permanently closed with sand as part of the proposed construction template (please refer to Appendix C for gap closure locations and recommendations). Gaps that are not permanently closed may be temporarily closed with stockpiled sand in order to help protect infrastructure when a storm is approaching. In this case, the storm would be expected to erode the dune system

requiring reconstruction and revegetation of the dune. Temporary gap closure as well as post-storm reconstruction and revegetation would result in a long-term, but not a permanent effect on the viewshed. Stockpiled sand, for storm related emergencies, would be located near existing gaps in dunes and would have a minor long-term effect on the viewshed. The placement of sand for the construction of dunes would reduce the risk of damage to shoreline infrastructure (buildings and parks) and should generally improve the appearance of these locations. Management measures like dune construction with vegetation is an opportunity for long-term benefits in preserving the beach habitat and to maintain the quality of the environment for human and natural use.

4.8.2 Alternative 2: Vegetation Only.

The construction activity associated with planting of vegetation only would result in minor short-term effects on aesthetics.

4.8.3 Alternative 3: Sand Fencing.

The construction activity associated with constructing sand fencing would result in minor short-term effects on aesthetics due to construction equipment on the beach and construction-related noise. Overtime, sand fencing may become buried by accreting sand or hidden by vegetation. The fencing is expected to have a minor long-term effect on the viewshed. Management measures like sand fencing is an opportunity for long-term benefits in preserving the beach habitat and to maintain the quality of the environment for human and natural use.

4.8.4 Alternative 4: Pedestrian Access Modifications.

The construction activity associated with constructing pedestrian access points would result in minor short-term effects on aesthetics due to construction equipment on the beach and construction-related noise. The long-term impact is the possibility of pedestrian access points increasing foot traffic in an area that was not previously walked through and may cause a disturbance to the residents.

4.8.5 Alternative 5: Vehicle Access Modifications.

Vehicle access modifications may include changing the angle or elevation of the cuts through the dune. Mats or ramps could be used to allow vehicles to drive over the dune. The construction activity associated with constructing vehicle access points would result in minor short-term effects on aesthetics due to construction equipment on the beach and construction-related noise. Long-term impacts would include angle or elevation changes in existing cuts through dunes, the use of mats or ramps to drive over the dune, and the possibility of increased vehicle traffic entering and exiting the vehicle access locations.

4.8.6 Alternative 6: Outfall Pipe Modifications.

The construction activity associated with outfall pipe modifications would result in minor short-term effects on aesthetics due to construction equipment on the beach and construction-related noise. The benefit of stormwater outfall pipe modifications is that since they intersect dunes and release storm water onto the dune footprint the outfall pipes could be modified with revetment sections or the pipes could be re-routed in order to prevent degradation of the dune in these areas caused by outfall scour.

4.8.7 No-action Alternative (Status Quo).

There would be an effect to aesthetic resources if the proposed dune system were not constructed. Otherwise the effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.9 Recreation Resources.

The placement of sand would result in minor short-term effects on recreational opportunities. Construction activity would temporarily disrupt recreation; however, access to a portion of the beaches would continue to be possible.

4.9.1 Alternative 1: Dune Construction with Vegetation.

Impacts to recreation during dune construction with planting of vegetation will be minimal and limited to during this construction period. Some gaps in existing dunes would be permanently closed with sand as part of the proposed construction template. This would result in a long-term effect on recreation by limiting beach access (please refer to Appendix C for gap closure locations and recommendations). Gaps in existing dunes may also be temporarily closed with stockpiled sand in order to help protect infrastructure when a storm is approaching. In this case, the storm would be expected to erode the dune system requiring reconstruction and revegetation of the dune. Temporary gap closure as well as post storm reconstruction and revegetation would have a long-term, but not a permanent effect on recreation. Stockpiled sand, for storm related emergencies, would be located near existing gaps in dunes and would have a long-term minor effect on recreation. The placement of sand for the construction of dunes would preserve and protect many recreational opportunities.

4.9.2 Alternative 2: Vegetation Only.

Impacts to recreation during planting of vegetation will be minimal and limited to during this construction period.

4.9.3 Alternative 3: Sand Fencing.

Impacts to recreation during construction of sand fencing will be minimal and limited to during this construction period.

4.9.4 Alternative 4: Pedestrian Access Modifications.

Impacts to recreation during construction of pedestrian access modifications will be minimal and limited to during this construction period.

4.9.5 Alternative 5: Vehicle Access Modifications.

Impacts to recreation during construction of vehicle access modifications will be minimal and limited to during this construction period. Proposed modifications include changes in the angle or elevation of the cuts through the dune. Mats or ramps could be used to allow vehicles to drive over the dune.

4.9.6 Alternative 6: Outfall Pipe Modifications.

Impacts to recreation during construction of outfall pipe modifications will be minimal and limited to during this construction period.

4.9.7 No-action Alternative (Status Quo).

There would be a minor effect to recreation resources if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.10 Hazardous, Toxic, and Radioactive Waste.

There are no known hazardous, toxic, or radioactive wastes in the dune systems that would be affected by the chosen alternative actions. There is a potential for hydrocarbon spills with dredging and construction equipment in the area, but accident and spill prevention plans described in the contract specifications should prevent most spills. The no-action alternative would not create situations to cause these potential impacts.

4.10.1 Alternative 1: Dune Construction with Vegetation.

There are no known hazardous, toxic, or radioactive wastes in the construction footprints that would be affected by construction of dunes with planting of vegetation.

4.10.2 Alternative 2: Vegetation Only.

There are no known hazardous, toxic, or radioactive wastes in the construction footprints that would be affected by planting of vegetation.

4.10.3 Alternative 3: Sand Fencing.

There are no known hazardous, toxic, or radioactive wastes in the construction footprints that would be affected by construction of sand fencing.

4.10.4 Alternative 4: Pedestrian Access Modifications.

There are no known hazardous, toxic, or radioactive wastes in the construction footprints that would be affected by pedestrian access modifications.

4.10.5 Alternative 5: Vehicle Access Modifications.

There are no known hazardous, toxic, or radioactive wastes in the construction footprints that would be affected by construction of vehicle access modifications.

4.10.6 Alternative 6: Outfall Pipe Modifications.

There are no known hazardous, toxic or radioactive wastes in the construction footprints that would be affected by construction of outfall pipe modifications.

4.10.7 No-action Alternative (Status Quo).

There would be no effects associated with HTRW if the proposed dune system is not utilized. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.11 Air Quality.

The placement of sand into the dune system would result in low-level emissions from the operation of the construction equipment. Exhaust emissions from the construction equipment would have a temporary effect on air quality. The short-term impact from emissions by the dredge and other construction equipment associated with the project would not significantly impact air quality. The Florida Department of Environmental Protection does not regulate marine or mobile emission sources (dredge and construction equipment) within the five projects. No air quality permits would be required for this project. These five projects are designated as attainment areas for Federal air quality standards under the Clean Water Act. Since the project is located within an attainment area EPA’s General Conformity Rule to implement Section 176(c) of the Clean Air Act does not apply and a conformity determination is not required.

4.11.1 Alternative 1: Dune Construction with Vegetation.

The placement of sand into the dune system would result in low-level emissions from the operation of the construction equipment. Exhaust emissions from the construction equipment would have a temporary effect on air quality. The short-term impact from emissions by the dredge and other construction equipment associated with the project would not significantly impact air quality. Planting of vegetation will have no adverse impact on air quality.

4.11.2 Alternative 2: Vegetation Only.

Planting of vegetation will have no adverse impact on air quality.

4.11.3 Alternative 3: Sand Fencing.

Construction of sand fencing will have no adverse impact on air quality.

4.11.4 Alternative 4: Pedestrian Access Modifications.

The construction of pedestrian access modifications would result in low-level emissions from the operation of the construction equipment. Exhaust emissions from the construction equipment would have a temporary effect on air quality.

4.11.5 Alternative 5: Vehicle Access Modifications.

The construction of vehicle access modifications would result in low-level emissions from the operation of the construction equipment. Exhaust emissions from the construction equipment would have a temporary effect on air quality.

4.11.6 Alternative 6: Outfall Pipe Modifications.

The construction of outfall pipe modifications would result in low-level emissions from the operation of the construction equipment. Exhaust emissions from the construction equipment would have a temporary effect on air quality.

4.11.7 No-action Alternative (Status Quo).

There would be no effects to air quality if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.12 Noise.

The placement of sand into the dune system would temporarily raise the noise level in the area. Noise associated with the construction of the dune activity would specifically include construction equipment (e.g., front-end loaders and trucks). Beach fill construction activity and the attendant noise impacts would occur based on each of the 5 projects specific construction allowable period. No sensitive receptor sites (e.g., hospitals) would be affected.

4.12.1 Alternative 1: Dune Construction with Vegetation.

The placement of sand into the dune system would temporarily raise the noise level in the area. Noise associated with the construction of the dune activity would specifically include construction equipment (e.g., front end loaders and trucks). Beach fill construction activity and the attendant noise impacts would occur based on each of the 5 projects specific construction allowable period. No sensitive receptor sites (e.g., hospitals) would be affected. Planting of vegetation would not impact noise levels.

4.12.2 Alternative 2: Vegetation Only.

Planting of vegetation would not impact noise levels.

4.12.3 Alternative 3: Sand Fencing.

The construction of sand fencing would temporarily raise the noise level in the area. Noise associated with the construction of the sand fencing activity would specifically include construction equipment.

4.12.4 Alternative 4: Pedestrian Access Modifications.

The construction of pedestrian access modifications would temporarily raise the noise level in the area. Noise associated with the construction of the pedestrian access modification activity would specifically include construction equipment.

4.12.5 Alternative 5: Vehicle Access Modifications.

The construction of vehicle access modifications would temporarily raise the noise level in the area. Noise associated with the construction of the vehicle access modification activity would specifically include construction equipment.

4.12.6 Alternative 6: Outfall Pipe Modifications.

The construction of outfall pipe modifications would temporarily raise the noise level in the area. Noise associated with the construction of the outfall pipe modification activity would specifically include construction equipment.

4.12.7 No-action Alternative (Status Quo).

There would be no effects associated with noise if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.13 Energy Requirements and Conservation.

Energy requirements associated with the use of constructing the dune system would be confined to the fuel used to operate construction equipment.

4.13.1 Alternative 1: Dune Construction with Vegetation.

Energy requirements associated with the use of constructing the dune system would be confined to the fuel used to operate construction equipment. Planting the vegetation would not impact energy requirements and conservation.

4.13.2 Alternative 2: Vegetation Only.

Planting the vegetation would not impact energy requirements and conservation.

4.13.3 Alternative 3: Sand Fencing.

Energy requirements associated with the use of constructing the sand fencing would be confined to the fuel used to operate construction equipment.

4.13.4 Alternative 4: Pedestrian Access Modifications.

Energy requirements associated with the use of constructing the pedestrian access modifications would be confined to the fuel used to operate construction equipment.

4.13.5 Alternative 5: Vehicle Access Modifications.

Energy requirements associated with the use of constructing the vehicle access modifications would be confined to the fuel used to operate construction equipment.

4.13.6 Alternative 6: Outfall Pipe Modifications.

Energy requirements associated with the use of constructing the outfall pipe modifications would be confined to the fuel used to operate construction equipment.

4.13.7 No-action Alternative (Status Quo).

There would be no energy requirements or opportunities for conservation if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.14 Natural or Depletable Resources

No natural energy resources occur within the proposed dune systems. Fuel is a depletable resource that would be consumed by construction equipment during construction operations. Impacts to natural resources are discussed elsewhere in this document. The use of these natural or depletable resources is not considered an unacceptable adverse impact of the proposed project.

4.14.1 Alternative 1: Dune Construction with Vegetation.

There are no impacts associated with natural energy resources within the proposed dune systems and planting of vegetation.

4.14.2 Alternative 2: Vegetation Only.

There are no impacts associated with natural energy resources due to the planting of vegetation.

4.14.3 Alternative 3: Sand Fencing.

There are no impacts associated with natural energy resources due to the construction of sand fencing.

4.14.4 Alternative 4: Pedestrian Access Modifications.

There are no impacts associated with natural energy resources due to the construction of pedestrian access modifications.

4.14.5 Alternative 5: Vehicle Access Modifications.

There are no impacts associated with natural energy resources due to the construction of vehicle access modifications.

4.14.6 Alternative 6: Outfall Pipe Modifications.

There are no impacts associated with natural energy resources due to the construction of outfall pipe modifications.

4.14.7 No-action Alternative (Status Quo).

Natural or depletable resources would not be affected if the dune systems were not utilized. Sand would not be placed within the proposed dune system. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.15 Native Americans

None of the proposed project activities for construction of the dune system occur on land belonging to Native Americans. Therefore implementation of the proposed project would not result in any impacts to Native Americans or land belonging to Native Americans.

4.15.1 Alternative 1: Dune Construction with Vegetation.

This alternative will not affect lands belonging to Native Americans.

4.15.2 Alternative 2: Vegetation Only.

This alternative will not affect lands belonging to Native Americans.

4.15.3 Alternative 3: Sand Fencing.

This alternative will not affect lands belonging to Native Americans.

4.15.4 Alternative 4: Pedestrian Access Modifications.

This alternative will not affect lands belonging to Native Americans.

4.15.5 Alternative 5: Vehicle Access Modifications.

This alternative will not affect lands belonging to Native Americans.

4.15.6 Alternative 6: Outfall Pipe Modifications.

This alternative will not affect lands belonging to Native Americans.

4.15.7 No-Action Alternative (Status Quo).

Native Americans would not be affected if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.16 Reuse and Conservation Potential.

There is no potential for reuse associated with the proposed project activities, therefore this is not applicable to the proposed action. Energy requirements for the proposed alternatives would be confined to fuel for construction equipment as stated in **subsection 4.13**.

4.16.1 No-action Alternative (Status Quo).

There would be no reuse potential if the proposed dune system were not constructed. The effects determination for the no-action alternative would be as disclosed in the prior NEPA documents specific to each project.

4.17 Cumulative Impacts.

Cumulative impact is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or Non-Federal) or person undertakes such other actions" (40 CFR 1508.7). A description of cumulative impacts for these projects, including descriptions of past, present, and reasonably foreseeable future actions, can be found within the NEPA reports listed in **Table 2** and are incorporated herein by reference. Reasonably foreseeable future actions include potential actions by the Counties to reconstruct dunes in the project area after future storm events, which may also include renourishment of the beach adjacent to the dunes. Reasonably foreseeable future land uses adjacent to the dunes include residential development or parks. The density of development may increase over time.

Table 14 summarizes the impact of such cumulative actions by identifying the past, present, and reasonably foreseeable future condition of the various resources which are directly or indirectly impacted by the proposed action and its alternatives. The table also illustrates the with-project and without-project condition (the difference being the incremental impact of the project). Also illustrated is the future condition with any reasonable alternatives (or range of alternatives). The temporal scope for this analysis begins with pre-development and ends when the life of each of the projects is reached. Geographic scope is limited to the project footprints and adjacent areas.

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Table 14. Summary of Cumulative Impacts.

	Past Conditions	Present (existing condition)	Future with Preferred Alternatives, Modify or develop resiliency design refinements (i.e. dune construction, dune vegetation, sand fencing, vehicle and pedestrian access modifications, and outfall pipe modifications)	No-Action Alternative (Authorized Project noted in the prior NEPA documents specific to each of the SPPs)
General Environment Effects	Prior to development, beaches were subjected to natural erosion and accretion. Beach quality sand has been placed on these beaches in the past.	General environment characteristics, including sand currently being used to nourish these beaches, are described in prior NEPA documents.	Resiliency design refinements in combination with beach nourishment events would increase the cumulative effect on the general environment. For example, construction periods would increase. However, when combined with beach nourishment events, refinements would further reduce future beach erosion. Greater erosion control would result in less damage to property and infrastructure.	Beach nourishment events would continue. Beach erosion would continue at the current rate and there would be greater risk of damage to property and infrastructure.
Dune Vegetation	Prior to development, vegetation naturally occurred within dunes and was affected by natural erosion and accretion. Development negatively impacted historical dune vegetation causing increased erosion.	Dune vegetation, if currently present, is described in prior NEPA documents.	Existing dune vegetation would be avoided to the maximum extent practicable during beach nourishment events as well as implementation of resiliency design refinements. Installation of dune vegetation would help prevent erosion. Resiliency design refinements in combination with beach nourishment events would further reduce loss of dune vegetation by reducing erosion.	Beach nourishment events would continue. Beach erosion would continue at the current rate and there would be greater risk of existing dune vegetation being lost.

	Past Conditions	Present (existing condition)	Future with Preferred Alternatives, Modify or develop resiliency design refinements (i.e. dune construction, dune vegetation, sand fencing, vehicle and pedestrian access modifications, and outfall pipe modifications)	No-Action Alternative (Authorized Project noted in the prior NEPA documents specific to each of the SPPs)
Protected Species and Habitats Threatened and Endangered Species (nesting sea turtles, piping plover, red knot, beach mouse, gopher tortoise); Essential Fish Habitat, Migratory Birds; Other Wildlife Resources	Populations were significantly greater prior to human development. Declines are attributed to loss or degradation of habitat as well as other human related factors.	Education and enforcement of relevant laws have resulted in some population increases. Habitat has also improved in some cases due to land conservation or protection, pollution abatement, and regulatory practices.	Construction periods would increase if resiliency design refinements were implemented in addition to beach nourishment. Species that utilize beach or dune habitat may be affected. These activities would be performed in compliance with all applicable laws. Resiliency design refinements and beach nourishment would help provide beach and dune habitat.	Beach nourishment events would continue. These activities would be performed in compliance with all applicable laws. Beach erosion would continue at the current rate and there would be greater risk of existing beach and dune habitat being lost.
Cultural, Historic, and Archaeological Resources	Ongoing erosion and storm event effects have added to the degradation of cultural resources located along the shoreline and in the nearshore environment.	No known present actions are occurring in the project vicinity.	Dredge material placement may result in the stabilization of existing shorelines and minimize future erosion in some areas. Any offshore and near shore cultural resources will be avoided. The decreased frequency of nourishment reduces potential to impact resources.	Beach nourishment events would continue. Erosion and storm event effects will continue to degrade cultural resources located along the shoreline and in the nearshore environment.
Water Quality	Prior to Federal and State laws being enacted and enforced, water quality had significantly declined due to human related factors (i.e. turbidity caused by upland runoff, septic tank leachate, etc.).	Present day water quality has significantly improved due to local, State, and Federal pollution abatement programs.	Minor increases in turbidity would occur from combined beach nourishment and implementation of resiliency design refinements. All work would be performed in compliance with State Water Quality Certification/permit, as applicable.	Beach nourishment events would continue and would result in minor increases in turbidity. Work would be performed in compliance with State Water Quality Certification/permit, as applicable.

	Past Conditions	Present (existing condition)	Future with Preferred Alternatives, Modify or develop resiliency design refinements (i.e. dune construction, dune vegetation, sand fencing, vehicle and pedestrian access modifications, and outfall pipe modifications)	No-Action Alternative (Authorized Project noted in the prior NEPA documents specific to each of the SPPs)
Aesthetics	Prior to development, natural beach and dune systems occurred. Urban development along the shoreline has affected the aesthetics of these project areas.	Continued urban development along the shoreline has affected the aesthetics of project areas.	There would be an increased impact to aesthetics during construction if resiliency design refinements were implemented in addition to beach nourishment events. These combined activities, however, would further reduce erosion thereby improving the viewshed.	Beach nourishment events would continue and would result in impacts to aesthetics during construction. Greater erosion rates would adversely affect the viewshed if resiliency design refinements were not implemented.
Recreation	Opportunities for beach recreation have been affected by shoreline development as well as storm induced erosion.	Numerous beach access routes have been established. However, opportunities for recreation are at risk due to erosion, or loss of beach area.	Beach nourishment events when combined with resiliency design refinements would increase construction periods, which would adversely affect beach recreation. However, access to a portion of the beaches would continue to be possible, and erosion of recreational areas would be reduced.	Beach nourishment events would continue and would result in impacts to beach recreation during construction. Greater erosion rates would adversely affect recreational areas if resiliency design refinements were not implemented.
Hazardous, Toxic, and Radioactive Waste (HTRW)	There are no known HTRW locations in the project areas.	There are no known HTRW locations in the project areas.	There should be no risk of encountering HTRW in the project areas.	Beach nourishment events would continue. There should be no risk of encountering HTRW in the project areas.
Air Quality	Prior to development, air quality was only occasionally affected by natural events. Development resulted in a decline of air quality.	Present day air quality has significantly improved due to local, State, and Federal pollution abatement programs. The project areas remain in attainment with air quality criteria.	There would be an increased impact to air quality during construction if resiliency design refinements were implemented in addition to beach nourishment events.	Beach nourishment events would continue and would result in impacts to air quality during construction.

	Past Conditions	Present (existing condition)	Future with Preferred Alternatives, Modify or develop resiliency design refinements (i.e. dune construction, dune vegetation, sand fencing, vehicle and pedestrian access modifications, and outfall pipe modifications)	No-Action Alternative (Authorized Project noted in the prior NEPA documents specific to each of the SPPs)
Noise	Prior to development, noise was created by natural sources. Noise levels have likely remained unchanged for some time due to the urbanized environment.	Noise levels continue to be typical for these urbanized project areas.	Beach nourishment events when combined with resiliency design refinements would increase construction periods and associated noise.	Beach nourishment events would continue and noise generated by construction activities would also continue.
Energy Requirements and Conservation	Past beach nourishment in the project areas required insignificant uses of energy.	Beach nourishment continues to require insignificant uses of energy.	Beach nourishment events when combined with resiliency design refinements would require insignificant energy.	Beach nourishment events would continue and would require insignificant energy.
Natural or Depletable Resources	Past beach nourishment in the project areas required the use of sand, which is a depletable natural resource.	Present day beach nourishment in the project areas requires the use of sand, which is a depletable natural resource.	Beach nourishment events and construction of dunes would require sand, and would contribute to the depletion of sand sources.	Beach nourishment events would continue and would require sand, which is a depletable natural resource.
Native Americans	There are no Native American lands in the project area.	There are no Native American lands in the project area.	There are no Native American lands in the project area.	There are no Native American lands in the project area.
Reuse and Conservation Potential	There is no potential for reuse associated with the proposed project activities.	There is no potential for reuse associated with the proposed project activities.	There is no potential for reuse associated with the proposed project activities.	There is no potential for reuse associated with the proposed project activities.

4.18 Irreversible and Irretrievable Commitment of Resources.

4.18.1 Irreversible Commitment.

An irreversible commitment of resources is one in which the ability to use and/or enjoy the resource is lost forever. As previously stated, sand is a depletable resource; therefore, the transfer of this sand from offshore borrow areas or an upland sand source by truck haul to the dune system is considered an irreversible commitment of resources.

4.18.2 Irretrievable Commitment.

An irretrievable commitment of resources is one in which, due to decisions to manage the resource for another purpose, opportunities to use or enjoy the resource as they presently exist are lost for a period of time. Typically, it refers to the use of renewable resources, including human effort, and to other utilization opportunities foregone in favor of the proposed action.

The project would result in the temporary loss of macrofauna habitat and associated fauna within the dune system. This is an irretrievable loss because macrofauna habitat will redevelop and fauna will reoccupy the affected areas following construction.

4.19 Unavoidable Adverse Environmental Effects.

Most of the beach sand infauna (e.g., sand fleas) will be unavoidably lost as a result of sand placement activities. However, these losses are not expected to have a long-term, significant adverse impact on the surrounding environment since infauna outside of the fill areas and borrow areas will recolonize the disturbed sandy areas within one to three seasons after construction, respectively, and changes in macroinfaunal community assemblages should result in a minimal loss of productivity.

4.20 Local Short-term Uses and Maintenance/Enhancement of Long-term Productivity.

Shoreline protection using beach quality material with periodic nourishment is an ongoing effort. Beach nourishment projects have a temporary and short-term impact on local offshore and nearshore biological resources. Most motile organisms (fishes, crabs, and some sand dwelling organisms) within the borrow area and nearshore zone should be able to escape these areas during construction. Some less-motile individuals that are unable to escape from construction will be lost, but are expected to recolonize after project completion. Short-term reductions in primary productivity and reproductive and feeding success of invertebrate species and fish are expected.

4.21 Indirect Effects.

There is relatively limited opportunity for future development. No additional development along these shorelines is anticipated to occur.

4.22 Compatibility with Federal, State, and Local Objectives.

The Federal objective is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Federal planning concerns other than economic include environmental protection and enhancement, human safety, social wellbeing, and cultural and historical resources. Federal, state and county objectives include (1) the reduction of expected storm damages through beach nourishment and other project alternatives; (2) maintaining beaches as suitable recreational areas; (3) maintaining suitable beach habitat for nesting sea turtles, invertebrate species, and shorebirds; (4) maintaining commerce associated with beach recreation in these five projects; and (5) avoidance or minimization of adverse impacts to sensitive environmental marine resources along the project area. The proposed project activity is consistent with Federal and local objectives and with the State's Coastal Zone Management Plan.

4.23 Conflicts and Controversy.

There are no known conflicts or controversy associated with modifying or developing the proposed dune systems for each of the five projects. The State of Florida's approval for modifying or developing dune systems for each of the five projects will be obtained for Coastal Zone Management Act consistency through the Florida Department of Environmental Protection Joint Coastal Permit, if one is not currently in place.

4.24 Uncertain, Unique, or Unknown Risks.

There are no uncertain, unique or unknown risk associated with modifying or developing the proposed dune systems for each of the five currently Federal authorized projects.

4.25 Precedent and Principle for Future Actions.

The proposed activities are consistent with, and/or adaptions of, prior permitted activities conducted by the Corps. These include prior beach nourishments and periodic nourishment along the projects.

4.26 Environmental Commitments.

The Corps commits to avoiding, minimizing, or mitigating for adverse effects during construction activities by including the following commitments in the contract specifications:

1. Protective measures for threatened and endangered species shall be enforced in accordance with the USFWS Statewide Programmatic Biological Opinion (2015), the USFWS Programmatic Piping Plover Biological Opinion (2013), and the State permit.
2. All water quality terms and conditions of any applicable State permit shall be implemented.

3. Migratory birds (adult birds, eggs and chicks) shall be protected during construction activities.
4. Essential Fish Habitat will not be impacted by the proposed design modifications (**Table 3** through **Table 7** and **Appendix C**).
5. In the event that cultural resources are discovered, then protective measures shall be utilized.
6. Air emissions such as vehicular exhaust and dust shall be controlled.
7. The contracting officer would notify the contractor in writing of any observed noncompliance with Federal, State, or local laws or regulations, permits and other elements of the contractor's Environmental Protection Plan.
8. The contractor would train his personnel in all phases of environmental protection.
9. The environmental resources within the project boundaries and those affected outside the limits of permanent work would be protected during the entire period of work.
10. An oil spill prevention plan shall be required.

4.27 Compliance with Environmental Requirements.

4.27.1 National Environmental Policy Act of 1969.

Environmental information on the project has been compiled and this Supplemental Environmental Assessment (SEA) has been prepared. Additionally, the NEPA documents referenced in **Table 2** are incorporated herein by reference. A scoping letter on the placement of sand within the dune system was mailed out to all Federal, State, and local agencies on December 3, 2018. The Corps issued a Notice of Availability (NOA) for the review of the SEA and proposed Finding of No Significant Impact (FONSI) to stakeholders on August 9, 2019 (Appendix B).

4.27.2 Endangered Species Act of 1973.

The proposed work would be performed in accordance with the USFWS Statewide Programmatic Biological Opinion (2015) and the USFWS Programmatic Piping Plover Biological Opinion P^3BO (2013). A consultation letter was sent to the USFWS with this SEA to document determination of effect and use of the SPBO and P^3BO. This project has been fully coordinated under the Endangered Species Act and is therefore, in full compliance with the Act (Appendix B).

4.27.3 Fish and Wildlife Coordination Act of 1958.

The proposed action is being coordinated with the USFWS through NEPA scoping and ESA consultation. By correspondence dated October 22, 2019, this project is in full compliance with the Act (Appendix B).

4.27.4 National Historic Preservation Act of 1966 (Inter Alia).

The consultation with SHPO and interested Tribes is complete for the proposed action. This project has been fully coordinated under the National Historic Preservation Act of 1966 by letter dated June 14, 2019 (Appendix B) and is therefore in full compliance with the Act.

4.27.5 Clean Water Act of 1972.

A Section 401 water quality certification has been issued by the Florida Department of Environmental Protection for Nassau, Duval, St. Johns, and Brevard counties Shore Protection Projects for project designs that do not include the proposed alternative. If necessary, these permits shall be modified to include the proposed design modifications. All State water quality standards shall be met. A Section 404(b) evaluation was included in the prior NEPA documents and has been determined to be sufficient because the dune construction and other design refinements would occur within the federally authorized project footprint. These projects are in full compliance with this Act.

4.27.6 Clean Air Act of 1972.

No air quality permits would be required for these projects. These projects have been coordinated with U.S. Environmental Protection Agency (EPA) and are in compliance with Section 309 of the Act.

4.27.7 Coastal Zone Management Act of 1972.

A Federal consistency determination in accordance with 15 CFR 930 Subpart C is included in this report as Appendix A. The proposed work was coordinated with the FDEP. The projects are in full compliance with this Act per correspondence received from the State of Florida on October 11, 2019 and is included in Appendix B.

4.27.8 Farmland Protection Policy Act of 1981.

No prime or unique farmland should be impacted by implementation of these projects. This Act is not applicable.

4.27.9 Wild and Scenic River Act of 1968.

No designated Wild and Scenic river reaches would be affected by project related activities. This Act is not applicable.

4.27.10 Marine Mammal Protection Act of 1972

Marine mammals will not be impacted by the proposed design modifications (**Table 3** through **Table 7** and **Appendix C**) for the projects.

4.27.11 Estuary Protection Act of 1968.

No designated estuaries would be affected by these project activities. This Act is not applicable.

4.27.12 Federal Water Project Recreation Act.

The principles of the Federal Water Project Recreation Act, (Public Law 89-72) as amended, have been fulfilled by complying with the recreation cost-sharing criteria as outlined in Section 2 (a), paragraph (2).

4.27.13 Submerged Lands Act of 1953.

These projects would occur on submerged lands of the State of Florida. These projects shall be coordinated with the State and are in full compliance with the Act.

4.27.14 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990.

There are no designated coastal barrier resources in the project areas that would be affected by this project. These Acts are not applicable.

4.27.15 Rivers and Harbors Act of 1899.

The proposed work would not obstruct or alter any navigable water of the United States. No dunes or other design refinement modifications are seaward of the Mean High Water Line. There are no impacts to navigation. These projects are in full compliance with the Act.

4.27.16 Anadromous Fish Conservation Act.

Anadromous fish species would not be affected. This Act is not applicable.

4.27.17 Migratory Bird Treaty Act and Migratory Bird Conservation Act.

Protective measures shall be implemented so that no migratory birds would be affected by project activities. These projects are in full compliance with these Acts.

4.27.18 Marine Protection, Research, and Sanctuaries Act.

The term "dumping" as defined in the Act [33 U.S.C. 1402(f)] does not apply to the disposal of material for beach nourishment or to the placement of material for a purpose other than disposal (e.g., placement of rock material as an artificial reef or the construction of artificial reefs as mitigation). Therefore, the Marine Protection, Research, and Sanctuaries Act does not apply to these project. The disposal activities addressed in referenced environmental documents have been evaluated under Section 404 of the Clean Water Act.

4.27.19 Magnuson-Stevens Fishery Conservation and Management Act.

An Essential Fish Habitat Assessment for this project is not applicable because no impacts to EFH are anticipated. However, coordination with NMFS was implemented. NMFS correspondence, dated September 9, 2019, states they have no comments for this project (Appendix B).

4.27.20 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

The purpose of PL 91-646 is to ensure that owners of real property to be acquired for Federal and federally assisted projects are treated fairly and consistently and that persons displaced as a direct result of such acquisition will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. The proposed work should not involve real property acquisition and/or displacement of property owners or tenants. This Act does not apply.

4.27.21 E.O. 11990, Protection of Wetlands.

There are no wetlands in the project area. This EO does not apply.

4.27.22 E.O. 11988, Flood Plain Management.

This EO states that Federal agencies shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out agency responsibilities. The project would have no adverse impacts to flood plain management.

4.27.23 E.O. 12898, Environmental Justice.

On February 11, 1994, the President of the U.S. issued Executive Order (E.O.) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This E.O. mandates that each Federal agency make environmental justice (EJ) part of the agency mission and to address, as appropriate, disproportionately high and adverse human health or environmental effects of the programs and policies on minority and low-income populations. Significance thresholds that may be used to evaluate the effects of a proposed action related to EJ are not specifically outlined. However, Council on Environmental Quality (CEQ) guidance requires an evaluation of a proposed action's effect on the human environment and the Corps must comply with Executive Order 12898. The Corps has determined that a proposed action or its alternatives would result in significant effects related to EJ if the proposed action or an alternative would disproportionately adversely affect an EJ community through its effects on:

- Environmental conditions such as quality of air, water, and other environmental media; degradation of aesthetics: loss of open space: and nuisance concerns such as odor, noise, and dust;
- Human health such as exposure of EJ populations to pathogens;

- Public welfare in terms of social conditions such as reduced access to certain amenities like hospitals, safe drinking water, public transportation, etc.; and
- Public welfare in terms of economic conditions such as changes in employment, income, and the cost of housing, etc.

The Corps conducted an evaluation of EJ impacts using a two-step process: as a first step, the study area was evaluated to determine whether it contains a concentration of minority and/or low-income populations. The second step includes evaluation to determine whether the proposed action would result in a disproportionately, high adverse effect on these populations.

As defined in Executive Order 12898 and the CEQ guidance, a minority population occurs where one or both of the following conditions are met within a given geographic area:

- The American Indian, Alaskan Native, Asian, Pacific Islander, Black, or Hispanic population of the affected area exceeds 50 percent; or
- The minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

An affected geographic area is considered to consist of a low-income population (i.e., below the poverty level for purposes of this analysis) where the percentage of low-income persons:

- is at least 50 percent of the total population; or
- is meaningfully greater than the low-income population percentage in the general population or other appropriate unit of geographic analysis.

Step 1: Study Area's Minority and Low-Income Population Average Percentages

Using the USEPA EJAssist Tool, the project areas were identified and the average percentage for the EJ criteria are compared in **Table 15** and **Table 16**. Out of the five projects, the EJAssist tool identified Mayport, Florida, and Jacksonville Beach, Florida, as having minority population and a low-income population.

Table 15. USEPA EJAssist Environmental Justice Criteria Percentages for Mayport, Florida.

	User-Defined Project Area %	Florida State Average %
Minority Population	37%	44%
Low Income Population	47%	37%

Based on the information provided by the USEPA EJAssist tool, the average minority population is approximately 37% of the total population and approximately 47% of the individuals in the project area are considered below the poverty level. Therefore, the study area which comprises Mayport, Florida, does not constitute an EJ community

because the population percentages are below 50 percent, indicating that the study area does not contain a high concentration of minority and low-income population.

Table 16. USEPA EJAssist Environmental Justice Criteria Percentages for Jacksonville Beach, Florida.

	User-Defined Project Area %	Florida State Average %
Minority Population	31%	44%
Low Income Population	32%	37%

Based on the information provided by the USEPA EJAssist tool, the average minority population is approximately 31% of the total population and approximately 32% of the individuals in the project area are considered below the poverty level. Therefore, the study area which comprises Jacksonville Beach, Florida, does not constitute an EJ community because the population percentages are below 50 percent, indicating that the study area does not contain a high concentration of minority and low-income population.

Since Mayport, Florida, and Jacksonville Beach, Florida, do not contain a concentration of minority and/or low-income populations such that it would result in a disproportionate, high adverse effect on these populations, Step 2 is not incorporated.

In summary, the proposed actions would not use methods or practices that discriminate on the basis of race, color, or national origin and would not have a disproportionate effect on minority or low-income communities.

4.27.24 E.O. 13089, Coral Reef Protection.

The EO refers to "those species, habitats, and other natural resources associated with coral reefs." There are no coral reefs within the project footprints. This EO does not apply.

4.27.25 E.O. 13112, Invasive Species.

The proposed activity does not include actions that would introduce invasive species.

4.27.26 E.O. 13186, Migratory Birds.

This Executive Order requires, among other things, a Memorandum of Understanding (MOU) between the Federal Agency and the U.S. Fish and Wildlife Service concerning migratory birds. Neither the Department of Defense MOU nor the USACE' Draft MOU clearly address migratory birds on lands not owned or controlled by the Corps. For many Corps civil works projects, the real estate interests are provided by the non-Federal sponsor. Control and ownership of the project lands remain with a non-Federal interest. Measures to avoid the destruction of migratory birds and their eggs or hatchlings shall be implemented.

5 LIST OF PREPARERS AND REVIEWERS.

5.1 Preparers.

Preparer	Discipline	Role
Wendy Dauberman-Zerby, U.S. Army Corps of Engineers	Biologist	Principal Author
Chris Altes, U.S. Army Corps of Engineers	Archaeologist	Cultural Resources

5.2 Reviewers.

This SEA was reviewed by the Corps, Jacksonville District, supervisory chain of the Environmental Branch.

6 PUBLIC INVOLVEMENT.

6.1 Scoping and Final SEA.

Pursuant to the National Environmental Policy Act and Corps Regulation, a scoping letter dated December 3, 2018 was issued for this proposed action. Also, the Corps issued a Notice of Availability (NOA) on August 9, 2019 for the review of the SEA and proposed Finding of No Significant Impact (FONSI) to stakeholders.

6.2 Agency Coordination.

Coordination has been conducted with appropriate agencies and is described in this document. Agency coordination letters and documents can be found in **APPENDIX B**.

6.3 Comments Received and Response.

All comment letters or emails received during the scoping process can be found in **APPENDIX B**. During the public review of the draft SEA, correspondence was received from individual property owners concerning specific properties. The Corps responded to these comments directly with information relevant to their residence. Due to this SEA being available to the public, these specific correspondences are not included in Appendix B in order to maintain privacy of individuals addresses. All other correspondence received during the public review period of the draft SEA relative to these SPP's is included in Appendix B.

Additionally, the City of Jacksonville Beach (COJB) located in Duval County expressed that they are looking forward to the Corps' continued support and coordination in this very important program. All comments received from the COJB have been addressed and will be taken into consideration by the Corps as this effort moves through the report phase and gets into the final design and construction phases. Specific comments received during the review of the draft SEA are located in Appendix B.

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APPENDIX A - COASTAL ZONE MANAGEMENT CONSISTENCY

FLORIDA COASTAL ZONE MANAGEMENT PROGRAM

FEDERAL CONSISTENCY EVALUATION PROCEDURES

DUNE RESILIENCY EVALUATION

SHORE PROTECTION PROJECTS

NASSAU, DUVAL, ST. JOHNS, AND BREVARD COUNTIES, FLORIDA

1. Chapter 161, Florida Statute (2018) Beach and Shore Preservation. The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

   Response: The proposed addition or resiliency design refinements (dune construction with vegetation; pedestrian access modifications with sand fencing, vehicle access modifications) will not violate the intent of this chapter. The proposed plans and information have been submitted to the State in compliance with this chapter.

2. Chapters 186 and 187, Florida Statute (2018) State and Regional Planning. These chapters establish the State Comprehensive Plan which sets goals that articulate a strategic vision of the State's future. Its purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

   Response: The proposed project has been coordinated with various Federal, State and local agencies during the planning process. The projects meet the primary goal of the State Comprehensive Plan through preservation and protection of the shorefront development and infrastructure through erosion control.

3. Chapter 252, Florida Statute (2018) Emergency Management. This chapter creates a State emergency management agency with authority: in order to

ensure that preparations of this State will be adequate to deal with, reduce vulnerability to, and recover from such emergencies and disasters; to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: The proposed project involves the addition or resiliency design refinement (dune construction with vegetation; pedestrian access modifications with sand fencing, vehicle access modifications) as a protective means for residents, development, and infrastructure through erosion control located along the Atlantic shoreline within Nassau, Duval, St. Johns, and Brevard counties SPPs; therefore, the proposed work would be consistent with the efforts of Division of Emergency management.

4. Chapter 253, Florida Statute (2018) State Lands. This chapter governs the management of State of Florida Board of Trustees of the Internal Improvement Trust Fund State Lands, including submerged State lands and resources within State lands. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

   Response: The proposed project complies with State regulations pertaining to the above resources; therefore, it would comply with the intent of this chapter.

5. Chapters 259, 260, and 375, Florida Statute (2018) Land Acquisition for Conservation and Recreation, Greenways and Trails, Outdoor Recreation and Conservation Lands. These chapters authorize agencies of the State of Florida to acquire land: to protect environmentally sensitive areas for conservation; and for outdoor recreation, including greenways and trails.

   Response: The proposed project will not have an adverse effect on State-owned environmentally sensitive or recreational lands. It does not require land acquisition for the stated purposes.

6. Chapter 258, Florida Statute (2018) State Parks and Aquatic Preserves. This chapter authorizes the State to manage State parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management, or operations.

   Response: The proposed project will comply with this chapter and will not directly or indirectly adversely impact park property, natural resources, park programs, management, or operations.

7. Chapter 267, Florida Statute (2018) Historical Resources. This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

   Response: The proposed project has been coordinated with the Florida State Historic Preservation Officer. Historic preservation compliance is complete by letter dated June 14, 2019 (Appendix B) and meets all responsibilities under Chapter 267.

8. Chapter 288, Florida Statute (2018) Commercial Development and Capital Improvements. This chapter directs the State Office of Economic and Demographic Research and the Office of Program Policy Analysis and Government Accountability to evaluate existing State economic development programs (e.g., tax credits, tax refunds, sales tax exemptions, etc.) for effectiveness and value to taxpayers.

   Response: This chapter is not applicable as the project does not involve any of the economic incentive programs listed in Chapter 288.

9. Chapters 334, 335, 336, 337, 338, and 339, Florida Statute (2018) Public Transportation. These chapters authorize the planning and development of a safe, balanced, and efficient transportation system.

   Response: No public transportation systems would be impacted by this project.

10. Chapter 379, Florida Statute (2018) Saltwater Fisheries. This chapter directs the State to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in State waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without State waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and other studies and research.

    Response: The material (sediment) proposed for the dune resiliency evaluation for shore protection projects in Nassau, Duval, St. Johns, and Brevard counties SPPs has been evaluated in the prior NEPA documents and would not have a substantial adverse effect on saltwater fisheries. The proposed project is consistent with the goals of this chapter.

11. Chapter 379, Florida Statute (2018) Wildlife. This chapter establishes the Florida Fish and Wildlife Conservation Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of

species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: The project is expected to have no significant effect on freshwater aquatic life or wild animal life. Consultation for the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act was coordinated with the USFWS and NMFS (Appendix B).

12. Chapter 373, Florida Statute (2018) Water Resources. This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

    Response: This project does not involve water resources as described by this chapter.

13. Chapter 376, Florida Statute (2018) Pollutant Discharge Prevention and Removal. This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

    Response: The contract specifications will prohibit the Corps and/or its contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the recycling or disposal of solid wastes. A spill prevention plan will be required. The proposed project is consistent with the intent of this chapter.

14. Chapter 377, Florida Statute (2018) Energy Resources. This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

    Response: The proposed project does not involve the exploration, drilling or production of gas, oil or petroleum product and therefore, this chapter does not apply.

15. Chapter 380, Florida Statute (2018) Land and Water Management. This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development.

    Response: The proposed project will not have any regional impact on resources in the area. Therefore, the project is consistent with the goals of this chapter.

16. Chapter 388, Florida Statute (2018) Mosquito Control. This chapter provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the State.

Response: The proposed project will not further the propagation of mosquitoes or other pest arthropods. Therefore, the project is consistent with the goals of this chapter.

17. Chapter 403, Florida Statute (2018) Environmental Control. This chapter authorizes the regulation of pollution of the air and waters of the State by the FDEP.

    Response: An Environmental Assessment addressing the proposed project effects has been prepared and will be reviewed by the appropriate resource agencies including the FDEP. Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. Coordination with the Florida Department of Environmental Protection shall occur prior to construction. The proposed project complies with the intent of this chapter.

18. Chapter 582, Florida Statute (2018) Soil and Water Conservation. This chapter establishes policy for the conservation of the State soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

    Response: The proposed project is not located near or on agricultural lands; therefore, this chapter does not apply.

APPENDIX B - PERTINENT PUBLIC CORRESPONDENCE AND AGENCY DOCUMENTS

Agency Scoping Letter and Comment Response Matrix

Table B-1. Dune Scoping Letter – December 03, 2018 (Public Scoping Comment Response Matrix)

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
Florida State Clearinghouse – Florida Department of Environmental Protection		
Date: December 05, 2018		
Chris Stahl, Coordinator	**Email:** I got the attached announcement. Are you all wanting a consistency determination or just review? Chris Stahl Chris Stahl, Coordinator Florida State Clearinghouse Florida Department of Environmental Protection 3800 Commonwealth Blvd., M.S. 47 Tallahassee, FL 32399-2400 ph. (850) 717-9076 State.Clearinghouse@floridadep.gov Attachment (December 03, 2018 Scoping Letter)	**Wendy Dauberman** Chris, Thank you for your email and for being proactive for this project. At this time, we expect the public review period to begin around March/April time-frame. At that time, a consistency determination will be requested from the State. Thank you.
Landstar System Holdings, Inc.		
Date: December 09, 2018		
Patrick J. Murphy VP & Treasurer	**Email:** I received the scoping letter in the mail. I appreciate receiving this information. I was looking at the project location map. With regard to Section 3, St John's County, St Augustine Beach, does that also include Vilano Beach? My property is located at 4320 Coastal Highway, St Augustine, FL 32084. We suffered a lot of erosion. Any level of beach nourishment in Vilano would be greatly needed and appreciated. Thanks, Pat Patrick J. Murphy VP & Treasurer Landstar System Holdings, Inc. 904.390.1278 pmurphy@landstar.com	**Wendy Dauberman** Mr. Murphy, Thank you for your e-mail and interest in this effort. The St. John's County, FL, St. Augustine Beach project listed on the scoping letter map does not include Vilano Beach. I apologize for any confusion that receiving this letter may have caused. The letter is associated with an effort to increase the resilience of existing Federal projects such as the one in St. Augustine Beach by adding dune features to the design. However, the Army Corps, in partnership with St. Johns County, has a separate ongoing effort that does involves dune and beach nourishment in Vilano Beach. A coastal storm risk management study has

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
		been completed which recommends dune and beach nourishment along approximately 2.6 mile in Vilano Beach. The full report can be viewed at https://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/. Your property is located within the area of the proposed project which would extend from the Serenata Condos (about 0.6 mile north of your property) to San Pelayo Ct (about 2.0 miles south of your property). This project is currently in the pre-construction engineering and design phase with construction scheduled for 2020. Best Regards
Seminole Nation of Oklahoma		
Date: January 10, 2018		
Theodore Isham Historic Preservation Officer	**Email:** The Seminole Nation of Oklahoma requests more information on the proposed plan to modify sand dunes in Florida. I will be in the ft. Lauderdale area on Monday morning 31dec2018 if someone will be available for a short meeting to discuss the projects. Theodore Isham Seminole Nation of Oklahoma Historic Preservation Officer PO Box 1498 Wewoka, Ok 74884 Phone: 405-234-5218 e-mail: isham.t@sno-nsn.gov	**Wendy Dauberman** Mr. Isham, Thank you for your email. I have cc'd Chris Altes, USACE Archeologist. Mr. Altes will contact you. Thank you.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
South Ponte Vera – Vilano Beach Preservation Association		
Date: December 10, 2018		
Linda Chambless Vice President	**Email:** Hello Wendy Dauberman-Zerby, The referenced letter has been sent to St Johns County property owners in in the area of the proposed new Federal project for Vilano/South Ponte Vedra Beach, specifically along a segment of Coastal Highway. The recipients are confused, because that project is not an existing project, and the only item in the Project Location Map for St Johns County is for the St Johns County Shore Protection Project (SPP) at St Augustine Beach, which has been ongoing since 2003 and is located south of here. Perhaps the intent is to add the proposed new segment to the current SPP? I have not received this letter, because my property is to the north of the proposed new project. However, as Vice President of the South Ponte Vera – Vilano Beach Preservation Association, I am receiving numerous inquiries from those who have received it. Can you enlighten me regarding the purpose of this letter being sent to property owners along Coastal Highway, so that I can explain it to them? Please either reply or contact me at 904-687-8435. Thanks! Linda Chambless	**Wendy Dauberman** Miss Chambless, Thank you for your email. I have attached the scoping document in question. Yes, as noted in the document, these are existing Federal Shore protection projects in which the study is evaluating design changes to add or modify sand dunes. The document lists the 16 projects that are being evaluated. Thank you again.
Bel-Aire Beach Apartments		
Date: December 14, 2018		
Craig McAdams	**Email:** To Whom It May Concern In response to the letter sent December 03, 2018 with regards to the dunes, specifically in Broward County, I would like to be included in any discussion or correspondence. If the situation arises whereby I may attend and observe any meetings pertaining to the dune project I would also like to attend any such meeting, if possible. My contact information is below. Thank you and Happy Holidays.	**Wendy Dauberman** Mr. McAdams, Thank you for your email. Yes, you will receive all communications in regard to this study so you have an opportunity to remain involved.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Sincerely, Craig McAdams Craig McAdams Bel- Aire Beach Apartments 1800 North Broadwalk Hollywood, FL 33019 craiga68@cs.com (954)328-1742 cell	Thank you.
APTIM | Coastal, Ports & Marine		
Date: December 14, 2018		
Lauren Floyd Senior Marine Biologist	**Email (1):** Good afternoon, Ms. Dauberman, I'm writing in response to the Dec. 3, 2018 scoping letter we received regarding the Corps' intent to evaluate adding or modifying dunes in 16 existing CSRM projects. On behalf of Manatee County, we'd like to express our support for this effort and to offer assistance to the Corps in identifying and prioritizing potential areas for dunes in the Manatee County Shore Protection Project. Could you please explain how and when we can provide this help? Also, does Manatee County need to formally reply in writing to this letter within 30 days for any reason? Thanks so much for your assistance, Lauren Lauren Floyd Senior Marine Biologist APTIM | Coastal, Ports & Marine O 561 361 3184 M 954 551 2594 E lauren.floyd@aptim.com 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 APTIM.com	**Wendy Dauberman** Lauren, Thank you for your email. I am saving your email to the file. It is not necessary for Manatee County to formally reply to this scoping letter unless you have something you would like address. Upon completion of the supplemental environmental assessment (SEA) document, it will be send out for public review. If you have comments or concerns during the public review of this document; that would be a good time to respond with issues to be addressed. This SEA will be sent out during the May/June 2019 time-frame. Thank you again for your email.

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	Email (2): Thanks very much. If you have a notification list for the public comment period for the SEA, please add my email (and those cc'd here) to it. Thank you, Lauren	**Wendy Dauberman** Good morning Lauren. Mailing addresses will be used for future notifications as opposed to emails. I will ensure your mailing address is on the mailing list so future notifications are received. Thank you again for reaching out.
Date: December 19, 2018		
Michael Laszlo	**Email (1):** Ms. Dauberman, I received the attached document, concerning a federal CSRM project that affects our city, without context. Would you kindly provide relevant documents or references that explain and pertain to this project? Respectfully, Michael Laszlo Boca Raton **Attachment (1):** **Palm Beach County, FL, Shore Protection Project ; Limited Reevaluation Report for North Boca Raton Second Periodic Renourishment with Environmental Assessment – April 2008** **Email (2):** Wendy, Is it possible to find out the north-south extent of the shoreline along North Boca Raton (where I live) to which the project applies? And how these particular shoreline extents were selected for the project. And how the	**Wendy Dauberman** Mr. Laszlo, Thank you for your email. As information becomes available for this study, it will be mailed out to the public for review. --- Mr. Laszlo, Thank you again for your email. Below is some information to answer your questions. The north-south extent of the North Boca Raton Segment is approximately 1.5 miles from about 1,000

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	dune template will be developed, and what is the existing beach template to which it will be compared? It's difficult to provide 'views and comments on the proposed evaluation' without more information about the proposed evaluation. Is there no background or context? Respectfully, Michael Laszlo **Email (3):** Wendy, Thank you for the information. I'll go through this and will provide comments if appropriate. Regards, Michael Laszlo	feet north of NE Spanish River Blvd to the north side of Red Reef Park. This particular extent has been authorized for Federal participation through 2038 and the non-federal sponsor for the project is the City of Boca Raton. The existing authorized beach template is a 50' wide beach plus advance fill with a berm elevation of +9 feet NGVD as documented in the 2008 Limited Reevaluation Report (attached). A dune template will be developed to generally mimic existing dunes in the project area and follow USACE design guidance as well as any local guidelines for dune construction if they exist. A draft Engineering Documentation Report (EDR) with more detailed information is being prepared and will be provided for review and comment. We look forward to receiving comments and will be taking them into consideration as we complete the study. Thank you.
Date: December 21, 2018		
Douglas W. Mann, P.E., D.CE. Lead Coastal Engineer	**Email:** Dear Ms. Dauberman: Please accept the attached letter to you in response to the public scoping request. The letter to Ms. Pfaff is the referenced enclosure. If you have any questions, please call me. DOUGLAS W. MANN, P.E., D.CE. Lead Coastal Engineer APTIM | Coastal, Ports & Marine O 561 361 3148 M 561 400 7766 E douglas.mann@aptim.com 2481 NW Boca Raton Boulevard	**Wendy Dauberman** Mr. Mann, Thank you for your email. I appreciate your sending it.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Boca Raton , FL 33431 **Attachment (Letter 1):** **To –** Ms. Wendy Dauberman of USACE, Jacksonville District **From** – Douglas W. Mann, P.E., D.CE. of Aptim Environmental & Infrastructure, Inc. **Subject: Response to Scoping Letter-Dunes** **Date: December 21, 2018** This letter is in response to Gina Paduane Ralph's scoping letter of December 3, 2018 regarding the USACE's effort to review and possibly amend the existing authorization of the Coastal Storm Risk Management project for Broward County, Florida. I represent Mr. Oscar Belaiche who owns the property at 2300 Bay Drive, Pompano Beach Florida. The property is located within the limits of the original authorized shore protection project located between Hillsboro Inlet and Port Everglades (also known as Segment II). Support The shore protection project located immediately south of Hillsboro Inlet has performed well overall and offers significant shore protection benefits to the upland properties, while incidentally providing recreational benefits along the publicly accessible shoreline. Nevertheless, the natural and manmade dunes within the Segment II project have from time to time been impacted by storm surges and waves overtopping the berm. The dunes are not presently included in the federal project and as a result are the responsibility of the non-federal partner (Broward County) and individual owners to maintain. We support the USACE investigating whether a dune cross section should be added to the authorized federal beach design section within Segment II. We believe that a continuous and uniform minimum dune cross section throughout Segment II will afford greater storm protection to upland properties and infrastructure and can be accomplished with limited increase in project costs. Concerns 1. In 1983, Segment II was nourished near its northern limits with a full design section constructed at FDEP monument R26 and a taper section toward the north. This sand placement may have been terminated due to recent sand placement by the Hillsboro Inlet	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	District. The beach immediately adjacent to the jetty is subject to significant fluctuations as a result of the bypassing. As such, there is a need for the USACE to insure that the entire congressionally authorized reach be maintained. During any review by the USACE of dunes in the Segment II federal shore project, we request that the northern limit of the federal project be codified as being at the south jetty of Hillsboro Inlet. 2. Recent wave action coupled with lower bypassing of sand at Hillsboro Inlet have led to high erosion rates at the beaches within 1500 feet south of the south jetty of Hillsboro Inlet (Olsen Associates, 2018). This erosion has impacted the beach berm and the dunes within this area; thus, the storm protection in this area has diminished. It is requested that a determination be made as to the following: a. Whether the federal authorized beach cross section is in place. Insufficient beach width and height will not allow stable dunes to reside at the landward extend of the beach. b. Whether federal action is required to reconstruction this beach section; c. Whether there is sufficient federal interest (storm protection benefits) to expand the federal design cross section to include a dune; d. Whether there is sufficient sand existing to fill the potential dune feature, or whether additional sand is needed. We have previously notified the USACE Jacksonville District regarding our opinions of items a and b (enclosed). 3. While a uniform and continuous dune is desirable, it is requested that the USACE design a few locations along Segment II reach to allow beach maintenance equipment, emergency service vehicles, and beach related construction equipment to traverse the dunes. This will facilitate operations and maintenance of the beach and dune infrastructure as well. If you have any questions please call me. Very truly yours	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Douglas W. Mann, P.E., D.CE. Lead Coastal Engineer Aptim Environmental & Infrastructure, Inc. cc. Oscar Belaiche --- **Attachment (Letter 2):** **To -** Nicole Sharp, P.E of Broward County & Lacey Pfaff of Army Corps of Engineers **From** – Douglas W. Mann, P.E., D.CE. of Aptim Environmental & Infrastructure, Inc. **Subject: Broward County, Florida Shore Protection Project Segment II, Possible FCCE Project** **Date: November 05, 2018** This letter is to request your assistance with the restoration of the federal shore protection project immediately south of the Hillsboro Inlet within Segment II of the federal shore protection project. I am representing Mr. Oscar Belaiche of 3698136, LP which owns the property 2300 Bay Drive, Pompano Beach. This property is immediately north of the private access point for the Hillsboro Shores Improvement Association. This property and the adjoin properties have suffered significant erosion over the last two years as a result of Hurricane Irma and other storm events, which has left the upland properties with less storm damage protection than that authorized by the Broward County Shore Protection Project for Segment II. The erosion has progressed to the point that the shoreline is now landward of the Erosion Control Line (Figure 1). The berm is deflated (Photo 1) and waves can impact the dunes during elevated tide conditions (Photo 2). Mr. Belaiche reports that 10 to 15 feet of dune were lost during last winter storms.	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	 Photo 2. Storm waves during January 2018 storm event. Photo by Oscar Belaiche.  Photo 1. Beach Conditions on September 27, 2018 at 3691836 LP property. Historical Maintenance of the Beach Since the completion of the 1983 federal nourishment of the beach, the beach has been indirectly maintained dredging by the Hillsboro Inlet District. While the aerial photographic record indicated that the beach width has fluctuated with the bypassing, the resulting conditions have usually supported the federal shore protection design section and have not required direct federal nourishment. The current conditions beach may be the result of the effects of Hurricane Irma combined with below average channel shoaling (and hence dredging) in 2017. Request A recent newspaper article (September 19, 2018 Sun Sentinel) indicated that the USACE was planning on correcting the Hurricane Irma related erosion by the placement of 388,000 cy in fall 2019. During the USACE planning for this restoration of the federal shore protection project in Segment II, it is requested that the beach cross sections between FDEP monuments R-25 and R-26 be restored to their original constructed widths and elevations. To assist the USACE with restoring the width and elevations of this section of the beach, I have located the 183 construction plan of which I have attached pertinent section (Figures 2 and 3). For reference, Mr. Belaiche's property is located immediately north of monument R-25.5. It is also requested that you keep is informed on the planning of the federal restoration effort. If you have any questions please call me. Very truly yours Douglas W. Mann, P.E., D.CE. Lead Coastal Engineer Aptim Environmental & Infrastructure, Inc.	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	cc. Oscar Belaiche, for 3698136 LP	
Lee County Government		
Date: December 17, 2018		
Stephen Boutelle Marine Operations Manager	**Email:** Ms. Dauberman, Lee County is supportive of the Corps project to evaluate design changes to add or modify sand dunes for the Gasparilla Segment of the Lee County Shore Protection Project. The addition of dunes and/or dune vegetation is considered to be a best management practice. The 2007 construction of the Gasparilla Project by Lee County included a non-federal sand dune for a portion of the project because we believed it to increase project benefits and resiliency. Inclusion of dunes is supported by several policies in Lee County's Comprehensive Plan including the following. Boca Grande Community Plan. Policy 19.4.3: Preserve the beach dune system, beach dune vegetation, and beach dune wildlife, by discouraging any construction seaward of the 1978 Coastal Construction Control Line. This policy will not apply to the placement of raised walkways intended to cross over the dune system from adjoining properties, nor will it apply to bona fide beach renourishment and shoreline protection efforts. Lee County will support the State's efforts to protect the beach dune system, beach dune vegetation, and beach dune wildlife communities on Gasparilla Island. Boca Grande Community Plan. Policy 19.4.4: Beach renourishment efforts will include the re-establishment of a beach dune system, beach dune vegetation, and beach dune wildlife communities, including nesting birds and turtles, to the greatest extent practicable. Any rock or hard revetment will be covered with sand and planted with salt resistant native plants. Hazard Mitigation. Policy 110.1.1: Regulations and incentives will be examined for additional setbacks in critical erosion areas, conservation and enhancement of dunes and vegetation, flood proofing of utilities, and appropriate requirements for structural wind resistance and floodplain management.	**Wendy Dauberman** Good morning Steve. Thank you for your email and the information in it. I appreciate it. Have a great day!

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	Coastal Planning Areas. Policy 113.3.1.12. Requiring the installation of dune vegetation as a component of all County funded renourishment projects. We encourage the Corps to complete the evaluations quickly and look forward to further participation in the process. Sincerely, Steve Boutelle Marine Operations Manager Lee County - Natural Resources Division 1500 Monroe Street Fort Myers, Florida 33901 Ph: 239-533-8128 FX: 239-485-8408 sboutelle@leegov.com www.leegov.com	
Environmental Protection Agency (EPA)		
Date: December 18, 2018		
Chris Militscher Chief, NEPA Program Office	**Email:** Ms. Dauberman-Zerby: Please see EPA's comments below: U.S. Environmental Protection Agency (EPA) Scoping Comments for the Jacksonville District, U.S. Army Corps of Engineers (USACE) Coastal Risk Management Study (CSRM) National Environmental Policy Act (NEPA) Document December 18, 2018 Background: On December 13, 2018, the EPA Region 4 NEPA Program Office received a letter dated December 3, 2018, from the Jacksonville District, USACE as the lead Federal agency announcing that the scoping process had been initiated for the Federal CSRM projects in 10 Florida counties and NEPA document. The EPA understands that the USACE has not decided whether to prepare an Environmental Assessment or Environmental Impact Statement and will determine the level of NEPA later in the process. As stated in the letter, the purpose of the CSRM is to evaluate each of the 16 existing Federal CSRM projects to determine whether addition or modification of dunes will contribute to authorized	**Wendy Dauberman** Chris, Thank you for your email. I appreciate your comments. Have a nice day!

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	project purposes and opportunities to increase project robustness, resiliency and reliability. The letter identifies the 10 counties, the 16 project areas and their respective shoreline lengths. General Technical Comments and Recommendations: Wetlands: The EPA recommends the USACE avoid and minimize impacts to wetlands and mitigate wetland impacts according to the Clean Water Act Section 404(b)(1) Guidelines and related regulations. Dredging activities could cause salinity levels to increase, which could convert freshwater/brackish wetlands into saltwater marshes. The EPA also recommends the USACE evaluate potential impacts to increases in salinity levels due to any dredging activities. The EPA recommends the USACE evaluate the potential increases in salinity and document any potential conversion of freshwater wetlands into saltwater marshes and avoid, minimize and mitigate these impacts, as appropriate. Additionally, the EPA recommends that the USACE avoid, minimize and mitigate any impacts to Submerged Aquatic Vegetation (SAVs). Water Quality: The EPA recommends the USACE evaluate potential impacts related to water quality such as potential increases in salinity, sedimentation, dissolved oxygen and re-suspension of nutrients, etc., and explore opportunities to minimize these potential impacts during the risk management study process. Groundwater and Drinking Water: The EPA has identified that increasing salinity levels within the drinking water aquifer as a potential issue associated with sea level rise. The EPA notes that saltwater intrusion is presently an issue with the Biscayne Aquifer, which is a drinking water source for many coastal Florida counties. The EPA also notes that presently there is a large saltwater plume beneath the Florida Power and Light's Turkey Point Nuclear Plant located near Homestead, Florida. The EPA recommends the USACE fully and rigorously evaluate the proposed projects impacts on the Biscayne Aquifer especially regarding impacts related to sea level rise and saltwater intrusion. Coral Reefs: The EPA notes that dunes enhancements involving increased dredging activities could impact coral reefs. The EPA notes that a National Marine Fisheries Service (NMFS) supported study found that previous USACE dredging in 2013-2015 in the Miami Harbor led to extensive mortality and partial mortality of hard coral complexes, as well as the loss of other coral community species.	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	This study notes: "Results indicate increased sediment accumulation, severe in certain times and places, and an associated biological response (e.g., higher prevalence of partial mortality of corals) extended up to 700 m from the channel, whereas project-associated monitoring was limited to 50 m from the channel." The study concludes that: "Dredging projects near valuable and sensitive habitats subject to local and global stressors require monitoring methods capable of discerning non-dredging related impacts and adaptive management to ensure predicted and unpredicted project-related impacts are quantified." If potential coral reef impacts are identified, the EPA recommends that the Jacksonville District identify an Interagency Work Group (IWG) and member agencies to draw upon their expertise in avoiding, minimizing and mitigating impacts to coral reefs. The EPA also encourages the USACE to apply lessons learned from the previous Miami Harbor dredging project so that future coral reef damages are avoided if additional dredging activities are planned. Everglades National Park, Biscayne National Park and Biscayne Bay Aquatic Preserve: The EPA notes that the project study area includes highly valued national and state protected lands such as Everglades National Park, Biscayne National Park and Biscayne Bay Aquatic Preserve. The EPA recommends that the USACE avoid, minimize and mitigate any project impacts to these protected lands and disclose any impacts in the NEPA document. The EPA also recommends the USACE include the state and federal trustees of these lands (National Park Service and Florida Department of Environmental Protection) as cooperating agencies and/or members of the Project Delivery Team. Recreation: The EPA recommends the USACE document any impacts to tourism and recreation (even temporary) such as beach closures, commercial and recreational fishing impacts, park and boat ramp closures, impacts to diving and snorkeling, etc. Additionally, the EPA recommends the USACE document and disclose any impacts to the local community and economy due to potential impacts to the recreation and tourism industry. Green Infrastructure: When possible, the EPA encourages the USACE to use green and sustainable infrastructure as project measures or features. The EPA also encourages the USACE to consider the concepts of living shorelines and other natural features to reduce damages from storms.	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Please contact Jamie Higgins of my staff at higgins.jamie@epa.gov or (404)562-9681 should you have questions. Thank you. Christopher A. Militscher Chief, NEPA Program Office USEPA Region 4 61 Forsyth Street, SW Atlanta, GA 30303 404-562-9512	
Boca Raton		
Date: December 19, 2018		
Michael Laszlo Boca Raton	**Email (1):** Ms. Dauberman, I received the attached document, concerning a federal CSRM project that affects our city, without context. Would you kindly provide relevant documents or references that explain and pertain to this project? Respectfully, Michael Laszlo Boca Raton **Email (2):** Wendy, Is it possible to find out the north-south extent of the shoreline along North Boca Raton (where I live) to which the project applies? And how these particular shoreline extents were selected for the project. And how the dune template will be developed, and what is the existing beach template to which it will be compared? It's difficult to provide 'views and comments on the proposed evaluation' without more information about the proposed evaluation. Is there no background or context? Respectfully, Michael Laszlo	**Wendy Dauberman** Mr. Laszlo, Thank you for your email. As information becomes available for this study, it will be mailed out to the public for review. **Wendy Dauberman** Mr. Laszlo, Thank you again for your email. Below is some information to answer your questions. The north-south extent of the North Boca Raton Segment is approximately 1.5 miles from about 1,000 feet north of NE Spanish River Blvd to the north side of Red Reef Park. This particular extent has been authorized for Federal participation through 2038 and the non-federal sponsor for the project is the City of Boca Raton. The existing authorized beach template is a 50' wide beach plus advance fill with a berm elevation of +9 feet NGVD as documented in the 2008 Limited Reevaluation Report (attached).

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
		A dune template will be developed to generally mimic existing dunes in the project area and follow USACE design guidance as well as any local guidelines for dune construction if they exist. A draft Engineering Documentation Report (EDR) with more detailed information is being prepared and will be provided for review and comment. We look forward to receiving comments and will be taking them into consideration as we complete the study. Thank you.
City of Hollywood		
Date: December 19, 2018		
Lorie Mertens Black Chief Civic Affairs Officer	**Email:** Please see the attached letter from the city of Hollywood in response to the scoping letter dated Dec. 3, 2018. Happy Holidays! Lorie Mertens Black Chief Civic Affairs Officer City of Hollywood 954-921-3599 **Attachment (Letter):** **Date: December 20, 2018** Dear Ms. Dauberman, I am providing comments as part of the scoping process to evaluate design changes to add or modify sand dunes in 16 existing Federal Shore protection projects specifically Segment 3 in Broward County. We appreciate this effort of the USACE to allow for dunes to be included within the federally authorized project template and for federal cost share eligibility. The City of Hollywood represents 7 miles of beach included in the Segment 3 project. As a coastal city, Hollywood benefits tremendously from its successful beachfront community. The 2.5 mile Broadwalk, located adjacent to central beach, is like no other in Florida and provides recreational	**Wendy Dauberman** Lorie, Thank you for your email. I am forwarded your email to the appropriate individuals. Happy Holidays!

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	amenities for residents and tourists alike. Adjacent property has a taxable value of $4.3 billion with a mix of commercial and residential properties. Hollywood recognizes the importance of dunes in reducing erosion, protecting adjacent infrastructure, and capturing sand. The City Commission created a Taskforce in January 2018 to assist staff in the development of a Dune Master Plan. This plan will provide guidance in the strategic placement of dunes and create maintenance standards. The plan is anticipated to be completed by summer 2019. As the Hollywood Dune Master Plan will provide a local standard for existing and new dunes, we request that this plan be considered for incorporation into standards developed for Broward County Segment 3 Project. If you have any questions, please contact me at 954-921-3201 or lm-b@hollywoodfl.org. Sincerely, Lorie Mertens Black Chief Civic Affairs Officer C: City Manager City Commission	
U.S. Fish and Wildlife Service		
Date: December 19, 2018		
Jeff Howe Coastal Fish & Wildlife Biologist South Florida Ecological Services Office	**Email:** Hello Wendy: In regard to the Corps' 3 December 2018, letter concerning the Corps' evaluation of 16 existing Federal CSRM projects to determine whether additional or modification of dunes will contribute to authorized project purposes, etc., will we have access to additional project specific information to comment on? Thank you, Jeff Howe Coastal Fish & Wildlife Biologist U.S. Fish & Wildlife Service South Florida Ecological Services Office 1339 20th Street Vero Beach, Florida 32960 (772) 469-4283 (Office)	**Wendy Dauberman** Hi Jeff. Thank you for your email. Yes, there will be more specific information provided on this study during the public review period. This will probably occur around the May or June time-frame. Thanks.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	(772) 562-4288 (FAX)	
Palm Beach County Government		
Date: December 21, 2018		
Deborah Drum Director of Environmental Resource Management	**Letter:** Dear Ms. Dauberman: This is to affirm the support of Palm Beach County's Department of Environmental Resources Management (ERM) for the evaluation of design changes to add or modify sand dunes in the five Federal Coastal Storm Risk Management (CSRM) projects located within Palm Beach County. Palm Beach County has successfully constructed numerous dune features throughout the county over the last 20 years and considers them an integral design element. Dunes provide a reserve of sand within the active beach system and vegetated dunes provide additional erosion protection. Dunes aid in controlling light pollution and reduce sea turtle disorientations. Recent storm have shown that areas with shoreline protection projects including dune features fared better than areas without projects. Palm Beach County ERM encourages the evaluation, by the Army Corps of Engineers (Corps), or existing CSRM projects for the inclusion of dune features, as supplemental elements to existing project templates and associated volumes. Sincerely, Deborah Drum, Director Environmental Resources Management	Thank you for your comment.
City of Jacksonville		
Date: December 28, 2018		
John P. Pappas, P.E. Director of Public Works	**Email:** Ms. Dauberman Zerby, In response to Dr. Gina Paduana Ralph's 12/3/18 "scoping letter" associated with the potential incorporation of Dune to the Duval County Federal Shore Protection Project, the City of Jacksonville supports the incorporation. As offered by Dr. Ralph's letter, attached herewith is the City of Jacksonville's views and comments concerning the subject.	**Wendy Dauberman** Dear Mr. Pappas, Thank you for your email and interest and support in this effort. Your understanding of the need for projects like is appreciated.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Please let me know if you have any questions or require additional information. Thank you for the opportunity to provide input into this very important subject. John P. Pappas, P.E. Director of Public Works City of Jacksonville **Attachment (Letter 1):** Re: Incorporation of Dunes to Duval County Federal Shore Protection Project Dear Ms. Dauberman: The following responds to the District's scoping letter dated December 3, 2018 in regard to the evaluation of sand dunes in existing Federal Shore protection projects. The City of Jacksonville, as the non-federal sponsor of the Duval County, FL Federal Shore Protection Project, supports the adoption of dune restoration and maintenance within the cost-shared federal project. As you are aware, a dune element is already included within the Duval County project through Section 934 Study Re-Evaluation Report with Environmental Assessment (October 1990). However, the ASA approval of that study, dated February3, 1992, stated that operation, maintenance, repair and rehabilitation of sand fencing and grassing (i.e., "dunes") will be a non-federal responsibility. As such, the City of Jacksonville has restored and maintained the sand dune along the federal shore protection project at 100% non-federal cost, with some of the work being conducted through Corps' contracts on behalf of the City with City funds. Most recently, this includes repair of the dunes after sever erosion damage by Hurricane Matthew in 2016 and Hurricane Irma in 2017. The value of the dunes for flood risk reduction and shore protection is indisputable. The robust sand dunes along the Duval County shore protection project, constructed from the early 1990's, clearly prevented wide scale flooding of the Jacksonville Beaches from Hurricane Matthew in 2016. In those locations where the dune was compromised or missing (such as street-end vehicle access paths), inland flooding, over wash and	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	inundation along several city blocks was observed. Otherwise, the vegetated sand dunes – though severely eroded by the storm – prevented shorefront flooding, despite complete over wash of the beach berm. As a result, the Jacksonville Beaches were nearly fully functional within a day after the storm. Furthermore, the rapid repair of the dunes, completed within just 9 months after Hurricane Matthew – proved its value by again preventing upland flooding and shorefront damage from Hurricane Irma, one year after Matthew. While Matthew and Irma were of similar intensity, upland flooding and damage was even less in Irma than in Matthew beaches, in part, almost all of the previous gaps in the dune has been closed by the post-Matthew dune repairs (or temporarily closed at street-end vehicle access paths, by sand scraped from the high tolerance beach berm). Dune vegetation was installed after the post-Matthew repairs, and it will be re-installed after the post-Irma repairs. Vegetation is also planted annually by local interests. Sand fencing is typically discouraged where the dune is already rebuilt, so that the dune does not advance anomalously upon the authorized beach berm. The appropriate dimensions of the dune (height, width, slopes, seaward location) have been determined and implemented as part of the post-Matthew and post-Irma dune repairs constructed by the District with city funds. These dimensions reproduce the pre-storm dune dimensions recorded by monitoring surveys prior to Hurricane Matthew, albeit shifted about 10 to 20 feet landward to correct seaward encroachment of the dune upon the active berm. The City of Jacksonville supports federal costs-share adoption of the dune feature into the shore protection project, and it supports consideration of actions that will mitigate storm water discharge and that will address gaps in the dunes while still ensuring safe access for life-safety, monitoring, maintenance, and heavy construction vehicles. The Corps is encouraged to coordinate closely with the City of Jacksonville, and the Beaches Cities, during its formation of concepts and plans for dune improvements. Please contact me at (904) 255-2748 if you have any questions regarding these observations. Thank you for the opportunity to comment on this matter. Sincerely, John P. Pappas, P.E. Director	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Cc: Jason Harrah, USACE/SAJ Honorable Charlie Latham, Mayor of the City of Jacksonville Beach Honorable Elaine Brown, Mayor of the City of Neptune Beach Honorable Ellen Glasser, Mayor of the City of Atlantic Beach Honorable Bill Gulliford, City of Jacksonville, District 13 Councilmember Sam E. Mousa, Chief Administrative Officer, City of Jacksonville Kevin Bodge, Olsen Associates Inc. Ed Starnes, P.E., Acting Chief, Engineering & Construction Management Division Gary Goldsberry, P.E., Engineering & Construction Management Division	
Youth Environmental Alliance (YEA)		
Date: December 29, 2018		
Lee Gottlieb Director of Community Outreach	**Email:** Hello Wendy Please see our comment regarding the scoping process to evaluate design changes to add or modify the 16 existing Federal Shore protection projects for Segment 3, Broward County as well as the other miles of beach / shoreline in Broward County. We are very pleased that the USACE is considering mandating dunes / dune restoration to be included as part of the federal authorized project template. Lee Gottlieb Director of Community Outreach Youth Environmental Alliance (YEA) www.yeafrog.org **Attachment (Letter 1):** **December 27, 2018** Dear Ms. Dauberman: This letter is sent on behalf of the Youth Environmental Alliance (YEA), a South Florida based 501(c) nonprofit organization to provide brief comments as part of the scoping process to evaluate design changes to add or modify the 16 existing Federal Shore protection projects for Segment 3 in Broward County, as well as the other miles of beach / shoreline in Broward County.	**Wendy Dauberman** Dear Mr. Gottlieb, Thank you for your email and support of this effort. Your understanding of the need for projects like this is appreciated. You will receive more information on this study as it becomes available. Thank you.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	We are very encouraged that the USACE is considering mandating dunes / dune restoration to be included as part of the federal authorized project template. We firmly believe that the restoration of our coastal dune system should be an integral part of ALL future beach re-nourishment project. Our organization firmly believe that the dune system: 1) Provides a natural barrier between the ocean waves and valuable residential property and that without the dune, our coastline and coastal properties would be vulnerable to storm surge, stronger winds, sand displacement and the rising sea levels predicted for the future. 2) Is an effective method to mitigate future beach erosion. 3) Helps restore and protect wildlife habitat for animals such as sea turtles, pollinators, nesting migratory birds and shorebirds 4) Affords a first line of coastline defense in the protection of the property and infrastructure. In advance of future beach re-nourishment project, our organization endorses and supports the efforts of our coastal municipal partners, the Town of Lauderdale-by-the-Sea and the City of Hollywood, in developing a Dune Master Plan. Please review and incorporate the feedback you receive so that the local standard in Broward County for existing and new dunes is followed for the Broward County Segment 3 Project and all of the County's Federal Shore Protection Projects. Feel free to contact me at 954-684-0609 or lee@yeafrog.org. Kind regards, Lee Gottlieb Director of Community Outreach Youth Environmental Alliance Office: (954) 382-0188 Fax: (954) 382-9770 www.YEAfrog.org	
South Florida Audubon Society		
Date: December 30, 2018		
Doug Young	**Email:**	**Wendy Dauberman**

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
COO, South Florida Audubon Society Board Member, Audubon Florida representing SE Florida Member, Florida Shore and Beach Preservation Association Member, SE Florida Shorebird Alliance	Hi Wendy: Attached is a letter from South Florida Audubon Society (SFAS) with brief comments addressing the changes to 16 existing Federal Shore protection projects for Broward County – Segment 3 as well as many additional miles of the shoreline in Broward County. SFAS is 100% supportive of USACE making dunes / dune restoration mandatory for federal projects. Please add SFAS to the mailing list if not already on: South Florida Audubon Society 10871 W Clairmont Circle Tamarac, FL 33321-5806 Thank you and Have a Happy New Year 2019! Kind regards. Cheers, Doug Doug Young, COO South Florida Audubon Society Board Member, Audubon Florida Member, Florida Shore and Beach Preservation Association Member, SE Florida Shorebird Alliance dyoung@southfloridaaudubon.org 954-232-1956 **Attachment (Letter):** Dear Ms. Dauberman: This letter is sent on behalf of the South Florida Audubon Society (SFAS) Board of Directors and the membership of the Broward County Audubon to provide brief comments as part of the scoping process to evaluate design changes to add or modify not only the 16 existing Federal Shore protection projects for Segment 3, Broward County as well as the other miles of beach / shoreline in Broward County. We are very pleased that the USACE is allowing dunes / dune restoration to be included as part of the federal authorized project template. We endorse and support coastal dune restoration projects. The South Florida Audubon Society believes dunes are important because they provide	Dear Mr. Young, Thank you for your email and support of this effort. Your address has been added to the mailing list and you will be notified as more information becomes available on this study. Thank you.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	a first line of defense, a barrier against sea level rise and beach erosion which provides needed resiliency to help Southeast Florida provide a sustainable coastline / habitat for marine life and the community. One of our key conservation initiatives involves multiple projects along the beaches / shoreline of Broward County for Coastal Dune Restoration Projects. With our partner organizations and the support of corporate sponsors and their employee volunteers as well as hundreds of student and adult volunteers, we have been planting tens of thousands of sea oats and diversity plants from Deerfield Beach at the North to Hallandale Beach at the South. Please review and incorporate the feedback you receive so that the local standard in Broward for existing and new dunes is followed for the Broward County Segment 3 Project and all of the County's Federal Shore Protection Projects. Feel free to contact me at 954-232-1956 or dyoung@southfloridaaudubon.org Kind regards, Doug Young COO, South Florida Audubon Society Board Member, Audubon Florida representing SE Florida Member, Florida Shore and Beach Preservation Association Member, SE Florida Shorebird Alliance 954-232-1956 dyoung@southfloridaaudubon.org www.southfloridaaudubon.org	
Turtle Dunes Property Managers, LLC		
Date: December 30, 2018		
Angelica Palank-Sharlet President, Turtle Dunes Property Managers, LLC	**Email (1):** As the sole shareholder of a Florida Limited Liability Corporation which holds title to a home at 147 North Beach Road on Jupiter Island, Florida, I would like to make comments and communicate our unique situation. For ease of communication, I will refer to this property as my house. Upon viewing the property, whether on-site or by documentation, one will notice that this little home is one of the most northward of any on the ocean of Jupiter Island, and that our parcels are very narrow, with our	**Wendy Dauberman** Dear Angelica Palank-Sharlet, Thank you for your email and interest in this effort. Your property at 70 Bay Colony Lane is located about 0.5 miles west of the Broward County Segment II Project. The potential addition of dune features to this project should not have any impacts to your home.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	structures on the primary dune. We are in a very different circumstance than any other, with my property being at the highest risk. If I am understanding the communications I have received from Jupiter Island, as well as the Army Corps of Engineers, the proposed changes would appear positive in creating a broader protection of sand behind my structure. Obviously that would be desirable to me. However, I wanted to have a discussion that I believe would only impact my property, and none of my neighbors. As all involved are aware, we have had some very serious periods of erosion, and can always expect more. During some of these events I have had discussions with John Duchock, the Beach District Manager for Jupiter Island, as well as the local person for Florida's Department of Environmental Protection. There are some pictures that would better help visualize the unique threat to my home alone, but pictures do not explain some issues that I perceive to be relevant. Of the last six homes at the north end of the beach, three had concreted in large revetments before they were stopped. The two houses to the north of me were allowed to be raised--the northernmost only after it fell into the ocean, and my next neighbor north more recently by approvals, but which had been allowed a very extensive revetment over several years. Differently, my home had a small revetment, placed against my will, because I was working to completely rebuild my house, and the small revetment actually caused intrusion in the existing house because it was three feet taller than my floor level. While seeking to rebuild, Jupiter Island would not allow me to raise my structure onto pilings, instead obligating me to pour my new foundation three feet deeper, thus four-and-one-half feet thick. That house is now over 13 years old, and is not a candidate for raising it any longer, due to the weight of the structure with the "new" foundation. My unique concern is that our very narrow revetment, in times of severe erosion, shows to be quite inadequate in supporting the structure itself. I have asked repeatedly, during such periods where even the base of the revetment itself are exposed, to be allowed to bring in more rocks to support the base of the revetment--not to the full height of the revetment, but to add lower strength for this narrow stack of rocks. Otherwise, I have asked to a special exception to be allowed to have concrete shot into the openings between the rocks so as to strengthen the total revetment structure.	Your property at 147 North Beach Road on Jupiter Island is not part of an authorized Federal Project and is not being investigated as part of the effort described in the scoping letter that you received. We are not able assist with the issues that you are having at your Jupiter Island property. Those issues will need to be resolved with Jupiter Island the Florida Department of Environmental Protection. Best regards

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	This would need to be done while sand is not present. We much appreciate our annual turtle nursery, and want to support more nesting. However, turtles do not lay eggs in boulders or in tides, and that is all that exists during these erosion events. That is why I am asking that, before this expansion is finalized, that boulders be brought in against the lowest part of my revetment, and only then covered with sand. Because of what my neighbors on each side has done on their properties, my property is more severely scoured. I walk the beach frequently as well as paddle along the shore, and there is no other home that has these threats. I have been placed in a unique set of circumstances through no fault of my own, and ask for help that is extremely minimal compared to those around me, and the exposure to complete loss of a valuable home. Thank you for allowing my comments, and I hope to hear from your agency about how we can resolve this issue. My home address is 70 Bay Colony Lane, Fort Lauderdale, Florida 33308, and my cell phone number is (954)849-2628. Sincerely, Angelica Palank-Sharlet President, Turtle Dunes Property Managers, LLC **Email (2):** Please accept my apology for confusing which home was relevant to the letter. Thank you for responding. Angelica Palank-Sharlet	
Hillsboro Shoes Improvement Association, Inc. (HSIA)		
Date: January 02, 2019		
Sam Tedesco Chair - Beach Committee	**Email**: Ms. Dauberman, Please see the attached response to Gina Paduano Ralph's Scoping letter of Dec 3, 2018 along with several photographs taken in the last 3 days. This	**Wendy Dauberman** Dear Mr. Tedesco, Happy New Year to you as well.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
2nd VP/HSIA Board	letter is from Matt Herren, President of the Hillsboro Shores Improvement Association (HSIA), representing over 350 families on the South side of the Hillsboro Inlet. Thank you and Happy New Year! Sam Tedesco Chair - Beach Committee 2nd VP/HSIA Board 954-254-3244 **Attachment (Letter)**: Re: CSRM Project Scoping Letter dated Dec 3, 2018 Dear Ms. Dauberman, This letter is in response to Gina Paduano Ralph's Scoping letter dated Dec 3, 2018, as it relates to the CSRM Project within Segment II (from the Hillsboro Inlet to Port Everglades) in Broward County, FL. The Hillsboro Shore Improvement Association (HSIA) represents over 350 families residing immediately South of the Hillsboro Inlet. Without a doubt, the single most important issue affecting our residents and their quality of life involves the escalating erosion of the beach that is the centerpiece of our community. Most of our residents moved here specifically because of the neighborhood's proximity to the beach and in fact, use it daily. This beach is also heavily used by tourists staying at the hotels, condominiums and rental units to the South as they walk to the inlets to view and photograph the historic Hillsboro Lighthouse, a major attraction heavily promoted by the City and County. There is a misconception that this beach is adequately renourished by the dredging operation conducted by the Hillsboro Inlet Navigation District. As the photos that I've attached here show, this is not the case. The dredge is often idle due to a lack of sand on the North side of the inlet where the dredge operates. This is often the case even in the winter, when the erosion is at its worse and there are not turtle nesting issues. The HSIA is currently organizing meetings with Pompano's new Mayor, District 1 City Commissioner and Broward County District Commissioner as well as out State and Congressional Representatives as this matter affects not only our neighborhood, but the City and County as well. We fully support the concept that the USACE codify that the Northern limit of Segment II of the Federal CSRM project be the South side of the Hillsboro	Thank you for your email and information that was provided in the letter. As more information becomes available on this effort it will be provided. Thank you.

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Inlet jetty. We respectfully request a dialogue with the appropriate USACE official(s) to discuss the aspects of the project as they relate to this concern. We'd be happy to include a representative from USACE at our meetings with our elected officials. Respectfully yours, Matt Herren President Hillsboro Shores Improvement Association (HSIA) wmherren@gmail.com | 561-441-3939	
Capps Land Management & Material, LLC		
Date: January 02, 2019		
Clyde Cross V.P. of Operations	**Email (1)**: Re: Add or Modify Sand Dunes in 16 Existing Shore protection projects in 10 Florida Counties. Dear Ms. Dauberman, We are aware of the scoping letter regarding the 16 Projects. We are interested in this Project from the construction and maintenance scope. Is there a timeline on when this work would be available? Will it all go to one vendor? Is there anything I can do now that could help in the future? I welcome any comments or suggestions you have and we would like to be placed on your document / notifications list for this work. Sincerely, Clyde Cross V.P. of Operations Capps Land Management & Material, LLC 114 Halsema Road South Jacksonville, Florida 32220 Office (904) 693-8644, ext. 32 Cell: (904) 859-4515 clyde@cappsland.net	**Wendy Dauberman** Dear Mr. Cross, Thank you for your email and interest in this effort. This project is currently in the study phase. For your information, projects for USACE are advertised on the https://www.fbo.gov/ . Best regards

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
Broward County		
Date: January 04, 2019		
Nicole S. Sharp, P.E. Natural Resources Administrator	Email: Please see attached. NICOLE S. SHARP, P.E., NATURAL RESOURCES ADMINISTRATOR Environmental Protection and Growth Management Department ENVIRONMENTAL PLANNING AND COMMUNITY RESILIENCE DIVISION 115 S Andrews Ave, Room 329-H | Fort Lauderdale, Florida 33301 954.519.1231 Attachment (Letter): Re: Support for Sand Dune Study for Incorporation into Broward County Shore Protection Projects Dear Dr. Ms. Dauberman, I am writing this letter of support for Broward County's Segment II and III Shore Protection projects, the County has a vested interest for incorporation of dunes into the Federal design as we are ground zero to sea level rise. The County recognizes the importance of dunes un reducing erosion, protecting adjacent infrastructure, and capturing sand. The County recently completed the Segment II Shore Protection project, which contained a locally cost-shared option that added over 105 miles of new dune system. Additionally, the County plans to incorporate dunes into the upcoming Segment III Shore Protection Project. As the Local Sponsor, we request that the Corps consult with the County during the design and planning process in order to determine the best local dune standard for our area. We look forward to working together during this process, and if you have any questions, please contact me at 954-519-1231 or nsharp@broward.ordg. Sincerely, Nicole S. Sharp, P.E. Natural Resources Administrator	Wendy Dauberman Dear Nicole, Thank you for the letter from Broward County supporting this effort. Best regards
Surfrider Foundation		
Date: January 07, 2019		
Alec Buchness	**Email (1)**:	**Wendy Dauberman**

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
Chair, Sebastian Inlet Chapter	Dear Ms. Dauberman-Zerby, Good morning. Our organization, the Surfrider Foundation Sebastian Inlet, sent a letter of response on 01/03/19 for delivery via USPS on 01/04/19 (Tracking #407 943 138). In checking the tracking information, it appears there was trouble being delivered and a request for rescheduling delivery was issued. We trust someone on your side received that notice. In interim, please see the attached copy of the original letter. Will this suffice? Look forward to your comments. With most kind regards, Alec Buchness Chair, Sebastian Inlet Chapter Surfrider Foundation Mobile: 321-505-2872 Email: chair@sebastianinlet.surfrider.org Web: https://sebastianinlet.surfrider.org/ **Attachment (Letter 1)**: To Whom It May Concern, Our committee on conservation issues has reviewed the scoping letter dated December 3rd, 2018 that outlines the process you intend to use to add and/or modify the existing sand dunes in our area (Map ID 5 South Reach). We have numerous concerns we wish to raise concerning this process. They are listed as follows, in no particular order: 1) What are the planned fill erosion rate targets? 2) What are the fill quality standards for each area? a) What sand sources are viable? b) What is the sediment steady state for large dunes? c) What is the breakdown of funding sources for fill? 3) What environmental impacts will be studied? 4) How will modeling of large Dune structures be performed? 5) Will there be native plant promotion on dunes? 6) Critical surf and fishing zone habitat impacts	Dear Mr. Buchness: Thank you for your interest in this effort. We did receive your letter and the concerns brought up will be considered. This effort is only looking into modifications for future nourishments of the existing North and South Reach Projects which could increase the existing project resilience to erosion by including a dune feature. In general, we do not anticipating increasing the amount of san being placed, changing the project footprint, or causing additional impacts. We will try to promote native plants to help stabilized the dunes and enhance dune habitat wherever we can. At the moment we are still in the very preliminary stages of developing recommendations for dunes. As more information becomes available on this study it will continue to be made available to the public for review and comment. No public hearings or meetings have been scheduled at this point. Best regards

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	a) Turtle nesting impact? b) Reef structure habitat disruption? 7) Mean high water modeling impacts a) transient effects due to large dune migrations b) shoreline modeling changes c) Critical shoreline fill profiles due to storm impacts 8) Frequency of significant storm impacts on historical dune migration. a) If high impact storms are increasing in frequency, do large dunes provide positive impact? b) Dune migration due to large and higher frequency storm events. 9) Modeling Alternatives a) Cost benefit model (50 years) for ROI of project. b) Cost for managed retreat vs time and sea level rise. What areas most likely to consider. c) Insurance/taxing cost models based on sea level rise, FEMA cost sharing. We thank you in advance for your consideration of these points and look forward to your response. May we also request that any public meetings also be held in central Florida as well as Jacksonville? We do not wish to see a burden placed on any citizens interested in attending. Sincerely, Aaron Adams, Ph.D. Conservation Policy Chair Alec Buchness Chapter Chair **Email (2)**: Hello Ms. Dauberman-Zerby We wish to confirm that you received the attached letter? The tracking information states it arrived at your PO box on 1/4/19 and is available for pickup. Also, have you scheduled any public hearings yet for the two Brevard county projects (map ID 4 & 5). If so, please advise when and where. Thanks in advance, Alec **Email (3)**:	

COMMENTER	AGENCY COMMENT	CORPS RESPONSE
	Dear Ms. Dauberman, Thank-you so much for the confirmation and detailed reply. We work closely with the local government officials here, as well as the public at large. As I'm sure you're aware, this region is home to critical sea turtle nesting habitat, as well as a renowned fishing and surfing region. The information you provided will be very helpful in our outreach efforts. Thanks again. Please feel free to reach out to us at any time. With most kind regards, Alec	
Seminole Tribe of Florida		
Date: January 28, 2019		
Bradley M. Mueller, MA Compliance Supervisor STOF-THPO	**Email**: Subject: NEPA Scoping – Sand Dune Design Changes in 16 Existing CSRMs THPO Compliance Tracking Number: 0031364 Dear Ms. Dauberman, Thank you for contacting the Seminole Tribe of Florida – Tribal Historic Preservation Office (STOF-THPO) regarding initiation of the NEPA Scoping process – Sand Dune Design Changes in 16 Existing CSRMs. The proposed undertaking does fall within the STOF Area of Interest. We have no comments to make at this time, however please continue to update us as the process proceeds. Feel free to contact us with any questions or concerns. Respectfully, Bradley M. Mueller, MA, Compliance Supervisor STOF-THPO, Compliance Review Section 30290 Josie Billie Hwy, PMB 1004 Clewiston, FL 33440 Office: 863-983-6549 ext. 12245 Email: bradleymueller@semtribe.com	**Wendy Dauberman** Mr. Mueller, Thank you for your interest in this project. You will continue to receive information as this process proceeds.

PUBLIC COMMENT	CORPS RESPONSE
Kenneth Juro	
Date: December 05, 2018	
Ha Wendy does this pertain to our property at 2769 spv beach fl 32082 we lost a lot dunes an sand due to matthew i an irma when will projet start thanks ken juro 904-403-9636	**Wendy Dauberman** Mr. Juro, Thank you for your email. This study pertains to the properties that received the scoping letter. Currently, this is a study and there are no project construction dates. You will receive future mailing to keep you informed. Thank you again.
Bill Frondorf	
Date: December 08, 2018	
Ms. Zerby: As a degreed oceanographer, who studied the stabilization of Ponce Inlet as an undergraduate thesis, I feel competent to discuss this issue. Most of the identified beaches are south of stabilized inlets, which were designed by the ACOE. As you know, migrating beach compatible sand is trapped on the north side of most of these inlets, ultimately carried around the east end of the inlets by the weak southerly counter current, and carried offshore by the outgoing water flow, where it is lost from the beach environment for ever. Some does go inshore, where it forms sandbars and affects navigational channels. With the loss of this true beach sand, there are no compatible windblown fines to naturally build the dunes. Same with true beach material. Thus, any resulting dunes or beaches are nowhere near natural. Emphasis MUST be placed on protecting this valuable TRUE beach sand and allow it to continue it southerly migration. Pumping dirt from the ocean floor is hardly beach material. Look at the disastrous results. Unnaturally steep beaches, clouded water in the high energy surf environment, and continued beach erosion. Bill Frondorf wafinfla@gmail.com	**Wendy Dauberman** Mr. Frondorf: Thank you for your email and the information provided in it. This information will be considered in the environmental assessment.

PUBLIC COMMENT	CORPS RESPONSE
Janet Levy	
Date: December 10, 2018	
Dear Wendy, We received your notice the other day regarding evaluating design changes to add or modify sand dunes. Our address is 500 South Ocean Blvd Palm Beach, Fl 33480 We are very interested and concerned about any beach nourishment and would like to be informed of any and all decisions regarding sand changes along our coastline. Please keep us informed. Thank you, Janet Levy	**Wendy Dauberman** Miss Levy, Thank you for your email. I appreciate it. The USACE will continue to keep you informed.
David and Merrilee Lundquist	
Date: December 11, 2018	
Subject: Ocean Ridge Beach As an Ocean Ridge beachfront owner, we will recount our experiences with beach renourishment and dune maintenance. We have experienced two beach renourishments with pumped sand from the ocean bottom. The sand was lightweight and resulted in difficulty walking on the beach. In both projects, most sand was lost within a year and the beach returned to its previous boundaries. The sand migrated south, which was a benefit. We have replanted our dune with approved DEP plants three times after hurricanes at a cost of $2000 each time. Hurricane Sandy took out 20 feet of dune that had 50 year old sea grapes plus everyone's very heavy stairs. Planting will recapture sand slowly but can be wiped out in a day during a storm. Numerous newspaper articles report that artificial reefs, which can be old ships, rocks, etc. sunken off shore become over time shelters for marine life as well as barriers to waves which break offshore instead of damaging the existing shoreline. This can mitigate significantly the wave action which erodes dunes and vegetation. Natural rocks placed in front of dune would preserve them and would last (The Breakers in Palm Beach has installed large rocks) Our property is between two aged groins. They are effective in trapping sand. The downside is the south side beach is 4 1/2 ft. lower than the beach on the north. Groins should be managed with sand pushed over once a month to even out the beaches. Groins are effective in catching sand and directing the flow. Groins are a favorite spot for fishing. Ocean Ridge has a sand pump installed at the county owned beach property by the Boynton Inlet. This sand pump is supposed to transfer sand flow that is lost in the inlet. It is inoperable most of the time. This continuing flow of sand is necessary. In our opinion, the dumping of new sand to expand the beach seaward is a waste of money. We need a	**Wendy Dauberman** David and Merrilee Lundquist, Thank you for your email and the information provided in it. This information will be considered.

PUBLIC COMMENT	CORPS RESPONSE
program that has artificial reefs, rocks, etc. along with a moderate sand renourishment. An integrated program will extend the useful life of a beach restoration. David and Merrilee Lundquist 6277 N. Ocean Blvd. Ocean Ridge, Fl.33435 (561) 736 8642	
William (Bill) Sincavage	
Date: December 13, 2018	
My name is Bill Sincavage and I reside at 1340 South Ocean Blvd, Pompano Beach, FL. 33062 a condo on the Beach. One of our residents has taken upon himself to be the savior of the dunes. He had contacted some and supposedly got permission and help from our representatives to add sea oats to a section of the dunes. He is now proposing another project which I will include the pictures. Our condo has sent about $10,000 and now a proposed another $10,000 to plant more sea oats. I was always under the impression that nobody can mess with the dunes. He claims that he has permits and permission to go ahead. Is it true that they can make changes? The part that really bothers me is that he wants to cut out parts of the dunes and put chair racks. He said that he was told he can do this. Could you please reply to me or phone me at 570-656-1099	**Wendy Dauberman** Mr. Sincavage, Thank you for your email. I have forwarded it to Florida Department of Environmental Protection for their review. **Wendy Dauberman** **FW to: Libbie.McDearmid@dep.state.fl.us** Libbie, I received this complaint from a citizen in Pompano Beach, so am forwarding to FDEP. The person's email address is showing below in the event he needs to be contacted. Thank you. **Libbie McDearmid** **RE: Wendy Dauberman** Good afternoon, The dunes and dune planting are generally managed CCCL permitting. I am forwarding this email to the CCCL Compliance office, Shonna Culver, and the CCCL field representative for Broward County, Jenna Caderas. I have also CC'd the CCCL permit manager for Broward County, Josh Adams, in with this response. Jenna,

PUBLIC COMMENT	CORPS RESPONSE
	I called Mr. Sincavage and let him know you would be contacting him to make a site visit and discuss the proposed changes to the dune vegetation. Please see the email below for details. Property and Contact information: 1340 South Ocean Blvd, Pompano Beach, FL 33062 Bill Sincavage: (570) 656-1099 Thank you, Libbie Libbie McDearmid JCP Compliance Officer Beaches, Inlets and Ports Program Division of Water Resource Management Florida Department of Environmental Protection 2600 Blair Stone Road, Rm 510B Tallahassee, Florida 32399-2400 Libbie.McDearmid@floridadep.gov Office: (850) 245-7539 Fax: (850) 245-8499
David Heath	
Date: December 19, 2018	
I received Ms. Ralph's letter about beach PARA work in Florida and I had several questions I hoped you could answer. First off, could you please add me directly to your mailing list for this project updates. It is David Heath, 2706 Manhattan Ave. Baltimore, MD 21215 (or at the e-mail dheath@friendsbalt.org). The house that my family owns in on Briny Ave. in Pompano Beach, right on the beach. It looks like you are doing two projects, totally over 19 miles in Broward County. I could not tell from the map. Is part of either of those segments along Briny Ave. in Pompano Beach? It is just 1/4 mile south of Atlantic Blvd. Also, I know this project has to balance several sometimes competing goals, but it is our hope that you do not build dunes up to the point that we could not see the water from our first floor patio. Thanks - I will look forward to hearing from you. David Heath	**Wendy Dauberman** Thank you for your email and interest in this effort. Your property on Briny Ave is located within the authorized limits of the Segment II Project which extends from Hillsboro Inlet to Port Everglades. Beach nourishment events associated with this authorized project have taken place directly in front of your property in 1970, 1983, and 2013. In 2016 a nourishment event took place immediately south of Briny Ave.

PUBLIC COMMENT	CORPS RESPONSE
Owner, 408 Briny Ave. Pompano Beach FL 33062	Your understanding of the need for projects like this to balancing competing goals and interests is appreciated. We will certainly take the concerns of property owners, such as impacts to views, into account when developing the design for adding dune features to the existing project. Additionally, your mailing address has been added to the mailing list for this project. Thank you again.
Leon Chow	
Date: December 27, 2018	
Thank you for your email. Will the St Johns Project / Map ID 3 be dependent upon the county passing an MSTU for funding, or will be project be proceeding regardless? Leon Chow 4470 Coastal Highway	**Wendy Dauberman** Dear Mr. Chow, Thank you for your e-mail and interest in this effort. The St. John's County, FL, St. Augustine Beach project (Map ID 3 listed on the scoping letter map) does not include Vilano Beach where your property at 4470 Coastal Highway is located. I apologize for any confusion that receiving this letter may have caused. The letter is associated with an effort to increase the resilience of existing Federal projects such as the one in St. Augustine Beach by adding dune features to the design. However, the Army Corps in partnership with St. Johns County have a separate ongoing effort that does involve dune and beach nourishment in Vilano Beach. A coastal storm risk management study has been completed which recommends dune and beach nourishment along approximately 2.6 mile in Vilano Beach.

PUBLIC COMMENT	CORPS RESPONSE
	The full report can be viewed at https://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/. Your property is located within the area of the proposed project which would extend from the Serenata Condos to San Pelayo. This project is currently in the pre-construction engineering and design phase with construction scheduled for 2020. Both the Vilano and St. Augustine Beach projects are cost shared with St. Johns County who is the non-federal sponsor for these projects. We cannot answer the question of if a project will or will not proceed dependent on the passing of a MSTU. That question would need to be answered by St. Johns County. Best regards
Gray King, Sr.	
Date: December 28, 2018	
Morning's greetings and Season's greetings, Ms. Dauberman-Zerby, As a property owner in Lee County, Florida, I am pleased to know the Corps is initiating a study of the defined coastline, and assume we will continue to receive letters as evaluations are conducted. So....thank you in advance for these forthcoming efforts. A concern I have would only become real under certain actions the Corps may recommend in Lee County. Those concerns include additional or larger dunes and/or other barriers impact on sight lines to the Gulf, but most especially, access to the shoreline. If "cut-throughs", boardwalks over the dunes, etc. become necessary who determines how many and where those are located and who bears the costs of any construction/infrastructure for pedestrian access? What is required to make any needed new or additional walkways included as part of the perceived project's improvement to robustness, resiliency, and reliability? I know it is premature to define what may happen, but find it necessary to express my concerns and ask that a prevenient and ongoing dialogue be opened as the design considerations are in the earliest stages. So, again, thank you in advance for future updates as the design evaluations unfold. W Gray King, Sr 320 Gulf Blvd	**Wendy Dauberman** Dear W. Gray King, Sr., Thank you for your email and interest in this study. Your concerns about impacts to line of sight and beach accessibility will certainly be taken into account when developing the design and specific plans for adding dune features to the existing project. At this time we do not have answers to your questions about the location, costs, and requirements for potential improvements to pedestrian beach access. In general we will try minimize impacts to existing beach access as much as possible. A draft Engineering Documentation Report (EDR) with more detailed information is being prepared and will be provided for review and comment.

PUBLIC COMMENT	CORPS RESPONSE
Unit 5C Boca Grande, FL **Email (2):** **Response to Gray King from David Carpenter (DCarpenter@Neeccontrols.com)** Gray: Good background work...obviously more info to follow on the "pedestrian access" issues in this New Year. Two key questions as you have already noted (1) what is the Assn's exposure if BGBC is responsible for the cost of these walk-ways, if any?....and (2) whether these are eventually defined as "permanent structure" that must be maintained by the Assn. The recent high water two weeks ago is evidence that with full moon, high tide and rough surf....the water can get up pretty far in front of the sea wall. David C.	We appreciate your comments and will be taking them into consideration as we complete the study. Thank you.

PUBLIC COMMENT	CORPS RESPONSE
Richard Blumberg	
Date: January 11, 2019	
Good morning Wendy. I spoke to Marty Durkin last week about my hopes that the work you are planning will lead to positive changes to the beach south of the Hillsboro inlet. As far as dunes go, there are none at this time. Not too long ago, there were very steep dunes that made it difficult for my wife and I to reach the water and return. The beach is a mess. At times, we have the smallest amount of sand that I have seen in my 18 years here. There has been very little dredging and 10, 100 pound pipes have found a home on my new neighbor's property. The only clean up that has taken place is due to the residents and the state of Florida has removed the garbage cans and advised beachgoers to take their garbage with them. Not surprisingly, most don't. There is a concrete garbage can that, for the last year, has been half buried at the water's edge. The one thing we have had in abundance is seaweed. All of this has impacted greatly on the usage of the beach by residents and tourists. This doesn't bother the homeowners but it should be a concern to Pompano Beach officials. I have very little idea of the scope of your project or which, if any, of the problems will be addressed. Marty thought it would be a good idea to get the issues "on the record" and it seemed like a good idea. I hope the work that you do is beneficial to beach homeowners in Pompano Beach and throughout the state. Richard Blumberg 2304 Bay Drive Pompano Beach, FL 33062	**Wendy Dauberman** Mr. Blumberg, Thank you for your email and interest in this effort. I appreciate your comments. I found this site for you to report the garbage issue. I hope it helps. http://pompanobeachfl.gov/pages/pw_report/report Thank you again.
Mark Brown	
Date: January 31, 2019	
I am Mark Brown, former Vice Mayor of Lauderdale-By-The-Sea, FL. I am writing to comment on the proposed design changes to the dune projects which are planned in Florida. I apologize for submitting my comments late and hope that they can still be added to the public record. I would urge the Army Corps of Engineers to use Lauderdale-By-The-Sea as a template for designing future dune restoration projects. We have implemented a low-cost, environmentally sound program for building up and maintaining our dunes in LBTS which I believe could be an effective model for other coastal communities. By way of background, LBTS is about 2.4 miles long and is located entirely along the coast in Broward County. In 2012, our entire beach was washed away as a result of Tropical Storm Sandy. The damage was so extensive that the Army Corps conducted an emergency sand replenishment project in 2013 to restore the beach and protect public and private property.	**Wendy Dauberman** Dear Mr. Brown, Thank you for your email and the information provided in it. I appreciate it. This information will be considered. Best regards

PUBLIC COMMENT	CORPS RESPONSE
Once the sand was placed on the beach, we were concerned that it would simply wash away again in the next storm because there was no vegetation left to hold it in place. Accordingly, LBTS entered into a working arrangement with the Youth Environmental Alliance to have volunteers plant sea oats along the beach. Over the last six years, we have planted more than 80,000 sea oats along nearly the entire length of our beach. The sea oats have anchored the sand in place and captured blowing sand to build up the dunes. We now have some dunes over four feet high where there were none just a few years ago. We have received tremendous cooperation from the condos and businesses located along the beach and have experienced no complaints or problems with our planting program. Hundreds of volunteers, including many schoolchildren, have helped with the planting and we have received great financial support from local corporations and businesses to help pay for the plants. LBTS received the 2017 Environmental Stewardship Award from the Florida League of Cities as a result of this successful program. When Hurricane Irma struck in 2017, we lost no sand from our beach. By comparison, neighboring communities such as Ft. Lauderdale, Hollywood, and Deerfield Beach suffered major erosion which cost a lot of money to repair. The most important point I want to make to the Army Corps is that vegetative planting must be mandated as a condition to receiving federal sand replenishment projects. It doesn't make sense to spend millions of dollars dredging or trucking in sand if there is nothing on the beach to help hold the sand in place. It is not enough to make vegetation an optional component of the beach restoration plan, since some individuals or communities will resist. This must be a mandatory condition. I have lots of before and after photos if you would be interested in seeing them. Our entire program--which is still ongoing--has cost very little money and invoked no environmental risk. We do the plantings as school projects or community service projects to get young people and businesses involved and educated on the importance of protecting the beach. While this is not the only answer to beach erosion, it is a successful program which works and should be utilized in all communities which receive federal beach restoration projects. I have attached a copy of my comments separately in case this is not an appropriate format for you. Please feel free to contact me at this email address or by cell phone at 954-802-8167 if you have any questions or need any additional information. Thank you very much. Mark Brown	

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, JACKSONVILLE DISTRICT
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-8915

Planning and Policy Division
Environmental Branch

DEC 03 2018

To Whom It May Concern

This scoping letter is being promulgated by the Jacksonville District, U.S. Army Corps of Engineers (Corps), in compliance with public coordination requirements of the National Environmental Policy Act (NEPA). The purpose of this correspondence is to formally initiate the scoping process as defined by 40 CFR 1501.7 to evaluate design changes to add or modify sand dunes (dunes) in 16 existing Federal Coastal Storm Risk Management (CSRM) projects in 10 counties (Figure 1).

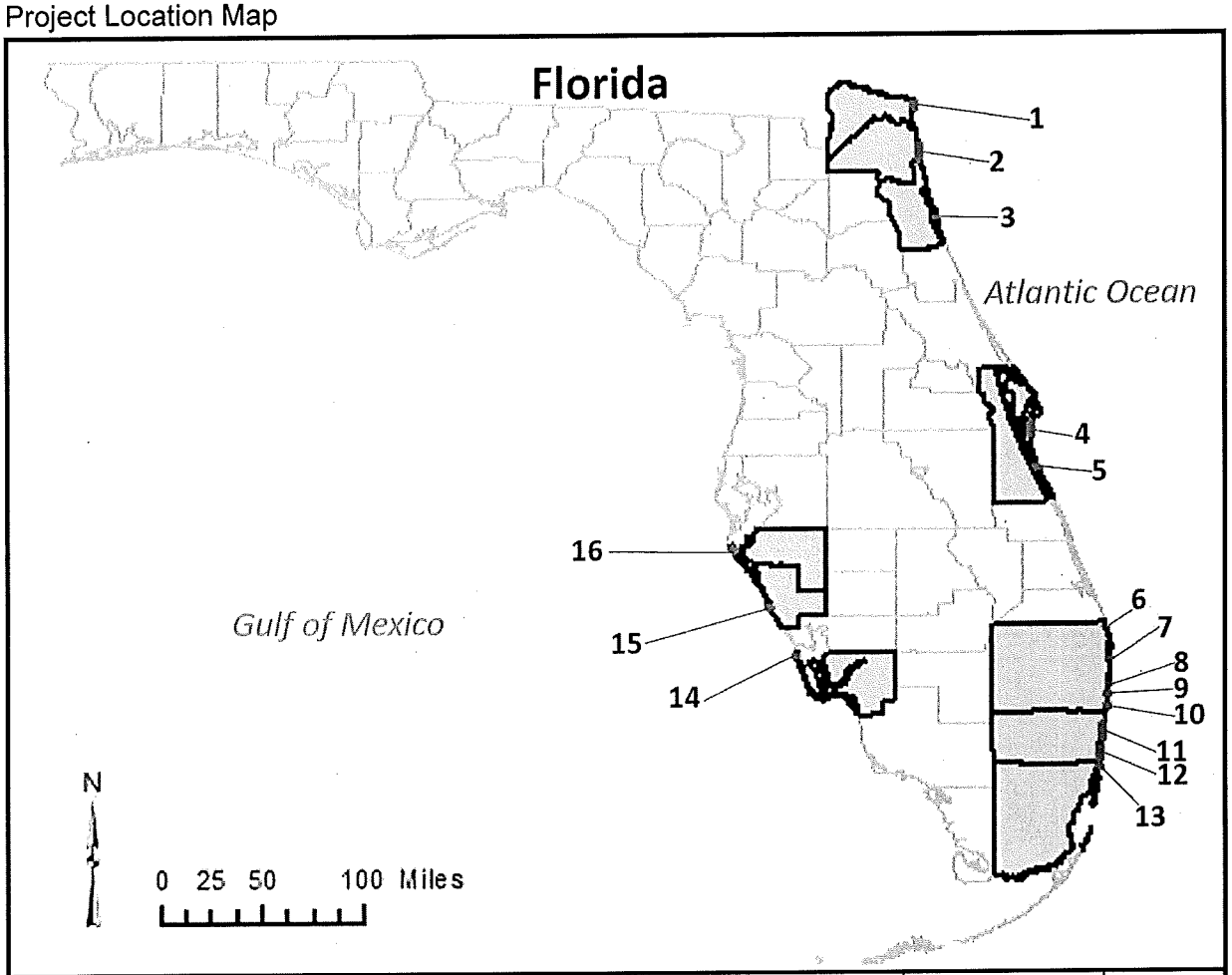
The Corps will evaluate each of the 16 existing federal CSRM projects to determine whether addition or modification of dunes will contribute to authorized project purposes and opportunities to increase project robustness, resiliency, and reliability per ECB 2018-2 which provides the policy and guidance for applying the Corps principles of resilience – Prepare, Absorb, Recover and Adapt (PARA). An evaluation of the performance of existing dunes, including reducing erosion and inundation damages, elongating nourishment intervals, decreasing nourishment volumes, and incidental environmental benefits will be made. A generalized dune template will be developed for comparison to the existing beach template; the dune template could include elongation of existing dunes, closing existing gaps in the dune line, realigning the current dune line or creating dunes in areas where they do not currently exist. Design considerations will also include vegetation and sand fencing which can enhance dune stability and beach accretion rates. The NEPA document, for the restoration or addition of dunes, may consider dune height, width, vegetation and other factors in assessing the design alternatives from a storm damage reduction viewpoint but also considering aesthetics, socioeconomic and view shed. Justification for modifying a project's design to include dunes will include criteria such as added robustness, resiliency, and redundancy to coastal storm impacts and adaptability to sea level rise. Economic justification for design changes will be included if those changes incur significant additional costs.

We welcome your views and comments on the proposed evaluation of design changes to include or modify dunes in 16 existing Federal CSRM projects in 10 counties. Your concerns will be appropriately considered and discussed in a NEPA assessment to update existing NEPA for each of the 16 projects. Please send your comments or inquiries to Ms. Wendy Dauberman at the letterhead address or via email at wendy.s.dauberman-zerby@usace.army.mil within thirty (30) days of the date of this letter. Please let us also know if you do not want to receive future notifications on this project. If you do not notify us that you would like to be removed from future notices, you will remain on our mailing list.

Sincerely,

Gina Paduano Ralph, Ph.D.
Chief, Environmental Branch

Project Location Map



Map ID	County	Project Name	Segment	Length (mi)
1	Nassau	Nassau County, FL Shore Protection Project	na	3.9
2	Duval	Duval County, FL Shore Protection Project	na	10
3	St. Johns	St. Johns County, FL Shore Protection Project	St. Augustine Beach	2.5
4	Brevard	Brevard County, FL Shore Protection Project	North Reach	9.4
5	Brevard	Brevard County, FL Shore Protection Project	South Reach	3.4
6	Palm Beach	Palm Beach County Shore Protection Project	Jupiter Carlin	1.1
7	Palm Beach	Palm Beach County Shore Protection Project	Mid-town	2.8
8	Palm Beach	Palm Beach County Shore Protection Project	Ocean Ridge	1.4
9	Palm Beach	Palm Beach County Shore Protection Project	Delray	1.7
10	Palm Beach	Palm Beach County Shore Protection Project	North Boca Raton	1.5
11	Broward	Broward County, FL Shore Protection Project	Segment II	11.3
12	Broward	Broward County, FL Shore Protection Project	Segment III	8.1
13	Dade	Dade County, FL Beach Erosion Control & Hurricane Protection Project	Sunny Isles	2.4
14	Lee	Lee County, FL Beach Erosion Control Project	Gasparilla	2.8
15	Sarasota	Sarasota County, FL Shore Protection Project	Venice	3.2
16	Manatee	Manatee County, FL Shore Protection Project	Anna Maria Island	4.2

Table B-2. Comments Received During Public Review of the Dunes and Other Resiliency Design Refinements, Shore Protection Projects, Nassau, Duval, St. Johns, and Brevard Counties Supplemental Environmental Assessment and Finding of Significant Impact.

Note: During the public review of the draft SEA, correspondence was received from individual property owners concerning specific properties. The Corps responded to these comments directly with information relevant to their residence. Due to this SEA being available to the public, these specific communications are not included in Appendix B in order to maintain the privacy of individual addressees. All other correspondence received during the public review period of the draft SEA is included in Appendix B.

Number	Commenter	Comment	Response
1	National Marine Fisheries Service	No comment from NMFS HCD, received October 9, 2019. **Document with NMFS response is located below this matrix.**	Thank you for your comment.
2	Florida State Clearing House for the Florida Coastal Management Program (FCMP).	Based on the information submitted and minimal project impacts, the state has no objections to the subject project and, therefore, it is consistent with the Florida Coastal Management Program (FCMP). **Document with this information is located below this matrix.**	Thank you for your comment.
3a	Florida Fish and Wildlife Conservation Commission (FWC)	Two of the SPP sites in Brevard County are within the range of the Southeastern beach mouse, however, the sites are not areas where mice are believed to occur. In St. Johns County all vegetated areas of the dune system throughout the preferred alternative project site should be considered occupied by Anastasia Island beach mice. Beach mice have been documented using the area for 1-2 years, especially the area within Anastasia State Park where the dune system is more extensive and less disturbed by human activity.	The minimization measures provided will be considered during the design phase and carried through to construction as appropriate.

Number	Commenter	Comment	Response
3b	FWC	Anastasia State Park is between Florida Department of Environmental Protection R monuments R-137 to R-141, within the St. Johns County SPP area. Though the entire park supports imperiled beach nesting bird habitat, the southern portion of the park is where State Threatened seabirds have historically nested (R-148.6 to R-141) … Construction within any of the SPP sites in Nassau, Duval, St. Johns, and Brevard Counties have the potential for impacts if the work is conducted during the shorebird nesting season (generally March 1 – September 1) … Any construction during nesting season in Anastasia State Park (between R-148.6 to R-141) could result in loss of nesting effort for the season. Take of state listed bird species is prohibited under F.A.C. 68A-27.003, unless authorized by FWC permit. For areas where nesting has been documented, we recommend contacting FWC staff to discuss necessary nest buffers and potential permitting alternatives.	Measures to avoid or minimize impact to protected birds will be considered during the design phase and carried through to construction as appropriate.
3c	FWC	The SPP sites provide important nesting habitat for threatened loggerhead (*Caretta caretta*), threatened green (*Chelonia mydas*) and endangered leatherback (*Dermochelys coriacea*) turtles … the generalized dune template should be modified for each project location to match existing topography … sand fences are valuable tools for rebuilding sand dunes but must be installed with minimal harm to nesting sea turtles…	Measures to avoid or minimize impact to nesting marine turtles will be considered during the design phase and carried through to construction as appropriate.
3d	FWC	The project area has potential habitat for the gopher tortoise. The USACE should refer to the FWC's Gopher Tortoise Permitting Guidelines (Revised January 2017) (http://www.myfwc.com/license/wildlife/gopher-tortoise-permits/) for survey methodology and permitting guidance prior to any development activity. **Document with this information is located below this matrix.**	Measures to avoid or minimize impact to gopher tortoise will be considered during the design phase and carried through to construction as appropriate.
4	Florida State Historic	SHPO concurs with the USACE determination in letter dated October 14,	Thank you for your comment.

Number	Commenter	Comment	Response
4 (continued from previous page)	Preservation Officer (SHPO)	2019 that the proposed activities will have no adverse effect on historic properties conditional upon continued observation of previous DHR conditions. **SHPO document is located below this matrix.**	
5a	City of Jacksonville Beach (COJB) Duval County	The Draft SEA and SPP indicate there would be no permanent effect on the viewshed; however, new FDEP walk-over height requirements may result in localized long-term aesthetic and viewshed impacts. **Document from the COJB is located below this matrix.**	The proposed recommendations for the Duval County project will not change the height of any dune walkovers.
5b	COJB	Is the USACE aware of potential funding assistance opportunities that may allow us to ensure the modified outfalls are fully constructed prior to the next renourishment project?	The Corps is not aware of potential funding assistance regarding options for modifying storm water outfalls.
5c	COJB	While the Seagate Ave. Emergency Stockpile will be located on the Neptune Beach side of the ramp, the City of Jacksonville Beach will assist in moving the stockpiled sand into the ramp in preparation for weather emergencies.	Thank you for this coordination
5d	COJB	Do recurring re-nourishment projects include restoration of Emergency Stockpiles?	Sand from periodic nourishment events may be used to restore the stockpiles if needed, however the restoration of the Emergency Stockpiles will be an Operations and Maintenance (O&M) responsibility of the non-Federal sponsor.
6e	COJB	The City is still assessing the operational and Beach safety impacts of closing the 20 foot wide lifeguard ramp at Beach Blvd. Would a raised access ramp and small Emergency Stockpile be an option?	Coordination with the City will occur during the pre-construction design phase and a ramp or stockpile options could be considered.
6f	COJB	Emergency Stockpile at Beach Blvd. ramp needs to be only on the south side since the north side will have an ADA ramp approach.	The Corps will take this comment into consideration during the design phase.
5g	COJB	Emergency Stockpile at 16th Avenue S. will be adjacent to a condominium pool. There may be potential for at least the perception of sand from the stockpile affecting the pool	Temporary sand fencing may be used to help control windblown sand.

Number	Commenter	Comment	Response
5g (continued from previous page)		and pool area. Does the USACE have recommendations for protecting the Stockpile(s) from erosion and sand migration (i.e. sand fencing)?	Adjacent dune vegetation should also help with this issue.
5h	COJB	What is the plan for closing the "gaps" at the existing wooden dune walkovers? Will these need small emergency stockpiles?	The recommendations do not include a plan for closing any gaps at pedestrian walkovers. These gaps are very small compared to the vehicle access gaps and sand fencing will be used to angle the gaps which to help with resilience to erosion at these locations.
5i	COJB	How will the ACOE address private walkovers and footpaths?	The recommended design changes are located only on public lands. There are no changes proposed to private walkovers and footpaths on private property.
6	John Alexander, President Coral Sands Condominium Association Brevard County	Would you please be specific where this area is located? The 9.4 miles are not well defined on the map that was sent to our condo association.	The north reach of the Brevard County, Florida Shore Protection Project extends from the Canaveral Harbor south jetty to the northern limit of Patrick Air Force Base.
7	Buzz Petsos Brevard County	Is it possible to send me only the impact to Cape Canaveral? It looks like only one area is impacted. I worked with Kevin Bodge to get the original dune fencing and sea oats in our area. Don't see anything improving our area other than at Washington Ave. which is a beach access for emergency vehicles, just would like a little clarification on any additional improvements in our area that don't seem to be on the web site.	The recommended design plans specific for Brevard County are in Appendix C, beginning on page 201. Below is the link to Appendix C: http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx Click on Multiple Counties, then scroll down to Dune Design Evaluation Shore Protection Projects Nassau, Duval, St. Johns and Brevard Counties and click on "Appendix C".

Number	Commenter	Comment	Response
8a	Resident Brevard County	For the Brevard County North Reach Segment (where I am an ocean front homeowner) the draft SEA's Summary Recommendation for the Dune Construction with Vegetation design change is: "Dune incorporation is recommended along the entire length of the North Reach and South Reach. Dunes could be constructed as part of the project in the event that the existing dune becomes eroded in the future."	Thank you for your comments for this project. Your interpretation of the recommended dune incorporation for Brevard North Reach is correct. Incorporating dunes into the Project's construction template is recommended along the entire length of the north and south reaches. Dunes could be constructed as part of the project in the event that the existing dunes become eroded in the future.
8b	Resident Brevard County	1) No immediate dune construction action is planned	Your interpretation is correct. No immediate dune construction action is planned.
8c	Resident Brevard County	2) If dunes are eroded in the future by weather events, dune construction could become part of a beach nourishment project in the North Reach Segment	Your interpretation is correct. If dunes are eroded in the future by weather events, dune construction could become part of a beach nourishment project in the north reach segment.
8d	Resident Brevard County	3) Finally, the draft SEA indicates "For more information, including descriptions and locations of the proposed vehicle and pedestrian access modifications, see Appendix C." Appendix C in this draft is empty. Can you please advise when it will be completed and included in the SEA for viewing online?	Please use this direct link to Appendix C: https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/11970
9a	Frank Hopf Nassau County	I find it encouraging that the Jacksonville District has taken on the task of improving the ability of the Nassau County Shore Projection Project (NCSPP) to prepare, absorb, recover, and adapt to risks of storms and sea level rise. As a student of the coastal processes and forms, I am pleased that the District recognizes the important of all elements of the beach - the nearshore, the berms and the dunes. It is important that the role of the dunes is getting particular emphasis.	A call was held on 30 September 2019 with Mr. Hopf and SAJ staff (Marty Durkin) to discuss the comments and concerns brought up in the letter. There is general agreement regarding the information presented in the letter and the importance of dunes in the project areas. Additional explanation was given on the limitations of what the Corps can recommend under this effort considering the existing project authority and Corps policy. The Corps will take these comments into

Number	Commenter	Comment	Response
9a (continued from previous page)		**Document of report is located below this matrix.**	consideration during the pre-construction design phase of this effort.
9b	Frank Hopf	First, the development of the planned bulldozed artificial dunes per a template fall far short of the natural and nature-based features encouraged in ERDC SR-15-1. Whereas this identified approach may well provide the softest approach in given certain circumstances, it makes little sense on places like Amelia Island where the dunes have remarkably recovered naturally, with a little help. Residents have applied nature based approaches to take advantage of the restored sediment supply to the system provided by beach restoration projects, most notably the NCSPP. Of note, residents on the island have helped nature rebuild the dunes using approaches outlined since 1984 in the USACE's Shore Protection Manual, Section VI. The "engineered dunes" may well be the best solution is some cases, including the sediment-starved and eroding Fernandina Beach in 1984. However, they do not represent the best first option on a vibrant nearshore-beach-dune system on Amelia Island in 2019	Dunes would only be constructed with bulldozers in small areas where gaps currently exist. The dunes throughout much of the project area are in great condition as a result of natural processes over time. Direct construction of dunes over large portions of the project would only occur if a major storm was to wipe out a large portion of the existing dune. This is because direct construction can happen much faster than building a dune through natural processes.
9c	Frank Hopf	The second major concern stems from the fact that the NCSPP project assumes that "Hurricane surge protection in the form of a sand dune was eliminated from consideration as the populated areas are of sufficient elevation to withstand such a surge." …During the August 6, 2019 presentation, USACE representatives indicated the draft resiliency dune project is "not necessarily designed to a specific level of protection from a specific storm." (News Leader, 2019). I believe that only by building dunes to at least the FEMA 540 rule should be that standard. It would allow city residents to avoid future flood destruction and lower flood insurance rates. But more importantly, to improve the resiliency of the NCSPP, it is the only standard that can really accomplish that goal. Otherwise the potential for	Since the existing project was authorized for beach erosion control purposes, the Corps is only making modifications that are focused on increasing resiliency with respect to erosion control. Designing a dune feature to FEMA flooding criteria would exceed the scope of this effort.

Number	Commenter	Comment	Response
9c (continued from previous page)		overwash and even new inlet formation remains above the 1% probability level, events that would limit the Project's ability to recover.	
9d	Frank Hopf	I make reference to the use of sand fencing in my comments along with planting dune vegetation as the preferred method of building truly resilient dunes. However, I have long held that vegetation is preferred over sand fencing for building dunes, but certainly the fencing plays a role in keeping traffic away from dune vegetation. Fencing should be used in conjunction with vegetation planting. (Hopf and Sherman 2007)	The recommendations only include sand fencing along the seaward side of footpaths at public beach access locations. In these instances the sand fencing has a dual purpose of both trapping sand and limiting foot traffic to a single path. Vegetation currently exists adjacent to where the recommended sand fencing would go. We have considered the benefits of vegetation in combination with some sand fencing as stated.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, JACKSONVILLE DISTRICT
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-8915

AUG 0 9 2019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

TO WHOM IT MAY CONCERN:

Pursuant to the National Environmental Policy Act and U.S. Army Corps of Engineers (Corps) Regulation (33 CFR 230.11), this letter constitutes the Notice of Availability of the Supplemental Environmental Assessment (SEA) and Proposed Finding of No Significant Impact (FONSI) in accordance with the National Environmental Policy Act of 1969, as amended (NEPA). The SEA follows the intent of the White House's Council of Environmental Quality regulations to evaluate design changes to add or modify sand dunes (dunes) for five existing federal Shore Protection Projects (SPP) located in Nassau, Duval, St. Johns and Brevard Counties, Florida (Figure 1: Location Map).

The project addresses the opportunity to add or modify dunes to contribute to authorized project purposes including increased project robustness, resiliency, and reliability per Corps' Engineering and Construction Bulletin 2018-2. An evaluation of the performance of existing dunes, including reducing erosion and inundation damages, elongating nourishment intervals, decreasing nourishment volumes, and incidental environmental benefits will be made. A generalized dune template has been developed for comparison to the existing beach template and could include elongation of existing dunes, closing existing gaps in the dune line, realigning the current dune line or creating dunes in areas where they do not currently exist. Design considerations will also include vegetation planting and sand fencing which can enhance dune stability and beach accretion rates. This SEA evaluates the effects of the Preferred Alternatives and the No Action Alternatives for each of the five SPPs.

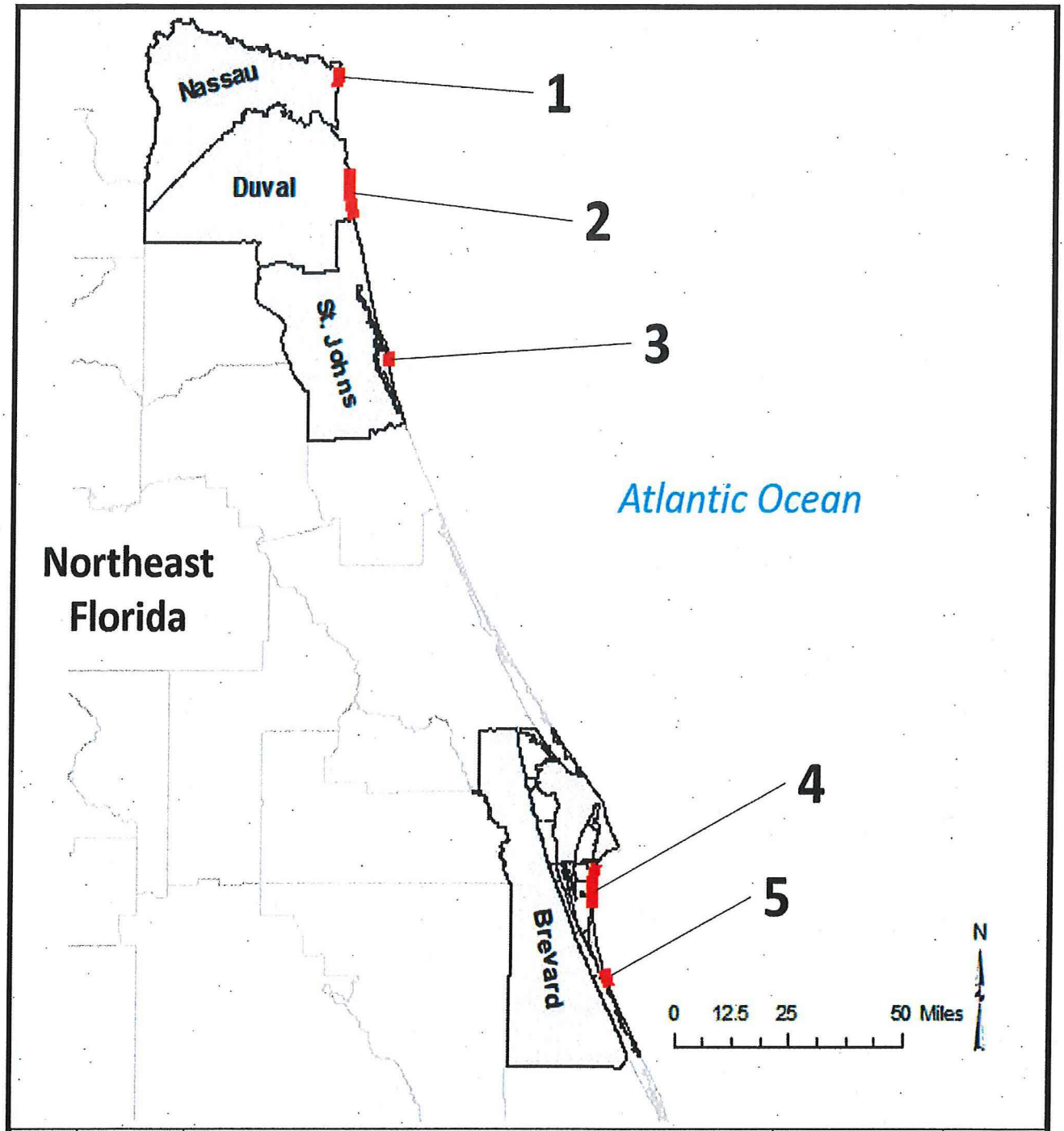
A copy of the SEA and Proposed FONSI are available for your review online at the following website. Click on Multiple Counties, then scroll down to Dune Design Evaluation Shore Protection Projects Nassau, Duval, St. Johns and Brevard Counties and click on "SEA and/or Proposed FONSI."

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx

Please submit questions or comments on the SEA and Proposed FONSI in writing to the letterhead address above or by email (wendy.s.dauberman-zerby@usace.army.mil) within 30 days of the date of this letter.

Sincerely,

Angela E. Dunn
Chief, Environmental Branch



Map ID	County	Project Name	Segment	Length (mi)
1	Nassau	Nassau County, FL Shore Protection Project	na	3.9
2	Duval	Duval County, FL Shore Protection Project	na	10
3	St. Johns	St. Johns County, FL Shore Protection Project	St. Augustine Beach	2.5
4	Brevard	Brevard County, FL Shore Protection Project	North Reach	9.4
5	Brevard	Brevard County, FL Shore Protection Project	South Reach	3.4

Figure 1: Location Map for SPPs in Nassau, Duval, St. Johns, and Brevard Counties.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, JACKSONVILLE DISTRICT
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-8915

AUG 09 2019

Planning and Policy Division
Environmental Branch

Ms. Virginia Fay
NOAA Fisheries Service
Southeast Regional Office
263 13th Avenue South
Saint Petersburg, Florida 33701

Dear Ms. Fay:

The U.S. Army Corps of Engineers, Jacksonville District (Corps) has prepared a Supplemental Environmental Assessment (SEA) in accordance with the National Environmental Policy Act of 1969, as amended (NEPA). The SEA follows the intent of the White House's Council of Environmental Quality regulations to evaluate design changes to add or modify sand dunes (dunes) for five existing federal Shore Protection Projects (SPP) located in Nassau, Duval, St. Johns and Brevard Counties, Florida (Figure 1: Location Map).

The Corps is initiating Essential Fish Habitat (EFH) consultation to add or modify sand dunes (dunes) as presented in the SEA. The project addresses the opportunity to add or modify dunes to contribute to authorized project purposes including increased project robustness, resiliency, and reliability per Corps' Engineering and Construction Bulletin 2018-2. An evaluation of the performance of existing dunes, including reducing erosion and inundation damages, elongating nourishment intervals, decreasing nourishment volumes, and incidental environmental benefits will be made. A generalized dune template has been developed for comparison to the existing beach template; the dune template could include elongation of existing dunes, closing existing gaps in the dune line, realigning the current dune line or creating dunes in areas where they do not currently exist. Design considerations will also include vegetation planting and sand fencing which can enhance dune stability and beach accretion rates. This SEA evaluates the effects of the Preferred Alternatives and the No Action Alternatives for each of the five SPPs.

The Corps' determination is that the proposed action would not impact EFH or federally managed fisheries along the East Coast of Florida. All construction work will be performed above the mean high water line. The SEA describing the proposed action can be found at the following website. Click on Multiple Counties, then scroll down to Dune Design Evaluation Shore Protection Projects Nassau, Duval, St. Johns and Brevard Counties and click on "SEA and/or Proposed FONSI."

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx

Please provide your response as specified in 50 CFR 600.920(e) (3) within 30 days of the date of this letter. If you have questions or need additional information, please contact Miss Wendy Dauberman at 904-232-3206, or by email (wendy.s.dauberman-zerby@usace.army.mil).

Sincerely,

Angela E. Dunn
Chief, Environmental Branch

Enclsoure

Cc:
Mr. Pace Wilber, NOAA Fisheries, 219 Fort Johnson Road, Charleston, SC 29412

From: Dauberman-Zerby, Wendy S CIV USARMY CESAJ (USA)
To: Pace Wilber - NOAA Federal
Subject: RE: [Non-DoD Source] Re: Public/Agency Review Period for North Florida Dune Supplemental Environmental Assessment
Date: Tuesday, September 10, 2019 9:49:00 AM

Thank you Pace.

Wendy
904-232-3206

-----Original Message-----
From: Pace Wilber - NOAA Federal [mailto:pace.wilber@noaa.gov]
Sent: Monday, September 9, 2019 4:59 PM
To: Dauberman-Zerby, Wendy S CIV USARMY CESAJ (USA) <Wendy.S.Dauberman-Zerby@usace.army.mil>
Subject: [Non-DoD Source] Re: Public/Agency Review Period for North Florida Dune Supplemental Environmental Assessment

No comment from NMFS HCD

On Mon, Sep 9, 2019 at 11:14 AM Dauberman-Zerby, Wendy S CIV USARMY CESAJ (USA) <Wendy.S.Dauberman-Zerby@usace.army.mil <mailto:Wendy.S.Dauberman-Zerby@usace.army.mil> > wrote:

> Good morning Pace.
>
> I left a voice message for you a few minutes ago regarding the North Florida Dune Supplement EA public comment period/Agency Review.
>
> Does NMFS have any comments?
>
> Attached is the letter to NMFS.
>
> Thanks.
>
> Wendy Dauberman
> Biologist
> United States Army Corps of Engineers
> Planning Division, Environmental Branch
> Coastal Section
> 701 San Marco Boulevard
> Jacksonville, Florida 32207-8175
> Phone: (904)232-3206
> Fax: (904)232-3442
> Wendy.s.dauberman-zerby@usace.army.mil <mailto:Wendy.s.dauberman-zerby@usace.army.mil>

--

Pace Wilber, Ph.D.

HCD Atlantic Branch Supervisor
NOAA Fisheries Service
219 Ft Johnson Road
Charleston, SC 29412

843-460-9926 <----Office Number
843-568-4184 <----Office Cell Number
Pace.Wilber@noaa.gov <mailto:Pace.Wilber@noaa.gov>

Dauberman-Zerby, Wendy S CIV USARMY CESAJ (USA)

From: Stahl, Chris <Chris.Stahl@dep.state.fl.us>
Sent: Friday, October 11, 2019 2:38 PM
To: Dauberman-Zerby, Wendy S CIV USARMY CESAJ (USA)
Cc: State_Clearinghouse
Subject: [Non-DoD Source] State_CLearance_Letter_For_FL201908208718C_Draft Supplemental Environmental Assessment Dunes And Other Resiliency Design Refinements Shore Protection Projects Nassau, Duval, St. Johns, And Brevard Counties, Florida
Attachments: 20191011_FWC_supp_EAltr_FL201908208718C.pdf; 2019-2924 Engineering Design Reports for Nassau, Duval, St. Johns, and Brevard Counties 106, CNAE.pdf

October 11, 2019

Wendy Dauberman-Zerby

United States Army Corps of Engineers

701 San Marco Boulevard

Jacksonville, Florida 32207-8175

RE: Department of Defense, Jacksonville District Corps of Engineers - Draft Supplemental Environmental Assessment Dunes and Other Resiliency Design Refinements Shore Protection Projects Nassau, Duval, St. Johns, and Brevard Counties, Florida

SAI# FL201908208718C

Dear Wendy:

Florida State Clearinghouse staff has reviewed the proposal under the following authorities: Presidential Executive Order 12372; § 403.061(42), Florida Statutes; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

The Florida Departments of State and the Florida Fish and Wildlife Conservation Commission have reviewed the proposed action and submitted comments. As a courtesy, these have been attached to this letter and are incorporated hereto.

Based on the information submitted and minimal project impacts, the state has no objections to the subject project and, therefore, it is consistent with the Florida Coastal Management Program (FCMP). Thank you for the opportunity to review the proposed project. If you have any questions or need further assistance, please don't hesitate to contact me at (850) 717-9076.

Sincerely,

Chris Stahl

Chris Stahl, Coordinator

Florida State Clearinghouse

Florida Department of Environmental Protection

3800 Commonwealth Blvd., M.S. 47

Tallahassee, FL 32399-2400

ph. (850) 717-9076

State.Clearinghouse@floridadep.gov <mailto:State.Clearinghouse@floridadep.gov>

<Blockedhttp://survey.dep.state.fl.us/?refemail=Chris.Stahl@dep.state.fl.us>

Florida Fish and Wildlife Conservation Commission

Commissioners
Robert A. Spottswood
Chairman
Key West

Michael W. Sole
Vice Chairman
Tequesta

Rodney Barreto
Coral Gables

Steven Hudson
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Thomas H. Eason, Ph.D.
Assistant Executive Director

Jennifer Fitzwater
Chief of Staff

Division of Habitat and
Species Conservation
Kipp Frohlich
Director

(850) 488-3831
(850) 921-7793 FAX

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

620 South Meridian Street
Tallahassee, Florida
32399-1600
Voice: 850-488-4676

Hearing/speech-impaired:
800-955-8771 (T)
800 955-8770 (V)

MyFWC.com

October 11, 2019

Chris Stahl, Coordinator Florida
State Clearinghouse
Florida Department of Environmental Protection 2600
Blair Stone Road, M.S. 47
Tallahassee, FL 32399-2400
Chris.Stahl@dep.state.fl.us
State.Clearinghouse@dep.state.fl.us

Subject: File No. SAI FL201908208718C, US Army Corps of Engineers (USACE), Draft Supplemental Environmental Assessment (SEA) for Dunes and Other Resiliency Design Refinements of Shore Protection Projects in Nassau, Duval, St. Johns and Brevard Counties

Dear Mr. Stahl:

Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed the above referenced SEA document and provides the following comments for your consideration in accordance with Chapter 379, Florida Statutes, and the Coastal Zone Management Act, Florida's Coastal Management Program.

The USACE has evaluated alternatives for design changes to sixteen Federal Shore Protection (SPP) projects, with existing active permits, to contribute to project robustness, resilience and reliability. The USACE has identified a preferred alternative for modifications of the existing project authority as: 1) Dune Construction with Vegetation (Nassau, Duval, St. Johns, Brevard); 2) Pedestrian Access Modifications with Sand Fencing (Nassau, Duval, St. Johns); and 3) Vehicle Access Modifications (Nassau, Duval, St. Johns, Brevard). The USACE has developed a generalized dune construction template that could include elongation of existing dunes, closing existing gaps in the dune line, realigning the current dune line, or creating dunes in areas where they do not currently exist.

Dune enhancement projects can have long-term positive benefits to the beach dune system. However, direct, secondary, and cumulative impacts could result during the work and from the preferred project redesign alternatives. These impacts may include potential loss of or harm to sand beach ecosystems, including species that depend on these habitats found in and near the sixteen project areas. The draft SEA specifies that the preferred alternatives will comply with Section 7 of the Endangered Species Act of 1973, as amended. The USACE has initiated formal consultation with the US Fish and Wildlife Service (USFWS) about impacts to federally threatened and endangered marine turtles, the threatened piping plover, threatened red knot, and the endangered Anastasia Island beach mouse, and advises that coordination with the USFWS regarding these species is ongoing. The Preferred Alternatives are also being coordinated with the State of Florida and the USACE will obtain a water quality certification pursuant to section 401 of the Clean Water Act (CWA), from the Florida Department of Environmental Protection (FDEP) prior to any preferred alternative construction. In addition, a determination of consistency with the Florida Coastal Zone Management program pursuant to the Coastal Zone Management Act will be obtained from FDEP prior to construction associated with any existing project design modifications. Coordination with the National Marine Fisheries Service in accordance with the Magnuson-Stevens Fishery Conservation will occur and FWC will coordinate with NMFS and the USFWS as federal biological opinions associated with any existing project design modifications are implemented. FWC will also provide recommendations about fish and

wildlife impacts (including, but not limited to, state and federally protected species) through the State regulatory process for modification of the existing SPP permits.

FWC provides the following comments about potential wildlife impacts for the USACE consideration as this proposal moves forward through future design considerations, and the NEPA process.

Beach Mice:
Two of the SPP sites in Brevard County are within the range of the Southeastern beach mouse, however, the sites are not areas where mice are believed to occur. In St. Johns County all vegetated areas of the dune system throughout the preferred alternative project site should be considered occupied by Anastasia Island beach mice. Beach mice have been documented using the area for 1-2 years, especially the area within Anastasia State Park where the dune system is more extensive and less disturbed by human activity. The following will help ensure impacts to beach mice are minimized:

1) placing sand along the southern part of Anastasia State Park should increase the amount, resilience, and connectivity of the dune system and thus be beneficial for beach mice as long as sand placement does not negatively impact vegetated dunes and any areas where sand is place are revegetated with a diverse mix of native plant species appropriate to that area. filling gaps in the dune system will benefit beach mice as long as sand is not placed atop vegetated parts of the dunes and the new dune areas are revegetated as quickly as possible.
2) Sand fencing alone should not be considered a viable alternative as it will leave areas of piled sand that do not benefit beach mice and are not sufficiently resilient. Whenever possible, plantings should be considered the preferred alternative for sand trapping.
3) Planting of vegetation should not be so dense that those areas become unsuitable for beach mice which need areas of bare sand between the vegetation.
4) Efforts should be made to replant vegetation in areas immediately south of the Anastasia State Park after any sand placement as that location around the seawall and rip rap is most vulnerable to erosion and vegetation is needed to connect the dune system in the park with the dune system further south for as long as possible in that area.
5) Pedestrian access modifications can benefit the beach mouse population by limiting or preventing disturbance to vegetated dune systems. However, it will be important to minimize impacts to the vegetated dunes during construction of those features.

Protected Birds:
Anastasia State Park is between Florida Department of Environmental Protection R monuments R-137 to R-141, within the St. Johns County SPP area. Though the entire park supports imperiled beach nesting bird habitat, the southern portion of the park is where State Threatened seabirds have historically nested (R-148.6 to R-141). In 2019, the southern end of the park supported the largest least tern colony on the Atlantic Coast of Florida. Any notable loss of habitat to this site could have devastating impacts to seabird nesting along the Atlantic Coast. Encroachment of new dune width into the existing berm will result in decreased nesting habitat. Construction within any of the SPP sites in Nassau, Duval, St. Johns, and Brevard Counties have the potential for impacts if the work is conducted during the shorebird nesting season (generally March 1 – September 1). Construction conditions to minimize the risk of harm or harassment of shorebirds/seabirds that may nest within the project boundary is important. This

would especially be a concern for the St. Johns County SPP. Any construction during nesting season in Anastasia State Park (between R-148.6 to R-141) could result in loss of nesting effort for the season. Take of state listed bird species is prohibited under F.A.C. 68A-27.003, unless authorized by FWC permit. For areas where nesting has been documented, we recommend contacting FWC staff to discuss necessary nest buffers and potential permitting alternatives. For additional information, please refer to FWC's Breeding Bird Protocol for Florida's Seabirds and Shorebirds located at the following web address: http://www.myflorida.com/apps/vbs/adoc/F15907_1241AttachmentDBreedingBirdProtocolForFloridasSeabirdsAndShorebirds.pdf .

Marine Turtles:
The SPP sites provide important nesting habitat for threatened loggerhead (*Caretta caretta*), threatened green (*Chelonia mydas*) and endangered leatherback (*Dermochelys coriacea*) turtles. The following will help ensure impacts to marine turtles are minimized:

1) The generalized dune template should be modified for each project location to match existing topography. In general, the shore-normal width of the dune should match that of existing natural dunes but in no place should the seaward toe of the created dune be located within thirty-feet of the mean high-water line.
2) Sand fences are valuable tools for rebuilding sand dunes but must be installed with minimal harm to nesting sea turtles. Attached are sand fencing guidelines for the USACE consideration as this proposal moves through future design options.

Gopher Tortoise:
The project area has potential habitat for the gopher tortoise. The USACE should refer to the FWC's Gopher Tortoise Permitting Guidelines (Revised January 2017) (http://www.myfwc.com/license/wildlife/gopher-tortoise-permits/) for survey methodology and permitting guidance prior to any development activity. Specifically, the permitting guidelines include methods for avoiding impacts as well as options and state requirements for minimizing, mitigating, and permitting potential impacts of the proposed activities. With questions regarding gopher tortoise permitting, contact Samantha Cobble by phone at (352) 732-1225 or at samantha.cobble@MyFWC.com

If you have specific technical questions regarding the content of this letter, please contact Kellie Youmans at (850) 922-4330 or by email at Kellie.Youmans@myfwc.com. Thank you for notifying our agency about the USACE's draft SEA. We appreciate the invitation to be part of the NEPA process.

Sincerely,

Ron Mezich, Section Leader
Imperiled Species Management Section
Division of Habitat and Species Conservation

Sand Fencing Guidelines

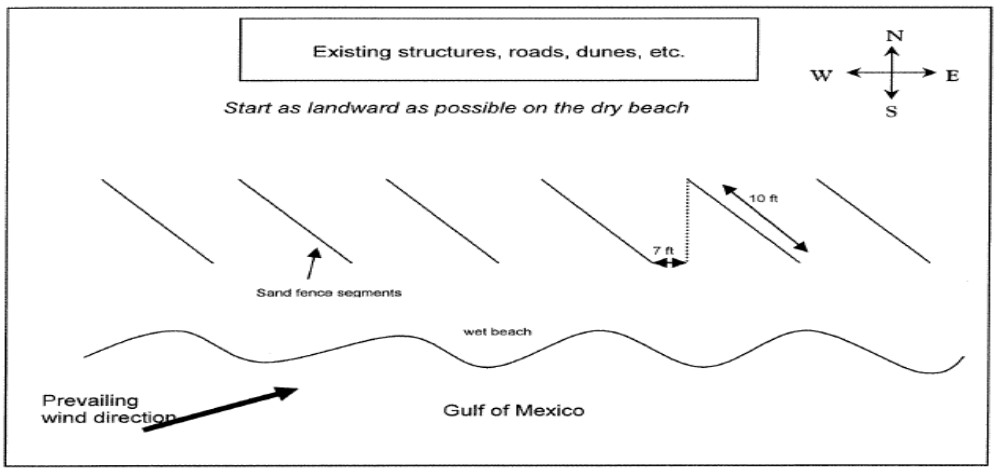
Florida Department of Environmental Protection
Division of Water Resource Management
Bureau of Beaches and Coastal Systems
3900 Commonwealth Boulevard, MS 300
Tallahassee, Florida 32399-3000
(850) 488-7708

Sand fences are valuable tools for rebuilding sand dunes but must be installed with minimal harm to nesting sea turtles. Standard fencing used in dune restoration projects consists of wooden slats wired together with space between the slats; however, the use of woven fabric type fencing has also been successfully. It is important that whatever material is used, the fencing must contain a 40% to 60% open space to closed space ratio. It should also be noted that fabric-type fences might not perform as well as the wooden slats and that many fabric-type fences are susceptible to ultraviolet degradation that causes the material to become brittle and deteriorate and may sag and lose the original shape, thus reducing performance. However with sufficient maintenance, this problem can be reduced or avoided.

In order to maximize the benefits of sand fencing, it is recommended that the fence be lifted and repositioned prior to the fence becoming 50% buried. If the sand is allowed to accumulate, the fence will not only become difficult to remove but will also lose its ability to collect sand.

Sand fences are usually 2 to 4 feet high. Sand fencing located seaward of the crest of the primary dune shall be designed and installed as follows: a maximum of ten (10) foot long spurs of sand fencing spaced at a minimum of seven (7) feet on a diagonal alignment (facing the predominate wind direction) for the shore-parallel coverage of the subject property. Review by the Florida Fish and Wildlife Conservation Commission shall be required for individual sand fencing projects that exceed 500 feet in length, shore-parallel, for alternative sand fence designs and for installation on sandy beaches in the following counties:

- Brevard County through Monroe County (Southeast Coast)
- Manatee County through Collier County (Southwest Coast)



If the primary reason for sand fencing is to control pedestrian access, a post and rope fence with a single strand of rope a minimum of three feet in height may be used to prevent human intrusion into existing dunes or vegetation.

Florida Fish and Wildlife Conservation Commission
Contact: Imperiled Species Management (850) 922-4330

Planning and Policy Division
Environmental Branch
Department of the Army
Corps of Engineers, Jacksonville District
701 San Marco Boulevard
Jacksonville, Florida 32207-8915

June 14, 2019

RE: DHR Project File No.: 2019-2924, Received by DHR: May 16, 2019
Project Name: *Engineering Design Reports for Nassau, Duval, St. Johns, and Brevard Counties*
County: Nassau, Duval, St. Johns, Brevard

To Whom It May Concern:

The Florida State Historic Preservation Officer reviewed the referenced project for possible effects on historic properties listed, or eligible for listing, on the *National Register of Historic Places*. The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended, and its implementing regulations in *36 CFR Part 800: Protection of Historic Properties.*

Our office has previously reviewed the referenced project area (DHR No. 2015-0531, 2019-3936, 2010-2392, and 2017-4459). Regarding the scope of work outlined, we concur with USACE's determination that the proposed activities will have no adverse effect on historic properties conditional upon the continued observation of previous DHR conditions. Additionally, if any sand sources not previously reviewed under Section 106 are to be used or our previously outlined conditions cannot be followed, further consultation with this office will be necessary. Finally, unexpected finds may occur during ground disturbing activities, and we request that the permit, if issued, should include the following special condition regarding inadvertent discoveries:

- If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The applicant shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section at (850)-245-6333. Project activities shall not resume without verbal and/or written authorization. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, Florida Statutes.

If you have any questions, please contact Kelly L. Chase, Historic Sites Specialist, by email at *Kelly.Chase@dos.myflorida.com*, or by telephone at 850.245.6425 or 800.847.7278

Sincerely,

Timothy A Parsons, Ph.D.
Director, Division of Historical Resources &
State Historic Preservation Officer

JACKSONVILLE BEACH

City of
Jacksonville Beach
Operations &
Maintenance Facility
Department of Public
Works
1460-A Shetter Avenue
Jacksonville Beach
FL 32250
Phone: 904.247.6219
Fax: 904.247.6117

www.jacksonvillebeach.org

TO: Angela E. Dunn, Environmental Branch Chief
Planning & Policy Division

FROM: Kayle W. Moore, P.E., Public Works Project Engineer

SUBJECT: USACE Shore Protection Plan Review Comments

DATE: September 9, 2019

Ms. Dunn,

City Staff has reviewed the Draft Supplemental Environmental Assessment (SEA) and Shore Protection Project (SPP) Design Refinement and provide the following comments for your consideration:

1) The Draft SEA and SPP indicate there would be no permanent effect on the viewshed; however, new FDEP walk-over height requirements may result in localized long-term aesthetic and viewshed impacts.
2) The City received funding assistance for the design of the City's beach stormwater outfall improvements/modification and is currently working to identify funding for construction of these improvements. Is the USACE aware of potential funding assistance opportunities that may allow us to ensure the modified outfalls are fully constructed prior to the next re-nourishment project?
3) While the Seagate Ave. Emergency Stockpile will be located on the Neptune Beach side of the ramp, the City of Jacksonville Beach will assist in moving the stockpiled sand into the ramp in preparation for weather emergencies.
4) Do recurring re-nourishment projects include restoration of Emergency Stockpiles?
5) The City is still assessing the operational and Beach safety impacts of closing the 20 foot wide lifeguard ramp at Beach Blvd. Would a raised access ramp and small Emergency Stockpile be an option?
6) Emergency Stockpile at Beach Blvd. ramp needs to be only on the south side since the north side will have an ADA ramp approach.
7) Emergency Stockpile at 16th Avenue S. will be adjacent to a condominium pool. There may be potential for at least the perception of sand from the stockpile affecting the pool and pool area. Does the USACE have recommendations for protecting the Stockpile(s) from erosion and sand migration (i.e. sand fencing).
8) What is the plan for closing the "gaps" at the existing wooden dune walkovers? Will these need small emergency stockpiles?
9) How will the ACOE address private walkovers and footpaths?

The City is pleased that the USACE is working to incorporate the Dunes and Other Resilience Design Refinements into the SPP and we appreciate your continued coordination with the Beach communities as you finalize the Project documents.

Sincerely,

Kayle W. Moore, P.E.

Cc: Mike Staffopoulos, City Manager
Karen Nelson, Deputy City Manager
Marty Martirone, City Engineer

Response to the USACE draft EDR on Dune Resilience dated May 2019 and Draft Supplemental Environmental Assessment, Dunes and Other Resiliency Design Refinements Shore Protection Projects, Nassau, Duval, St Johns, and Brevard Counties. Florida, US dated August 2019

My name is Frank Hopf, I am a resident of Amelia Island. I have been a registered professional engineer (Civil) in the State of Texas since 1987 and in 2011 I earned a Ph.D. from Texas A&M University studying coastal geomorphology. I am a member of American Shore and Beach Preservation Association and the Florida Floodplain Managers Association. I am semi-retired and am making my comments only as a concerned citizen. I do not own or represent in any way property that can be affected by my comments.

First of all I would like to thank the Jacksonville District o the USACE for sending representatives Ms. Keiser and Misters Corbett and Durkin to present the subject plan to the Fernandina Beach City Commissioners meeting on August 6, 2019. I find it encouraging that the Jacksonville District has taken on the task of improving the ability of the Nassau County Shore Projection Project (NCSPP) to prepare, absorb, recover, and adapt to risks of storms and sea level rise. As a student of the coastal processes and forms, I am pleased that the District recognizes the important of all elements of the beach - the nearshore, the berms and the dunes. It is important that the role of the dunes is getting particular emphasis.

I do have two major concerns which we feel need to be addressed before the effort proceeds:

First, the development of the planned bulldozed artificial dunes per a template fall far short of the natural and nature-based features encouraged in ERDC SR-15-1. Whereas this identified approach may well provide the softest approach in given certain circumstances, it makes little sense on places like Amelia Island where the dunes have remarkably recovered naturally, with a little help. Residents have applied nature based approaches to take advantage of the restored sediment supply to the system provided by beach restoration projects, most notably the NCSPP. Of note, residents on the island have helped nature rebuild the dunes using approaches outlined since 1984 in the USACE's *Shore Protection Manual*, Section VI. The "engineered dunes" may well be the best solution is some cases, including the sediment-starved and eroding Fernandina Beach in 1984. However, they do not represent the best first option on a vibrant nearshore-beach-dune system on Amelia Island in 2019.

The Island's more natural dunes tend to produce greater diversity in form, flora, and fauna and provide essential habitat for several endangered and threatened species, which is something the templated and planted artificial dunes provide very little. Unfortunately the importance of the dunes as a habitat and indeed as a place of "scenic beauty, nature-inspired design, art, and culture" as identified in ERDC SR-15-1 (p. 353) is not mentioned in the draft EDR.

The second major concern stems from the fact that the NCSPP project assumes that "Hurricane surge protection in the form of a sand dune was eliminated from consideration as the populated areas are of sufficient elevation to withstand such a surge." (EDR p i) Indeed the elevation of the remnant natural dunes in 1985 stood higher than the official estimated storm surge elevation, so FEMA classified only

three structures along Fletcher and Ocean Avenues as being in the Special Flood Hazard Zone driven by storm surge. In the years since, with improved modeling of storm surge, FEMA determined (Nordstrom) that for a dune to provide protection against storm surge, not only height but also sufficient volume of sand was required. Specifically to protect against a 100 year storm event, FEMA determined protection against damage required a protective dune with at least 540 cubic feet/foot of sand above the design storm water elevation level (SWEL). After Superstorm Sandy's surge rolled over and through some of New Jersey's flat beach berms and undersized dunes, FEMA reevaluated our beaches and added hundreds of homes, apartments and other buildings in the Project Area to the list of those in the VE flood hazard zone. Ironically, all of the structures for 8,800 feet of city beach down drift of the NCSPP limits were safely out of the zone, because over the last 30 years or so, the residents and State agencies have promoted and protected natural and nature based dune development.

During the August 6, 2019 presentation, USACE representatives indicated the draft resiliency dune project is "not necessarily designed to a specific level of protection from a specific storm." (News Leader, 2019). I believe that only by building dunes to at least the FEMA 540 rule should be that standard. It would allow city residents to avoid future flood destruction and lower flood insurance rates. But more importantly, to improve the resiliency of the NCSPP, it is the only standard that can really accomplish that goal. Otherwise the potential for overwash and even new inlet formation remains above the 1% probability level, events that would limit the Project's ability to recover.

The City of Fernandina Beach is in the process of developing dune management plans that will promote, through the nature and nature-based methods, a dune system that provides 100 year storm surge protection along the NCSPP beach. I believe that these dunes will improve the resilience of the NCSPP quicker and cheaper, while providing superior habitat for wildlife, wider flat berms for beach-goers, and enhanced flood protection. The NCSPP has done an excellent job of restoring to near natural conditions the sediment supply in the littoral system. As noted in the presentation, whereas the project relied on the opinion that, "bigger, wider beaches was the best way to address" (News Leader 2019) these storm damages, many citizen scientists in the community recognized that the sand being blown off and lost to the littoral system could be trapped in the dunes. The dune system built over the last 30 years provides virtually all of the island's protection against storm waves. I believe that residents of Fernandina Beach are willing to offer and share their local knowledge and experience to improve the Draft EDR as detailed in the attached comments. Working closely with the Corps on this project could lead to great benefits to all.

Finally, these comments are largely based on the Draft EDP for the NCSPP and two things should be note:

1) Specific references to the Duval, St Johns, and Brevard Counties. Florida, US plans have not been attempted, since I only have studied in detail the dunes of the Nassau County. However, I do have concerns that the lack of specific dune knowledge in the other areas, the first reliance on bulldozed dunes rather than natural and nature based dunes, and the failure to recognize the exact role the dunes play in each area in the storm surge protection as defined by FEMA render the entire document suspect.

2) I make reference to the use of sand fencing in my comments along with planting dune vegetation as the preferred method of building truly resilient dunes. However, I have long held that vegetation is preferred over sand fencing for building dunes, but certainly the fencing plays a role in keeping traffic away from dune vegetation. Fencing should be used in conjunction with vegetation planting. (Hopf and Sherman 2007)

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Specific comments on the draft EDR on Dune Resilience for NCSPP dated May 2019

Per USACE request, these comments will start with Section 6 "Recommended Design Changes" and then pick up other comments in other sections.

I feel that Section 6 should reflect support of continuing nature and nature-based development of protective dunes by the City of Fernandina Beach and its individual citizens. This activity includes limiting access to active dunes and particularly the foredunes, installation of sand fencing with dune vegetation plantings and providing controlled access to the beach via new construction and maintenance of dune walkovers for high traffic areas and fenced and/or roped off paths for lower trafficked accesses, including private accesses. As beach traffic increases, additional walkovers will be installed to protect the dunes at the locations. The program will include monitoring, preventing and control of any invasive plant species that will harm the dune vegetation. All dune walkovers will be designed and built in accordance with Florida Department of Environmental Protection (FDEP) regulations.

City dune-promoting activities have been guided by the old USACE *Planting Guidelines for Dune Creation and Stabilization* (Knutson 1977) and the *Shore Protection Manual Section VI*, as modified by recent research, much of it highlighted in Elko *et al* 2016 and the *Use of Natural and Nature-Based Features (NNBF) for Coastal Resilience*. The goal will be to create enough dune volume in front of any infrastructure to meet or exceed FEMA Rule 540 requirements everywhere along the NCSPP. Not only will this help move all but five buildings in the city and all city infrastructure out of the 100 year VE flood zone, but it also will maximize resiliency of the NCSPP against the 100-year storm because no sediment will be lost to the project due to washover or new channel formation. Unfortunately the bulldozed sand dune template sitting on the berm will reduce the usable dry berm for recreation, cost over $10 million to just vegetate, will not provide 100 year flood protection for all of the beachfront, and will provide little natural habitat.

On Amelia Island, we know that this can be done because it has already been achieved in the southernmost 8,800 feet or so of beach/dune in the City. We recognize that because of wind patterns or other environmental conditions, it might not be possible to let nature help build an adequately sized dune in all areas. The option of then building an adequately sized artificial dune on a case-by-case basis would make sense in the 2024 nourishment time frame. We all agree that dunes are the answer to improving the resiliency of the NCSPP, the only question is the priority of which method to be used to build those dunes. It continues to be a disappointment that the *Coastal Engineering Manual* Part III, Chapter 4 - "Wind-Blown Sediment Transport" dropped any reference to sand fences and vegetation when it replace the *Shore Protection Manual* Section 6 in 2002, (Hopf and Sherman, 2007).

To apply these comments to action on the specific recommendations, our suggestions of the best way to improve and correct the most glaring resiliency needs would be as follows.

1) In reviewing the proposals for the Main Beach/ Dolphin Emergency Access, when comparing the changes against the FEMA 540 rule, with the exception of the increasing the elevation of the Dolphin Avenue drive-over, all the new sand made very little difference in the amount of infrastructure that would be damaged. With the exception of the Dolphin Avenue work, the floodplain limit would move only halfway to the beach and exclude only part of one building. More park grass and some of the parking lot would enjoy extra protection but that is not the highest priority. The Sandbar Restaurant would double its level of protection, but they do not want it and the building will be heavily damaged or destroyed by a 100-year storm event regardless.

Raising the elevation of the Dolphin Street emergency crossing will reduce the extent of flooding during a 100-year event but will still involve water surging down North Fletcher and Ocean Avenues. To completely protect infrastructure from flooding at the emergency access on Dolphin, the elevation would have to be raised another 2 feet (to 16) making that idea extremely difficult to justify.

My suggestion would be to close off the Dolphin Street emergency access with an artificial dune large enough to meet the FEMA 100-year flood requirements. The City should relocate the emergency access to the end of Atlantic Avenue. This would only require only curb modifications, signage and relocation of several park benches. I support the idea of developing, continuous, bigger and taller dunes between the old and new emergency access locations but feel it can be better completed using dune vegetation, sand fencing and rope fencing to promote this dune growth. Elevated and extended user friendly dune walkovers would also support the desirable, but not critical, closing of the foredune gaps on Main Beach.

The hope is that by delaying immediate closure of the dunes at Main Beach can free up funding to help the part of the NCSPP at greatest risk now, the dune section along Ocean Avenue north of Main Beach and south of North Beach. This is the section wiped out by Hurricane Dora in 1964. Subsequently, a very steep riprap revetment was built and over the years locals have planted vegetation and built a 15-17' high (at the road), 80 to 100' wide semi-natural sand dune for the 5,000 foot length of the street. The City installed several walkover steps to help get from the street parking to the beach but they are so steep that beachgoers have worn very deep cuts in the dune as they drag their wagons and coolers around it to the beach. This has occurred at several random locations in addition to the walkover steps. None of these access trails are controlled as they cross the sand dune, resulting in rutting and dune elevation loss. Adding to the problem, this spring, two of these step-ways over the revetment were declared structurally unsound and were removed, leaving two more gaping holes in the revetment/dune and low-elevation paths cross the dune to the back of the berm for both beach-goers and flood surge.

City crews continual try to patch the cuts in the revetment with sand, put up signs telling people to not cross the dune and the neighbors try to plant vegetation on the back side to stabilize what really is a revetment remnant. The dune system in this section has been so compromised by low elevation footpaths, that they would be virtually worthless as a resiliency or flood protection structure. We

recommend funding at least three new dune walkovers that include ramps at each end to make accessing the beach from Ocean Avenue at 1st, 3rd, 5th and 6th Streets. The City has obtained grants to rebuild the walkovers at 5th and 6th (8N and 9N) and expects to complete this work by early 2020. Also the beachside pathways from the walkover stairways need to be fenced off to restrict dune damage at 2nd, 4th 7th and 8th Street accesses. Finally a 5,000' long sand fence needs to be run the length of Ocean Street to deter beach access except at the controlled access points. Then sand should be brought into "plug the holes" in the revetment and dune vegetation planted to help hold the slope together. Finally, a 15' by 100' minimum dune development project (sand fencing and vegetation planting) should be initiated at the end of each of the walkways, anchored to the front of the existing dune slope.

After much study we recommended to the USACE that the repair of this endangered 5,000' long dune along Ocean Avenue and closing the emergency access gaps would be the most cost effective way to boost the resiliency of the NCSPP.

I also have concerns about the proposal to stockpile 95 cubic yard of sand in an existing natural dune and identified habitat area. This sand would then be moved under emergency conditions to provide about 32.4 cubic feet/running foot of additional flood protection by raising the elevation of the drive-over during the emergency. This would only provide marginal protection and increase City liability if a flood still occurred and the City's emergency blocking activity gets perceived as improperly executed. The current FEMA FIRM shows only the outdoor serving area of the one restaurant in the 100-year VE zone because of this gap. An increase in the elevation of the crossover by say a foot or so could achieve the same level of protection and resiliency with only slightly more sand being permanently placed. Alternatively, all parties could agree to accept the level of risk and do nothing at this time.

<u>Longer term changes</u>

I believe that the USACE should look first to natural and nature-based methods to develop the necessary dune fields required for both resiliency and additional protection for the public. The City should agree to begin to increase efforts to grow these dunes immediately. The City and USACE should jointly monitor the program and identify the need to adapt the program as needed. If, by the 2024 renourishment, it is clear that the nature-based processes are not creating the dunes needed in any sections to provide the desired resiliency and 100 year flood protection, I would actively support construction of artificial dunes in those locations.

Alternately, the 2024 renourishment, the USACE might investigate keeping the Status Quo Advanced Fill design template but add an extra layer of sand at the back of the profile which the wind could in the words of the USACE representative, "kind of blow(n) it up into a dune." Sand trapping fencing and vegetation would have to be in place before starting such an effort. It might be appropriate to use some of the finer sediment, perhaps even sand marginal on the fine end for this dune source layer. Best estimate is that the existing dunes in the NCSPP needs 200,000 to 300,000 cubic yards of sand to achieve the minimum standard dune volume (FEMA rule 540) that is the goal to maximize project resiliency. I believe that any sand volume specifically added to the nourishment template for dunes in

any way should be in addition to the standard nourishment template volume so that design beach width is not lost.

Other recommended changes to other report sections

Introduction

In the introduction, I believe it might be helpful to recognize that the original project premise that the elevation of the dunes in Fernandina Beach is sufficient to protect all structures in the NCSPP from storm surge flooding is no longer considered to be true. It could be helpful to reference the FEMA FIRM mapping and methodology. This does not suggest that at this point the entire NCSPP funding and Congressional Authorization needs to be redone because we believe that a dune structure not overtopped by the 100-year storm provides both a good flood protection standard and a good project resiliency standard.

Also in the Introduction, we should revise the proposed future nourishment template to make reference to additions of sand as necessary in 2024 to create artificial dunes where more natural methods have been too slow to achieve resiliency standards

The Pertinent Data Table on Page viii would be revised to say under EDR Recommendation column:

"Planned Periodic Nourishment Volume"	1, 472,000 plus up to 300,000 in 2024 only
"Dune Crest Width" (Plug in emergency access)	70 feet
"Dune Slope"	1V:3H Land
	1V:5H Water
"Volume"	1100 cu. yd.
"Vehicle Mat"	N/A
"Sand Fencing"	6000 feet
"Elevated Walkovers"	2-Total length 400'

Section 7 Sea Level Rise

In Section 7.1, the entire analysis is difficult to understand. It clearly shows expectations of Sea Level Rise over the project duration and suggests that the berm elevation should be adjusted accordingly but then suggests any changes in the project scope would be delayed until renewal comes up in 2058.

Bruun's Rule suggests that for a beach like ours, a 1" rise in sea level rise (SLR) would result in a 4 to 8 foot loss in beach (Dean and Dalrymple p 187). To raise the berm one inch to maintain the erosion control line would take an estimated 100 cubic feet/foot of beach front or about 76,000 cubic yards of sand for the project length (assuming 1.0 0 overfill ratio). This is based on the conservative estimation

that the entire profile from the dune to the depth of closure has to be raised 1” to preserve the equilibrium profile. It also assumes an estimate of 1200 feet for the width of the dune/beach/nearshore system.

The charts presented are difficult to read but numbers publicly used suggest we could experience several inches of SLR before the 2058 reevaluation date suggesting the issues need to have a little more attention than suggested in Section 7.1 and perhaps should be not considered at this time.

Section 8 Cost Estimate

The only item in paragraph 3 of page 24 we are not including in the proposal is the “creating emergency stockpiles”

Table 8.1 The proposed Nassau County EDR Budget is on the next page:

Section 10 Cost Allocation and Cost Sharing It was announced at the August 5, 2019 presentation that for the recommended EDR, the cost sharing ratio will move to 100% Federal.


Current FEMA VE
Flood zone limit
VE Flood Zone limt
w/ USACE Proposal
Proposed
"Dune"
Proposed
"Dune"
Higher Emergency
Access Road
Google Earth

Table 8.1 Nassau County EDR Budget Estimate -Revised

Location	Description	Feature	Unit Price	Units	Estimated Cost	Column1 Item total	Column12 Cum total
Close Dolphin Road	Fill-in the gap	Build Dune	$ 67.50 /cubic foot	1100	$ 74,250		
Emergency Access	to close						
Relocate to end	Emergency	Vegetation	$ 5.00 /square foot	5600	$ 28,000		
of Atlantic	Access Road						
	At Dolphin & move	Conversion at	$ 1,000.00	Lump	$ 1,000		
	to end of Atlantic	Atlantic					
						$ 103,250	$ 103,250
Restoration of	Install walkover	Build new walko	$ 875.00 /foot	200	$ 175,000		
Ocean Avenue Dune	1st Avenue						
		Sand fencing	$ 4.88 /foot	250	$ 1,220		
		Vegetation	$ 2.00 /square foot	2000	$ 4,000		
		Fill hole in dune	$ 3.50 /cubic ft	10	$ 35		
						$ 180,255	$ 283,505
	Install walkover	Walkover	$ 875.00 /foot	200	$ 175,000		
	at 3rd Avenue (6N)						
		Sand fencing	$ 4.88 /foot	250	$ 1,220		
		Vegetation	$ 2.00 /square foot	2000	$ 4,000		
		fill hole in dune	$ 3.50 /cubic ft	10	$ 35		
						$ 180,255	$ 463,760
	Restrict walkover	Sand fencing	$ 4.88 /foot	1200	$ 5,856		
	2nd, 4th, 7th &						
	8th.	Vegetation	$ 2.00 /square foot	9600	$ 19,200		
		Fill hole in dune	$ 3.50 /cubic ft	50	$ 175		
						$ 25,231	$ 488,991
	Seal open sections	Sand fencing	$ 4.88 /foot	3400	$ 16,592		
	of Ocean Avenue						
	Dune	Vegetation	$ 2.00 /square foot	3400	$ 6,800		
		Fill hole in dune	$ 3.50 /cubic ft	40	$ 140		
						$ 23,532	$ 512,523

	Description	Feature	Column2	Unit Price	Units	Estimated Cost
Close Dolphin Road	Fill-in the gap	Build Dune		$ 67.50 /cubic foot	1100	$ 74,250
	created by					
	Emergency	Vegetation		$ 5.00 /square foot	5600	$ 28,000
	Access Road					
	At Dolphin &	Conversion at		$ 1,000.00	Lump	$ 1,000
	to Atlantic	Atlantic				
Strenghten Dunes	Install one	New Walkover		$ 875.00 /foot	200	$ 175,000
in Main Beach	walkover,					
	start dune	sand fencing		$ 4.88 /foot	400	$ 1,952
	rebuilding					
	relocate	roping off dune		$ 1.00 /foot	2000	$ 2,000
	v-ball. Rope					
	off dunes	Vegetation		$ 2.00 /square foot	2800	$ 5,600
Restoration of	Install walkover	Walkover		$ 875.00 /foot	200	$ 175,000
Ocean Avenue Dune	1st Avenue					
		Sand fencing		$ 4.88 /foot	250	$ 1,220
		Vegetation		$ 2.00 /square foot	2000	$ 4,000
		Fill hole in dune		$ 3.50 /cubic ft	10	$ 35
	Install walkover	Walkover		$ 875.00 /foot	200	$ 175,000
	6th Avenue					
		Sand fencing		$ 4.88 /foot	250	$ 1,220
		Vegetation		$ 2.00 /square foot	2000	$ 4,000
		Fill hole in dune=j3		$ 3.50 /cubic ft	10	$ 35
	Install walkover	Walkover		$ 875.00 /foot	200	$ 175,000
	3rd Avenue					
		Sand fencing		$ 4.88 /foot	250	$ 1,220
		Vegetation		$ 2.00 /square foot	2000	$ 4,000
		fill hole in dune=j3		$ 3.50 /cubic ft	10	$ 35
	Restrict walkover	Sand fencing		$ 4.88 /foot	1200	$ 5,856
	2nd, 4th, 7th &					
	8th. Seal off 5th	Vegetation		$ 2.00 /square foot	9600	$ 19,200
		Fill hole in dune		$ 3.50 /cubic ft	50	$ 175
	Seal open sections	Sand fencing		$ 4.88 /foot	3400	$ 16,592
	Ocean Avenue					
		Vegetation		$ 2.00 /foot	3400	$ 6,800

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DEPARTMENT OF THE ARMY
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AUG 09 2019

Planning and Policy Division
Environmental Branch

Mr. Jay Herrington, Field Supervisor
U. S. Fish & Wildlife Service
North Florida Ecological Services Office
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Dear Mr. Herrington:

The U.S. Army Corps of Engineers, Jacksonville District (Corps) has prepared a Supplemental Environmental Assessment (SEA) in accordance with the National Environmental Policy Act of 1969, as amended (NEPA). The SEA follows the intent of the White House's Council of Environmental Quality regulations to evaluate design changes to add or modify sand dunes (dunes) for five existing federal Shore Protection Projects (SPP) located in Nassau, Duval, St. Johns and Brevard Counties, Florida (Figure 1: Location Map).

The project addresses the opportunity to add or modify dunes to contribute to authorized project purposes including increased project robustness, resiliency, and reliability per Corps' Engineering and Construction Bulletin 2018-2. An evaluation of the performance of existing dunes, including reducing erosion and inundation damages, elongating nourishment intervals, decreasing nourishment volumes, and incidental environmental benefits will be made. A generalized dune template has been developed for comparison to the existing beach template; the dune template could include elongation of existing dunes, closing existing gaps in the dune line, realigning the current dune line or creating dunes in areas where they do not currently exist. Design considerations will also include vegetation and sand fencing which can enhance dune stability and beach accretion rates. This SEA evaluates the effects of the Preferred Alternatives and the No Action Alternatives for each of the five SPPs.

The Corps will abide by all terms and conditions within the USFWS State Programmatic Biological Opinion (SPBO) and the USFWS Programmatic Piping Plover Biological Opinion (P^3BO). Standard Manatee Protection Measures would be imposed on activities in the water. Protection measures for nesting sea turtles and piping plovers shall be incorporated into the project plans and specifications in compliance with the terms and conditions of the SPBO and P^3BO. Red knots may occasionally use the project areas during winter and migration periods. Because suitable habitat for the red knot and piping plover is similar, minimization measures for potential effects to red knots in non-optimal habitat will be incorporated into the project through the Corps' implementation of the P^3BO Conservation Measures.

The Corps has determined that the proposed activity may affect nesting sea turtles and may affect, but is not likely to adversely affect, manatee, piping plover and red knot. The Corps has also determined that the proposed activity may affect, but is not likely to adversely affect, loggerhead turtle designated critical habitat.

Additional information on the SEA can be found at the following website. Click on Multiple Counties, then scroll down to Dune Design Evaluation Shore Protection Projects Nassau, Duval, St. Johns and Brevard Counties and click on "SEA and/or Proposed FONSI."

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx

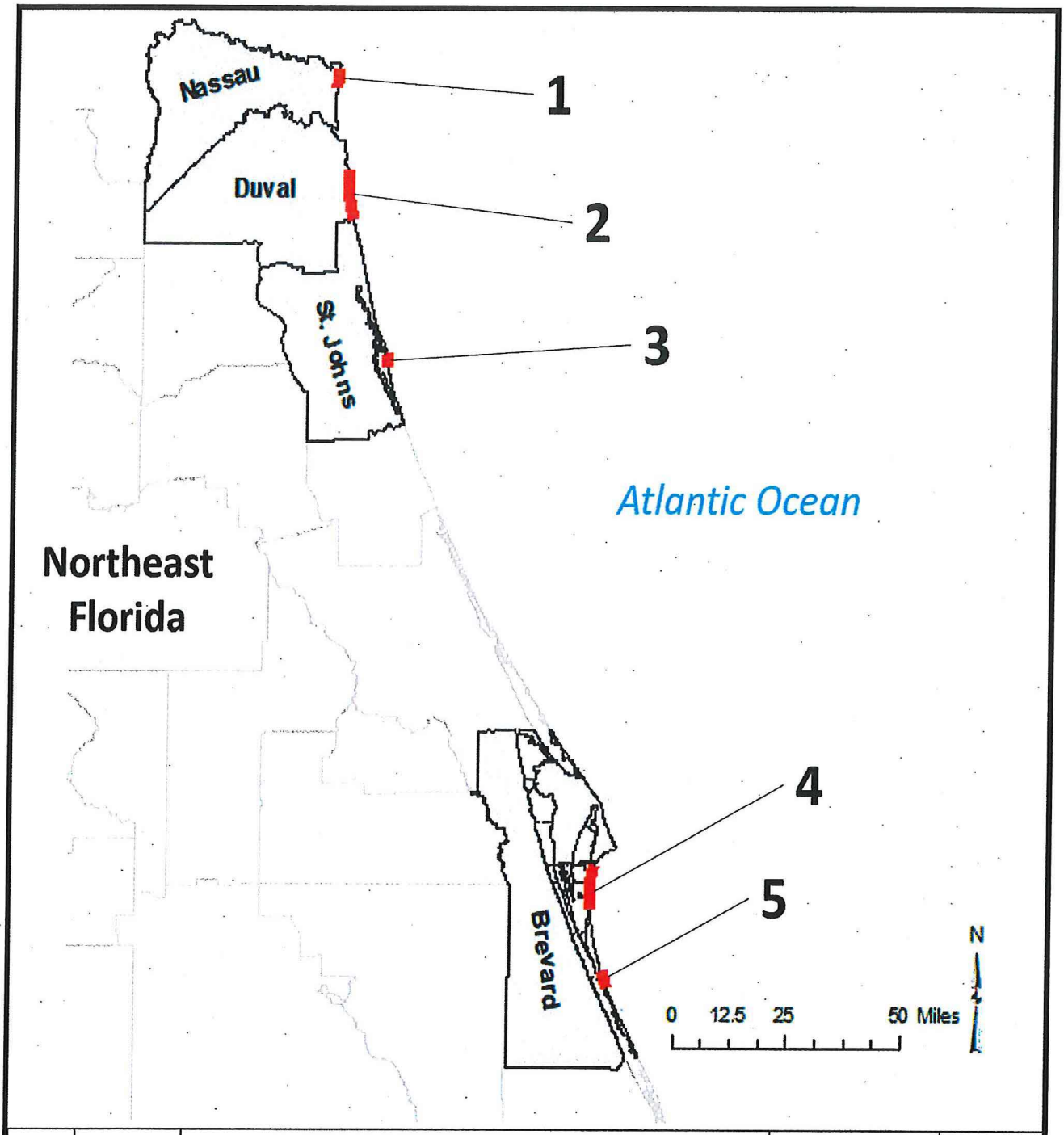
Should you determine that the proposed activity is not within the scope of the SPBO and the P^{3}BO please consider this letter initiation of consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended. The Corps respectfully requests a response within 30 days of date of this letter. If you have any questions, please contact Wendy Dauberman at 904-232-3206 or by email (wendy.s.dauberman-zerby@usace.army.mil).

Sincerely,

Angela E. Dunn
Chief, Environmental Branch

Enclosure

Cc: Annie Dziergowski, U.S. Fish & Wildlife Service, North Florida Ecological Services Field Office, 7915 Baymeadows Way, Suite 200, Jacksonville, FL 32256



Map ID	County	Project Name	Segment	Length (mi)
1	Nassau	Nassau County, FL Shore Protection Project	na	3.9
2	Duval	Duval County, FL Shore Protection Project	na	10
3	St. Johns	St. Johns County, FL Shore Protection Project	St. Augustine Beach	2.5
4	Brevard	Brevard County, FL Shore Protection Project	North Reach	9.4
5	Brevard	Brevard County, FL Shore Protection Project	South Reach	3.4

Figure 1: Location Map for SPPs in Nassau, Duval, St. Johns, and Brevard Counties.

Dauberman-Zerby, Wendy S CIV USARMY CESAJ (USA)

From: Nguyen, Tina <tina_nguyen@fws.gov>
Sent: Tuesday, October 22, 2019 1:43 PM
To: Dunn, Angela E CIV USARMY CESAJ (USA); Dauberman-Zerby, Wendy S CIV USARMY CESAJ (USA)
Cc: Annie Dziergowski
Subject: [Non-DoD Source] USFWS - NE Florida Dune Environmental Assessment Consultation

Dear Wendy,

The U.S. Fish and Wildlife Service (Service) has reviewed the Corps proposed NE Florida Dune Environmental Assessment (SEA) and its implementing regulations to evaluate design changes to incorporate resiliency features into existing Federal Shore Protection Projects (SPP) located in Nassau, Duval, St. Johns, and Brevard counties, Florida and its effects on nesting sea turtles, piping plover, red knot, manatee, and Anastasia beach mouse. Brevard County is inclusive of two projects, North Reach segment and South Reach segment. The Corps has determined that the proposed activities including sand placement may affect nesting sea turtles and may affect, but is not likely to adversely affect the piping plover, red knot, manatee, and Anastasia beach mouse. The Corps has also determined that the proposed activity may affect, but is not likely to adversely affect, loggerhead turtle designated critical habitat.

The Corps will abide by all terms and conditions within the USFWS Statewide Programmatic Biological Opinion (SPBO) and the USWFS Programmatic Piping Plover Biological Opinion (P^{3}BO). Standard Manatee Protections Measures would be imposed on activities in the water. Protection measures for nesting sea turtles and piping plovers shall be incorporated into project plans and specifications in compliance with the terms and conditions of the SPBO and P3BO. Red Knots may occasionally use the project areas during winter and migration periods. Because suitable habitat for the red knot and piping plover is similar, minimization measures for potential effects to red knots in non-optimal habitat will be incorporated through the Corps implementation of the P^{3}BO Conservation Measures.

The Service concurs with the Corps determinations that the project is likely to adversely affect nesting sea turtles and may affect, but is not likely to adversely affect the piping plover, red knot, manatee, Anastasia beach mouse, and loggerhead turtle designated critical habitat. The Service also agrees that the project conforms to and is covered by the SPBO and the P^{3}BO.

This project has been assigned the TAILS number: **04EF1000-2020-E-00183** for future reference. An official letter of concurrence regarding this project will be sent within the following week. This email can be used as a record for Section 7 consultation under the Endangered Species Act with the Service.

Best,

Tina

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New projects should be submitted to: jaxregs@fws.gov

Tina Nguyen
Project Consultation
Fish and Wildlife Biologist
US Fish and Wildlife Service
North Florida Ecological Services Field Office
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256

Ph: 904-731-3098
Fax: 904-731-3045
Email: tina_nguyen@fws.gov

Blockedhttps://www.fws.gov/northflorida/

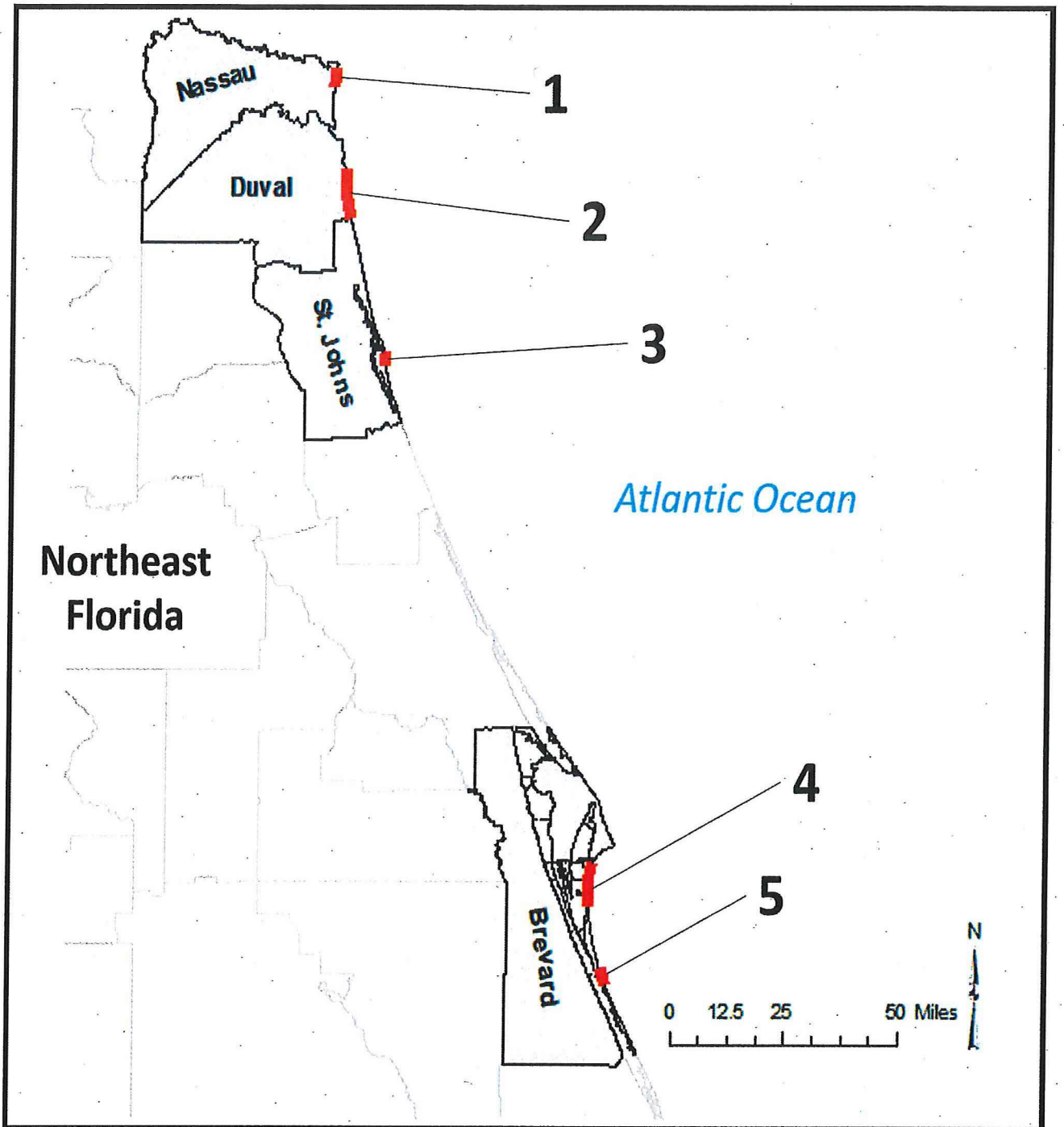

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Figure 1: Location Map for SPPs in Nassau, Duval, St. Johns, and Brevard Counties.

Appendix C - Recommended Plans

Appendix C can be located at the following webpage:

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx

Click on Multiple Counties, then scroll down to Dune Design Evaluation Shore Protection Projects Nassau, Duval, St. Johns and Brevard Counties and click on “Appendix C”.