



**UNITED STATES DEPARTMENT OF COMMERCE**  
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F/SER31:JS  
SERO-2020-02388

Mr. Randall Overton  
Director, District Bridge Program  
Coast Guard Seventh District  
909 SE 1<sup>st</sup> Avenue Suite 432  
Miami, Florida 33131

Ref: Coast Guard File Number 3944/3945, US Coast Guard, Miami Beach Corridor Rapid Transit Project Bay Crossing, Miami-Dade County, Florida

Dear Mr. Overton:

The enclosed Biological Opinion (Opinion) was prepared by the National Marine Fisheries Service (NMFS) pursuant to Section 7(a)(2) of the Endangered Species Act (ESA). The Opinion considers the effects of a proposal to construct the new Miami Beach Corridor Rapid Transit Project Bay Crossing. NMFS concludes that the proposed action may affect, but is not likely to adversely affect, green sea turtle (North and South Atlantic Distinct Population Segments [DPSs]), hawksbill sea turtle, Kemp's ridley sea turtle, loggerhead sea turtle (Northwest Atlantic DPS), leatherback sea turtle, giant manta ray, Nassau grouper, and smalltooth sawfish (United States DPS). NMFS concludes that the proposed action is likely to adversely affect, but will not destroy or adversely modify, Johnson's seagrass designated critical habitat.

This project has been assigned the tracking number SERO-2020-02388 in the NMFS Environmental Consultation Organizer (ECO). Please refer to the ECO number in all future inquiries regarding this consultation. Please direct questions regarding this Opinion to Jennifer Schull, Consultation Biologist, by phone at (561) 440-1748, or by email at [Jennifer.Schull@noaa.gov](mailto:Jennifer.Schull@noaa.gov).

Sincerely,

Andrew J. Strelcheck  
Acting Regional Administrator

Enclosure:  
Biological Opinion

File: 1514-22.h



**Endangered Species Act - Section 7 Consultation  
Biological Opinion**

**Action Agency:** United States Coast Guard

**Applicant:** Miami-Dade County Department of Transportation and Public Works

**Activity:** Miami Beach Corridor Rapid Transit Project, Miami-Dade County, Florida

**Consulting Agency:** National Oceanic and Atmospheric Administration (NOAA),  
National Marine Fisheries Service (NMFS),  
Southeast Regional Office, Protected Resources Division (PRD),  
St. Petersburg, Florida

Consultation Tracking Number SERO-2020-02388

**Approved by:** \_\_\_\_\_  
Andrew J. Strelcheck, Acting Regional Administrator  
NMFS, Southeast Regional Office  
St. Petersburg, Florida

**Date Issued:** \_\_\_\_\_

**Table of Contents**

1 CONSULTATION HISTORY ..... 5  
2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA ..... 6  
3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT ..... 10  
4 ENVIRONMENTAL BASELINE..... 19  
5 EFFECTS OF THE ACTION ON CRITICAL HABITAT ..... 22  
6 CUMULATIVE EFFECTS ..... 24  
7 DESTRUCTION/ADVERSE MODIFICATION ANALYSIS..... 25  
8 CONCLUSION..... 27  
9 REINITIATION OF CONSULTATION..... 28  
10 LITERATURE CITED ..... 28

**Figures**

Figure 1. Image of the approximate project location (red line) and surrounding area (©2020 Google) ..... 10  
Figure 2. Johnson’s seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO) ..... 18

**Tables**

Table 1. Summary of Pile Installation ..... 8  
Table 2. Effects Determination(s) for Species the Action Agency and/or NMFS Believe May Be Affected by the Proposed Action..... 11  
Table 3. Effects Determinations for Designated Critical Habitat the Action Agency and/or NMFS Believe May Be Affected by the Proposed Action ..... 11  
Table 4. Designated Critical Habitat Units for Johnson’s Seagrass ..... 17  
Table 5. Federal Actions within Action Area with Impacts to Johnson’s Seagrass Critical Habitat..... 21

**Acronyms and Abbreviations**

CFR	Code of Federal Regulations
DPS	Distinct Population Segment
DTPW	Miami-Dade County, Department of Transportation and Public Works
ECO	NMFS Environmental Consultation Organizer
ESA	Endangered Species Act
FRP	Fiber Reinforced Polymer
MHWL	Mean High Water Line
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
Opinion	Biological Opinion
PRD	NMFS Southeast Regional Office Protected Resources Division
REA	Resource Equivalency Analysis
U.S.	United States
USACE	U.S. Army Corps of Engineers
USCG	United States Coast Guard

**Units of Measurement**

ac	acre(s)
ft	foot/feet

ft <sup>2</sup>	square foot/feet
in	inch(es)
m	meter(s)
mi	miles

## **Introduction**

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Section 7(a)(2) of the ESA of 1973, as amended (16 U.S.C. § 1531 et seq.), requires that each federal agency ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. Section 7(a)(2) requires federal agencies to consult with the appropriate Secretary in carrying out these responsibilities. The National Oceanic and Atmospheric Administration (NOAA) NMFS and the United States (U.S.) Fish and Wildlife Service share responsibilities for administering the ESA.

Consultation is required when a federal action agency determines that a proposed action “may affect” listed species or designated critical habitat. Consultations on most listed marine species and their designated critical habitat are conducted between the action agency and NMFS. Informal consultation is concluded after NMFS determines that the action is not likely to adversely affect listed species or critical habitat. Formal consultation is concluded after NMFS issues a Biological Opinion (“Opinion”) that identifies whether a proposed action is likely to jeopardize the continued existence of a listed species, or destroy or adversely modify critical habitat, in which case reasonable and prudent alternatives to the action as proposed must be identified to avoid these outcomes. The Opinion states the amount or extent of incidental take of the listed species that may occur, develops measures (i.e., reasonable and prudent measures) to reduce the effect of take, and recommends conservation measures to further the recovery of the species. No incidental destruction or adverse modification of designated critical habitat may be authorized, and thus there are no reasonable and prudent measures – only reasonable and prudent alternatives that must avoid destruction or adverse modification.

This document represents NMFS’s Opinion based on our review of impacts associated with the proposed action to issue a permit within Miami-Dade County, Florida. This Opinion analyzes the project’s effects on threatened and endangered species and designated critical habitat, in accordance with Section 7 of the ESA. We based our Opinion on project information provided by the USCG, consultants for the applicant, DTPW, and other sources of information, including the published literature cited herein.

## **1 CONSULTATION HISTORY**

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The following is the consultation history for NMFS ECO number SERO-2020-02388:

- 1/24/19 – NMFS conducted a site inspection
- 1/28/19 – NMFS uploaded a response to the Efficient Transportation Decision Making #14257 Planning Screen
- July to Aug 2019 – Multiple calls with project consultants to discuss project and coral survey design
- 9/12/19 – NMFS attended a public meeting on Miami Beach
- 10/9/19 – NMFS participated in a preliminary call with consultants to discuss mitigation strategies
- 10/23/19 – NMFS participated in a multi-agency site visit
- 12/6/19 – NMFS participated in an interagency pre-application meeting

- 1/30/20 – NMFS participated in a call with project consultants to work on REA and coral impacts
- 2/14/20 – NMFS participated in a call with project consultants to discuss REA and requirements for ESA Section 7 consultation
- 3/11/20 – NMFS participated in an interagency call on consultation initiation process
- 4/9/20 – NMFS participated in a call to discuss Biscayne Bay Aquatic Preserve permitting guidelines
- 4/18/20 – USCG requested NMFS serve as cooperating agency
- 5/15/20 – NMFS responded affirmatively to USCG, agreeing to serve as cooperating agency
- 8/31/20 – USCG submitted request to NMFS for ESA Section 7 and Essential Fish Habitat consultations
- 9/24/20, 9/25/20, 10/13/20 – NMFS requests additional information for ESA Section 7 consultations
- 10/26/20 – USCG sent addendum modifying effects determination for Nassau grouper, Giant Manta Ray, and Johnson’s seagrass critical habitat
- 11/25/20 – NMFS receives a response to requests for information
- 12/24/20 – NMFS receives additional information on previous request for information and initiates consultation that day

## **2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA**

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### **2.1 Proposed Action**

The applicant, DTPW, proposes to construct an elevated guide rail rapid transit line over Biscayne Bay to link the City of Miami to the City of Miami Beach adjacent to and south of the MacArthur Causeway. The project will be built by DTPW as part of its Strategic Miami Area Rapid Transit Plan (SMART Plan). The project will consist of three sections: a west bridge, a causeway section, and an east bridge. The bridges will match the clearances of the existing MacArthur Causeway vehicular bridges, and the causeway section will be 16.5 feet (ft) above the road grade. The entire project is approximately 3.7 miles (mi) in length.

The proposed west bridge will be at risk for strikes by large vessels due to its proximity to the Port of Miami and therefore, will be fortified by construction of two drilled shafts per bent. For the west bridge, construction will consist of 14 bents, each consisting of two 84-in diameter drilled concrete shafts with permanent steel casings. A temporary steel casing will surround the shaft while it is being drilled for containment. Temporary templates will be erected to support the drilled shaft construction and each of these templates will be supported by four 18-in steel pipe piles. A cofferdam (45 ft by 24 ft) will be constructed around the two drilled shafts to dewater and isolate the area in order to form and pour a 326 square foot (ft<sup>2</sup>) pier cap and the superstructure on top of the drilled shafts.

For the proposed east bridge, construction will consist of 16 bents, each consisting of one 96-in diameter drilled concrete shaft with permanent steel casings. A temporary steel casing will surround the shaft while it is being drilled for containment. A cofferdam (24 ft by 24 ft) will be constructed around each drilled shaft to form and pour a 113.1 ft<sup>2</sup> pier cap and the superstructure.

Templates supported by 4 18-in steel pipe piles will be erected to support drilled shaft construction.

For the causeway section, construction will consist of 56 bents, each consisting of one 96-in drilled shaft with permanent steel casings. A temporary steel casing will surround the shaft while it is being drilled for containment. No cofferdams will be constructed since pier caps are unnecessary. Templates supported by 4 18-in steel pipe piles will be erected to support drilled shaft construction. A new fender system will be constructed to guide vessels under the new bridges. This fender system will be constructed of 14-inch (in) FRP composite piles.

Barges will be used for most of the construction since traffic needs to be maintained along the adjacent MacArthur Causeway. Three barges will be on site at each location for 5 to 9 weeks at a time. Two of the three barges will be anchored to the seafloor using two 36-in diameter spuds. In waters too shallow for barges, temporary trestles supported by steel pipe piles will be constructed to support construction equipment. Three temporary trestles will be constructed for the west bridge construction and two temporary trestles will be built to construct the east bridge. These trestles will be supported by 36-in steel pipe piles. Table 1 provides a summary of the piles that will be used throughout the project.

DTPW has committed to ensuring no drilling slurry is discharged into Biscayne Bay. Containment systems will contain drilling fluid during construction, and it will be pumped out to containment barges and tanks and removed from the area for disposal.

In-water work will take approximately 33 months. Work will be conducted during daylight hours only. The applicant will comply with *NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions*<sup>1</sup>. Ramp up procedures will be followed each day for vibratory hammer and impact hammer activities. The vibratory and impact hammer will start each day at less than maximum power to give ample time for protected species to leave the area on their own volition prior to maximum noise and vibration propagation. This reduces the likelihood protected species are within the range for noise-related injury.

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<sup>1</sup> NMFS. 2006. Sea Turtle and Smalltooth Sawfish Construction Conditions revised March 23, 2006. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, Saint Petersburg, Florida.

**Table 1. Summary of Pile Installation**

<b>Pile type(s)</b>	<b>Number of Piles</b>	<b>Installation Method</b>	<b>Seconds of vibration or strikes per pile</b>	<b>Pile Use</b>
18-in Steel Pipe	344	Vibratory Hammer	600	Drilled Shaft Templates
36-in Steel Pipe	216	Vibratory Hammer	1,800	Temporary Trestles
84-in Steel Pipe	28	Vibratory Hammer	20,000	Permanent Drilled Shaft Casings – West Bridge
96-in Steel Pipe	72	Vibratory Hammer	20,000	Permanent Drilled Shaft Casings – East Bridge and Causeway
120-in Steel Pipe	100	Vibratory Hammer	20,000	Temporary Drilled Shaft Casings
48-in by 18-in Sheet Pile	860	Vibratory Hammer	600	Coffercells
14-in FRP	140	Impact Hammer	1,200	Fender Piles

## 2.2 Action Area

The proposed project site is parallel to and south of the MacArthur Causeway connecting the City of Miami with the City of Miami Beach in Miami-Dade County, Florida (central coordinate approximately 25.7777°N, 80.165605°W, North American Datum 1983), approximately 1 mi from Government Cut. Government Cut is the nearest opening to the Atlantic Ocean (approximately 1 nautical mile) and experiences significant boat traffic, including cruise ships (Figure 1). The project occurs within the Biscayne Bay Aquatic Preserve. Biscayne Bay is a state-designated Outstanding Florida Water. The habitats impacted by this project are readily accessible to NOAA trust resources. Project area depths range from 0-15 ft as the narrow shelf slopes gently towards the navigation channel. The project area experiences high velocity currents and water is often turbid. Although the area is highly urbanized, seagrass, corals, sponges, macroalgae, hardbottom, mangroves, sand, and sand/shell hash occur within the project area. Extensive riprap lines the shoreline of the causeway section of the project. The project site is located within Unit J of Johnson’s seagrass critical habitat.

Miami-Dade County contractors performed coral and mangrove surveys in August 2019. Seagrass surveys were conducted in September 2018. One seagrass bed is present at the west bridge site, consisting of approximately 1.35 acres (ac) with 90 percent cover by *Halophila decipiens*. Three seagrass beds are present at the east bridge site, consisting of approximately 0.63 ac and a combined percent cover of 40 percent or less for *H. decipiens*. Impacts to seagrass are expected from barge spudding, constructing the drilled shafts, installing the drilled shaft templates and cofferdams, and shading from barges and temporary trestle bridges. The applicant estimates overall impacts to seagrass will be 0.18 ac. NMFS believes this may be an underestimate of impacts, but the overall project impact to seagrass resources is unlikely to change the effects determinations for ESA-listed species and designated critical habitat herein.



The project is within designated critical habitat for Johnson's seagrass, but no Johnson's seagrass was observed.

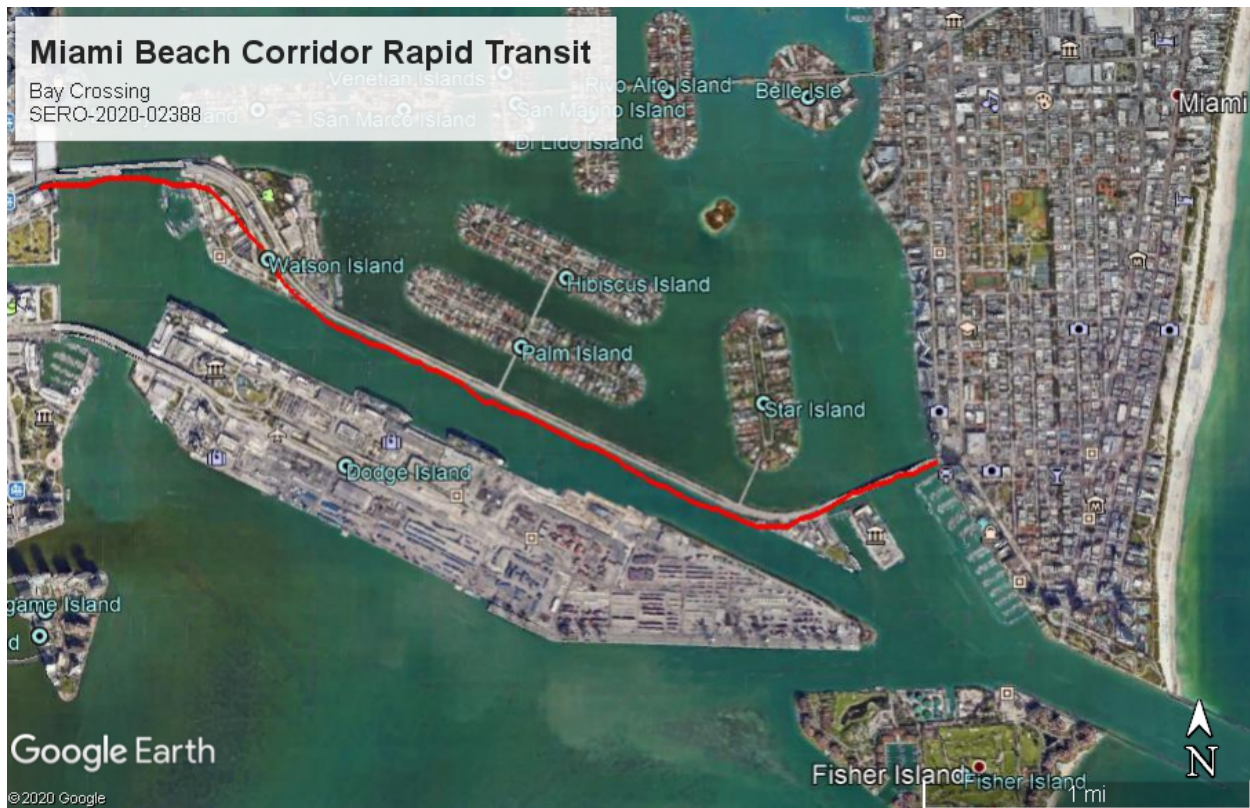
Benthic habitats along the causeway portion of the project are comprised of medium sized boulder riprap in 0-4 ft of water and low relief hardbottom from the toe of the riprap to the beginning of the navigation channel. These riprap boulders and hardbottom areas are colonized by a diverse array of algae and invertebrates, including corals, octocorals, sponges, and bryozoans. No ESA-listed corals were found during benthic surveys. Most of the 56 drilled shafts along the causeway section of the project will be sited above the mean low water line and will have little to no impact to corals or submerged riprap. It is estimated that up to 20,160 ft<sup>2</sup> of riprap (56 shafts x 360 ft<sup>2</sup>) will need to be removed to accommodate installation of the drilled shafts. Most of this riprap is located above the MHWL. The riprap will be replaced post construction.

The low relief hardbottom will not be impacted by the installation of the drilled shafts, but spuds from the construction barges will likely impact this habitat. Exact locations of barge spudding are not known. To determine potential impacts to corals, octocorals and sponges, the applicant extrapolated data from coral surveys to determine size, density and abundance of corals, octocorals, and sponges throughout the hardbottom habitat. The applicant then determined the theoretical square footage of spudding impacts (11,086 ft<sup>2</sup> (0.25 ac))<sup>2</sup> to calculate a theoretical impact to 6,030 individual corals, 273 octocorals, and 2,573 sponges within the project area. No ESA-listed corals were found throughout the project corridor where construction will occur.

Red, black, and white mangroves have colonized the riprap along MacArthur Causeway, mostly above the MHWL. Of the 121 individual mangroves present along the shoreline, 56 are expected to be lost from construction. These mangroves provide minimal habitat for NOAA trust resources. We expect mangroves to recruit naturally to the riprap-lined shoreline after construction.

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<sup>2</sup> Two barges per site, two spuds each barge, each spud 7.07 ft<sup>2</sup>, 7 visits each barge, 56 pier locations equals 11,086 ft<sup>2</sup>.



**Figure 1. Image of the approximate project location (red line) and surrounding area (©2020 Google)**

The action area is defined by regulation as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action” (50 Code of Federal Regulations [CFR] 402.02). As such, the action area includes the areas in which construction will take place, as well as the immediate surrounding areas that may be affected by noise generated from pile driving and vibratory hammer use. Thus, the action area is equivalent to the maximum radius of noise effects to ESA-listed species that are expected to result from the installation of steel sheet piles and pilings using impact or vibratory hammer, which in this case is a 3,280.8-ft behavioral noise radius.

### **3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT**

This section identifies ESA-listed species and designated critical habitat under NMFS’s jurisdiction that may occur in or near the action area and evaluates which of those may be affected by the proposed action. Effects determinations are summarized in Table 2 and Table 3.

Table 2 provides the effect determinations for ESA-listed species the USCG and/or NMFS believe may be affected by the proposed action.

**Table 2. Effects Determination(s) for Species the Action Agency and/or NMFS Believe May Be Affected by the Proposed Action<sup>3</sup>**

Species	ESA Listing Status	Action Agency Effect Determination	NMFS Effect Determination
<b>Sea Turtles</b>			
Green (North Atlantic [NA] DPS)	T	NLAA	NLAA
Green (South Atlantic [SA] DPS)	T	NLAA	NLAA
Kemp's ridley	E	NLAA	NLAA
Leatherback	E	NLAA	NLAA
Loggerhead (Northwest Atlantic [NWA] DPS)	T	NLAA	NLAA
Hawksbill	E	NLAA	NLAA
<b>Fish</b>			
Smalltooth sawfish (U.S. DPS)	E	NLAA	NLAA
Nassau grouper	T	NLAA	NLAA
Giant manta ray	T	NLAA	NLAA
<b>Invertebrates and Marine Plants</b>			
Elkhorn coral ( <i>Acropora palmata</i> )	T	NLAA	NP
Staghorn coral ( <i>Acropora cervicornis</i> )	T	NLAA	NP
Boulder star coral ( <i>Orbicella franksi</i> )	T	NLAA	NP
Mountainous star coral ( <i>Orbicella faveolata</i> )	T	NLAA	NP
Lobed star coral ( <i>Orbicella annularis</i> )	T	NLAA	NP
Rough cactus coral ( <i>Mycetophyllia ferox</i> )	T	NE	NP
Pillar coral ( <i>Dendrogyra cylindrus</i> )	T	NE	NP
Johnson's seagrass	T	NE	NP

Because elkhorn coral, staghorn coral, star coral (*Orbicella sp.*), and Johnson's seagrass were not observed during the benthic survey of this site, we believe these species are not present within the action area.

Table 3 provides the effects determination for designated critical habitat occurring in the action area that the USCG and NMFS believe may be affected by the proposed action.

**Table 3. Effects Determinations for Designated Critical Habitat the Action Agency and/or NMFS Believe May Be Affected by the Proposed Action**

Critical Habitat	Unit	USCG Effect Determination	NMFS Effect Determination
Johnson's seagrass	Unit J	Likely to adversely affect	Likely to adversely affect, will not destroy or adversely modify

<sup>3</sup> E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect; NP = not present

### 3.1 Potential Routes of Effect Not Likely To Adversely Affect Listed Species

We believe that sea turtles (green, Kemp's ridley, loggerhead, leatherback, and hawksbill), and ESA-listed fishes (giant manta rays, Nassau grouper, and smalltooth sawfish) may be found in or near the action area and may be affected by the proposed action covered in this Opinion. We have identified the following potential adverse effects to these species and concluded that these are not likely to adversely affect the ESA-listed species for the reasons described below.

Effects to sea turtles (green, Kemp's ridley, loggerhead, leatherback, and hawksbill), giant manta rays, Nassau grouper, and smalltooth sawfish include the potential for injury from construction equipment or materials. We believe this effect is extremely unlikely to occur. Because these species are highly mobile, we expect these species to move away from the action area if disturbed. The applicant's implementation of *NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions*<sup>1</sup> will further reduce the risk of injuries by requiring all construction workers to watch for sea turtles and smalltooth sawfish. Operation of any mechanical construction equipment will cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of moving equipment. Activities will not resume until the protected species has departed the project area of its own volition.

The action area contains shallow-water seagrass, coral, sponge, octocoral, algae, and mangrove habitats that are established on hardbottom, seawalls, pilings, riprap, shoreline and rubble communities throughout the project corridor. These habitats may be used by sea turtles and ESA-listed fishes for refuge and forage and will be temporarily unavailable to sea turtles and ESA-listed fishes during construction. Giant manta rays may temporarily lose forage habitat containing zooplankton that will be temporarily disturbed by construction activities. Sea turtles and ESA-listed fishes may be affected by their inability to access habitats within the action area due to their avoidance of construction activities, noise and associated disturbances, and physical exclusion from the action area due to turbidity barriers. We believe habitat displacement effects to sea turtles and ESA-listed fishes will be insignificant given the proposed action will be temporary and intermittent (i.e., in-water work will occur during daylight hours only) and will only occur within a relatively small area adjacent to otherwise open water and useable habitat. In addition, because these species are mobile, we expect that they will move away from construction activities and use adjacent areas in Biscayne Bay with similar available habitat. Furthermore, we expect encrusting benthic organisms used for forage and refuge will recruit and grow within the project corridor after completion of the project. While some of these habitats will be permanently lost as a result of new in-water structures, we believe such effects will be insignificant due to the relatively small area of these structures (1,881.76 ft<sup>2</sup> or 0.04 acres) and the availability of similar habitat in adjacent areas in Biscayne Bay.

Effects to listed species as a result of noise created by construction activities can physically injure animals in the affected areas or change animal behavior in the affected areas. Injurious effects can occur in 2 ways. First, immediate adverse effects can occur to listed species if a single noise event exceeds the threshold for direct physical injury. Second, effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects if animals are exposed to the noise levels for sufficiently long periods. Behavioral effects can be adverse if such effects interfere with animals migrating, feeding, resting, or reproducing, for example. Our evaluation of effects to ESA-listed

species as a result of noise created by construction activities is based on the analysis prepared in support of the Opinion for SAJ-82 (NMFS 2014). The noise analysis in this consultation evaluates effects to ESA-listed fish and sea turtles identified by NMFS as potentially affected in the table above (Table 2).<sup>4</sup> To simplify the analysis below, we have combined the analysis of 18-in and 36-in steel pipe piles, and combined the analysis of 84-in, 96-in, and 120-in steel pipe piles.

Based on our noise calculations, which use the best available data for calculating injuries to ESA-listed fish species and sea turtles, installation of 18-in or 36-in steel pipe piles by vibratory hammer will not cause single-strike or peak-pressure injurious noise effects. However, the cumulative sound exposure level over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 1.9 ft (0.6 meters [m]) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species, and because the project occurs in open water and the construction crew will use ramp-up procedures, we expect the species to move away from noise disturbances. Because we anticipate an exposed animal will move away, we believe that animal's suffering physical injury from noise is extremely unlikely to occur. Even in the unlikely event an animal does not vacate the daily cumulative injurious impact zone, the 1.9-ft radius for potential noise effects from the installation of 36-in steel pipe piles by vibratory hammer is smaller than the 50-ft radius that must be visually monitored for smalltooth sawfish and sea turtles in accordance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. Because personnel must cease construction activities if a sea turtle or smalltooth sawfish is sighted per NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, these conditions will provide an additional measure of protection. Thus, we believe the likelihood of any injurious cumulative sound effects is unlikely to occur. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

The installation of 18-in or 36-in steel pipe piles by vibratory hammer could also result in behavioral effects at radii 1,522.8 ft (464.2 m) for ESA-listed fishes and 328.1 ft (100 m) for sea turtles. Due to the mobility of sea turtles and ESA-listed fishes and the use of ramp-up procedures, we expect them to move away from noise disturbances in this open-water environment. Because there is similar habitat nearby in Biscayne Bay, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during installation. Up to 6 piles will be installed per day and installation will occur only during the day. Therefore, these species will be able to resume normal activities during quiet periods between installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

In order to determine the impacts of installation of 84-in, 96-in, and 120-in steel pipe piles by vibratory hammer, we used the largest steel pipe pile data available<sup>5</sup>, which pertains to 72-in steel pipe piles. Based on our noise calculations, which use the best available data for calculating injuries to ESA-listed fish and sea turtles, installation of 84-in, 96-in, or 120-in steel

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<sup>4</sup> While NMFS does not have information regarding noise effects specific to giant manta rays, we believe that effects to giant manta rays from pile driving noise would be very similar to effects on smalltooth sawfish (which are considered in SAJ-82), because both species are elasmobranchs, are very large at birth, and lack swim bladders.

<sup>5</sup> From CALTRANS. 2012. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Report prepared by ICF Jones & Stokes and Illinworth and Rodkin, Inc.

pipe piles by vibratory hammer could cause single-strike or peak-pressure injurious noise effects at a radius of up to 6.1 ft (1.8 m). There are adequate avenues for ESA-listed fish species or sea turtles to leave or avoid the project area during pile-driving activities and the use of ramp-up procedures will encourage ESA-listed species to leave the area. Because it is extremely unlikely that a sea turtle or ESA-listed fish would remain in such close proximity to construction activities, and we anticipate that sea turtles and ESA-listed fish will move away from the project area during set up for pile driving, we believe that an animal's suffering physical injury from peak-pressure noise exposure is extremely unlikely to occur. Even in the unlikely event an animal does not vacate the single-strike or peak-pressure injurious noise impact zone, the 6.1-ft radius is smaller than the 50-ft radius that must be visually monitored for smalltooth sawfish and sea turtles in accordance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These conditions will provide an additional measure of protection by causing activities to stop if a sea turtle or smalltooth sawfish is spotted within 50 ft of operations. Thus, we believe that the potential for peak-pressure injury effects is extremely unlikely to occur.

Cumulative sound exposure level associated with the installation of 84-in, 96-in, or 120-in steel pipe piles by vibratory hammer over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 6.1 ft (1.9 m) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species, and because the project occurs in open water and ramp-up procedures will be used, we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that an animal's suffering physical injury from noise is extremely unlikely to occur. Moreover, as discussed above, even in the unlikely event an animal does not vacate the daily cumulative injurious impact zone, the 6.1-ft radius is smaller than the 50-ft radius that must be visually monitored for smalltooth sawfish and sea turtles in accordance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These conditions will provide an additional measure of protection by causing activities to stop if a sea turtle or smalltooth sawfish is spotted within 50 ft of operation. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

The installation of 84-in, 96-in, or 120-in steel pipe piles by vibratory hammer could also result in behavioral effects at radii 3,280.8 ft (1000 m) for ESA-listed fishes and 706.8 ft (215 m) for sea turtles. Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances in this open-water environment. Because there is similar habitat nearby in Biscayne Bay, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during installation. Because only 1 pile will be installed per day and installation will occur only during the day, these species will be able to resume normal activities during quiet periods between installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

Based on our noise calculations, which use the best available data for calculating injuries to ESA-listed species fish and sea turtles, installation of 48-in by 18-in corrugated steel sheet piles by vibratory hammer will not cause single-strike or peak-pressure injurious noise effects. However, the cumulative sound exposure level over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 0.4 ft (0.1 m) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species and the use of ramp-up procedures, we expect them to

move away from noise disturbances. Because we anticipate the animal will move away, we believe that an animal's suffering physical injury from noise is extremely unlikely to occur. Even in the unlikely event an animal does not vacate the daily cumulative injurious impact zone, the 0.4-ft radius for potential noise effects from the installation of corrugated steel sheet piles by vibratory hammer is smaller than the 50-ft radius that must be visually monitored for smalltooth sawfish and sea turtles in accordance with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. Because personnel must cease construction activities if a sea turtle or smalltooth sawfish is sighted per NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, these conditions will provide an additional measure of protection. Thus, we believe the likelihood of any injurious cumulative sound effects is unlikely to occur. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

The installation of 48-in by 18-in sheet piles by vibratory hammer could also result in behavioral effects at radii 328.1 ft (100 m) for ESA-listed fishes and 70.7 ft (21.5 m) for sea turtles. Due to the mobility of sea turtles and ESA-listed fish, we expect them to move away from these noise disturbances. Because there is similar habitat nearby in Biscayne Bay, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during installation. Up to 15 sheet piles will be installed per day and installation will occur only during the day. Therefore, these species will be able to resume normal activities during quiet periods between installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

Based on our noise calculations, which use the best available data for calculating injuries to ESA-listed species fish and sea turtles, installation of 14-in FRP fender piles by impact hammer will not cause single-strike or peak-pressure injurious noise effects. However, the cumulative sound exposure level over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 93.2 ft (28.4 m) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species and the use of ramp-up procedures, we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that an animal's suffering physical injury from noise is extremely unlikely to occur. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

The installation of 14-in FRP fender piles by impact hammer could also result in behavioral effects at radii 706.8 ft (215.4 m) for ESA-listed fishes and 152.3 ft (46.4 m) for sea turtles. Due to the mobility of sea turtles and ESA-listed fish, we expect them to move away from these noise disturbances. Because there is similar habitat nearby in Biscayne Bay, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during installation. Because only 2 fender piles will be installed per day and installation will occur only during the day, these species will be able to resume normal activities during quiet periods between installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

### **3.2 Designated Critical Habitat Likely To Be Adversely Affected**

The term “critical habitat” is defined in Section 3(5)(A) of the ESA as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (1) essential to the conservation of the species and (2) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. “Conservation” is defined in Section 3(3) of the ESA as “...the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which listing under the ESA is no longer necessary.”

#### **3.2.1 Johnson’s Seagrass Critical Habitat**

##### *Description*

NMFS designated Johnson’s seagrass critical habitat on April 5, 2000 (65 FR 17786; see also, 50 CFR 226.213). The specific areas occupied by Johnson’s seagrass and designated by NMFS as critical habitat are those with 1 or more of the following criteria:

1. Locations with populations that have persisted for 10 years
2. Locations with persistent flowering populations
3. Locations at the northern and southern range limits of the species
4. Locations with unique genetic diversity
5. Locations with a documented high abundance of Johnson’s seagrass compared to other areas in the species’ range

Ten areas (Units) within the range of Johnson’s seagrass (approximately 200 kilometers of coastline from Sebastian Inlet to northern Biscayne Bay, Florida) are designated as Johnson’s seagrass critical habitat (Table 4). The total range-wide acreage of critical habitat for Johnson’s seagrass is roughly 22,574 ac (NMFS 2002).

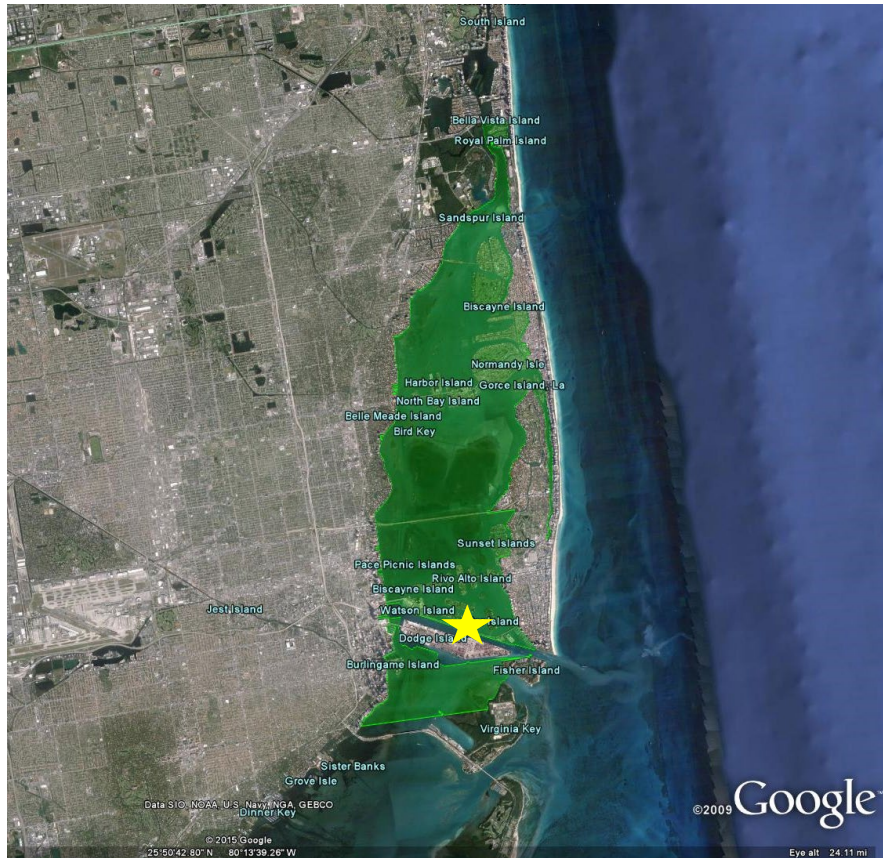


**Table 4. Designated Critical Habitat Units for Johnson’s Seagrass**

<b>Unit</b>	<b>Location/Area</b>
<b>A</b>	A portion of the Indian River, Florida, north of the Sebastian Inlet Channel
<b>B</b>	A portion of the Indian River, Florida, south of the Sebastian Inlet Channel
<b>C</b>	A portion of the Indian River Lagoon, Florida, in the vicinity of the Fort Pierce Inlet
<b>D</b>	A portion of the Indian River Lagoon, Florida, north of the St. Lucie Inlet
<b>E</b>	A portion of Hobe Sound, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway
<b>F</b>	A portion of the south side of Jupiter Inlet, Florida
<b>G</b>	A portion of Lake Worth, Florida, north of Bingham Island
<b>H</b>	A portion of Lake Worth Lagoon, Florida, located just north of the Boynton Inlet
<b>I</b>	A portion of northeast Lake Wyman, Boca Raton, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway
<b>J</b>	A portion of northern Biscayne Bay, Florida, including all parts of the Biscayne Bay Aquatic Preserve excluding the Oleta River, Miami River, and Little River beyond their mouths, the federally marked navigation channel of the Intracoastal Waterway, and all existing federally authorized navigation channels, basins, and berths at the Port of Miami to the currently documented southernmost range of Johnson’s seagrass, Central Key Biscayne

*Critical Habitat Unit Impacted by this Action*

This consultation focuses on an activity that occurs in Unit J, which encompasses the northern portion of Biscayne Bay from Northeast 163<sup>rd</sup> Street south to Central Key Biscayne at 25°45’N (Figure 2). This portion of Biscayne Bay is bound by heavy residential and commercial development, though a few areas of mangrove shoreline remain. Dredge and fill projects have resulted in a number of spoil islands and channels too deep for seagrass growth. Biscayne Bay supports a diversity of biological communities including intertidal wetlands, seagrasses, hard bottom, assemblages, and open water. Unit J is wholly within the Biscayne Bay Aquatic Preserve.



**Figure 2. Johnson's seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO). Star indicates approximate project location within Biscayne Bay.**

### *Essential Features of Critical Habitat*

NMFS identified 4 habitat features essential for the conservation of Johnson's seagrass: (1) adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions; (2) adequate salinity levels, indicating a lack of very frequent or constant discharges of fresh or low-salinity waters; (3) adequate water transparency, which would allow sunlight necessary for photosynthesis; and (4) stable, unconsolidated sediments that are free from physical disturbance. All 4 essential features must be present in an area for it to function as critical habitat for Johnson's seagrass.

### *Status and Threats*

A wide range of activities, many funded, authorized or carried out by federal agencies, have and will continue to affect the essential habitat requirements of Johnson's seagrass. These are generally the same activities that may affect the species itself, and include: (1) vessel traffic and the resulting propeller dredging; (2) dredge and fill projects; (3) dock, marina, and bridge construction; (4) water pollution; and (5) land use practices (shoreline development, agriculture, and aquaculture).

Vessel traffic has the potential to affect Johnson's seagrass critical habitat by reducing water transparency. Operation of vessels in shallow water environments often leads to the suspension

of sediments due to the spinning of propellers on or close to the bottom. Suspended sediments reduce water transparency and the depth to which sunlight penetrates the water column. Populations of Johnson's seagrass that inhabit shallow water and water close to inlets where vessel traffic is concentrated are likely to be most affected. This effect is expected to worsen with increases in boating activity.

The dredging of bottom sediments to maintain, or in some cases create, inlets, canals, and navigation channels can directly affect essential features of Johnson's seagrass critical habitat. Dredging results in turbidity through the suspension of sediments. As discussed previously, the suspension of sediments reduces water transparency and the depth to which sunlight can penetrate the water column. The suspension of sediments from dredging can also re-suspend nutrients, which could result in over-enrichment and/or reduce dissolved oxygen levels. Further, dredging can destabilize sediments and alter both the shape and depth of the bottom within the dredged footprint. This may affect the ability of the critical habitat to function through the removal or modification of essential features.

Dock, marina, and bridge construction leads to loss of habitat via construction impacts (e.g., pile installation) and shading. Similar to dredging, installation of piles for docks or bridges can result in increased turbidity that can negatively impact water transparency over short durations. Additionally, installed piles also replace the stable, unconsolidated bottom sediments essential for the species. Completed structures can have long-term effects on critical habitat in the surrounding area because of the shade they produce. While shading does not affect water transparency directly, it does affect the amount and/or duration of sunlight that can reach the bottom. The threat posed by dock, marina, and bridge construction is especially apparent in coastal areas where Johnson's seagrass is found.

Other threats include inputs from adjacent land use. Johnson's seagrass critical habitat located in proximity to rivers, canal mouths, or other discharge structures is affected by land use within the watershed. Waters with low salinity that are highly colored and often polluted are discharged to the estuarine environment. This can impact salinity, water quality, and water transparency, all essential features of Johnson's seagrass critical habitat. Frequent pulses of freshwater discharge to an estuarine area may decrease salinity of the habitat and provoke physiological stress to the species. Nutrient over-enrichment, caused by inorganic and organic nitrogen and phosphorous loading via urban and agricultural land run-off, stimulates increased algal growth, decreased water transparency, and diminished oxygen content within the water. Low oxygen conditions have a demonstrated negative impact on seagrasses and associated communities. Discharges can also contain colored waters stained by upland vegetation or pollutants. Colored waters released into these areas reduce the amount of sunlight available for photosynthesis by rapidly reducing the amount of shorter wavelength light that reaches the bottom. In general, threats from adjacent land use will be ongoing, randomly occurring events that follow storm events.

#### **4 ENVIRONMENTAL BASELINE**

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By regulation, the environmental baseline for an Opinion refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline

includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process. The consequences to the listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

#### **4.1 Status of Designated Critical Habitat within the Action Area**

As discussed above, this Opinion focuses on an activity occurring in Unit J of Johnson's seagrass designated critical habitat, which encompasses the northern portion of Biscayne Bay from North East 163<sup>rd</sup> Street south to Central Key Biscayne at 25°45'N. The project site is adjacent to the MacArthur Causeway, connecting the City of Miami to City of Miami Beach. A seagrass survey was performed in September 2018. Johnson's seagrass was not observed. The depth within the action area ranges from 0-15 ft. The substrate is sand/shell bottom with riprap, rubble, hardbottom, and seagrass.

#### **4.2 Factors Affecting Johnson's Seagrass Designated Critical Habitat Within the Action Area**

##### *Federal Actions*

A wide range of activities funded, authorized, or carried out by federal agencies may affect the essential features of designated critical habitat for Johnson's seagrass. These include actions permitted or implemented by the USACE such as dredging, dock/marina construction, bridge/highway construction, residential construction, shoreline stabilization, breakwaters, and/or the installation of subaqueous lines or pipelines. Other federal activities that may affect Johnson's seagrass critical habitat include actions by the Environmental Protection Agency and the USACE to manage freshwater discharges into waterways, management of Biscayne Bay Aquatic Preserve, regulation of vessel traffic to minimize propeller dredging and turbidity, and/or other activities by the USCG and U.S. Navy. Although these actions have adversely affected Johnson's seagrass critical habitat, none of these past actions have destroyed or adversely modified Johnson's seagrass critical habitat. Other than the proposed action, the following federally permitted projects in Table 5 are known to have occurred or have had effects to Johnson's seagrass designated critical habitat within the action area, as per a review of the NMFS PRD's completed consultation database by the consulting biologist on March 9, 2021. All of these projects resulted in a determination of may affect, and is likely to adversely affect, but not destroy or adversely modify Johnson's seagrass designated critical habitat.

**Table 5. Federal Actions within Action Area with Impacts to Johnson’s Seagrass Critical Habitat**

<b>Action Agency Identifier</b>	<b>NMFS Identifier</b>	<b>Name of Project</b>	<b>Biological Opinion Completion Date</b>	<b>Project Summary</b>	<b>Impact to Johnson’s Seagrass Critical Habitat</b>
SAJ-2017-02907 & 01036	SER-2018-19123 & 19110	Cejas Dock & Tina Dock	7/18/18	Removal and replacement of dock and installation of boat lifts	916 ft <sup>2</sup> (0.021 ac)
SAJ-2015-2909	SER-2017-18680	Dean Carr Riprap Project	2/12/18	Riprap installation	1,090 ft <sup>2</sup> (0.025 ac)
SAJ-2013-01554	SER-2017-18963	JSG Besson Kayak	3/13/18	Construction of kayak launch	141 ft <sup>2</sup> (0.003 ac)
SAJ-2015-2411 & 2412	SER-2017-18515 & 18508	Lape Holdings LLC Dock Projects	1/5/18	Dock Construction	1164 ft <sup>2</sup> (0.027 ac)
SAJ-2014-00958	SER-2018-19343	Jungle Island Shoreline Stabilization	12/21/18	Riprap shoreline stabilization	1,563 ft <sup>2</sup> (0.036 ac)
SAJ-2015-02909	SER-2016-18329	Dean Carr Dock	5/17/17	Dock removal and construction, with jet ski lift and davit crane	1,063 ft <sup>2</sup> (0.024 ac)
SAJ-2015-1571	SER-2015-17171	Edmund Irvine Seawall and Dock Project	4/7/17	Dock replacement, seawall and riprap installation	1,645 ft <sup>2</sup> (0.038 ac)
SAJ-2016-462	SER-2016-18094	Twenty Two Star Island LLC Dock Project	7/19/17	Installation of wood frame dock	1,778 ft <sup>2</sup> (0.041 ac)
SAJ-2015-622	SER-2016-17903	158 Palm LLC Dock Project	5/3/17	New dock and 2 vessel slip installation	1,286 ft <sup>2</sup> (0.03 ac)
SAJ-2014-2050	SER-2015-16504	Kristi Jernigan Dock Project	4/26/16	Dock Repair	696 ft <sup>2</sup> (0.016 ac)
SAJ-2013-3483	SER-2014-15017	Berdan Group Corp. Pier Project	5/19/15	Pier and mooring piling installation, relocation of boat lift	246 ft <sup>2</sup> (0.006 ac)
SAJ-2013-3339	SER-2014-14823	Michael Sidney Lipscomb Pier & Seawall Project	5/19/15	Installation of seawall, dock, floating pier, mooring for 2 vessels, boat lift and new riprap	1,718 ft <sup>2</sup> (0.040 ac)
SAJ-2014-0058	SER-2014-14693	Bayfront 2011 Property LLC Marina Project	12/9/15	Construction of new 50-slip marina	211,902 ft <sup>2</sup> (4.9 ac)

*Private Recreational Vessel Traffic*

Marina and dock construction increases recreational vessel traffic within areas of Johnson’s seagrass critical habitat, which increases suspended sediments from propellers and could result in propeller dredging. As mentioned above, suspended sediments are known to adversely affect Johnson’s seagrass critical habitat by reducing the water transparency essential feature. Shading from dock structures and vessel mooring also affects the water transparency essential feature of

the designated critical habitat. Propeller dredging and installation of piles and dock support structures may adversely affect Johnson's seagrass critical habitat and permanently remove the unconsolidated sediments essential feature of the critical habitat.

#### *Marine Pollution and Environmental Contamination*

The project is located in a highly-developed coastal area in Biscayne Bay. This can lead to freshwater discharges and nutrient over-enrichment due to coastal runoff and man-made canal discharges into the bay. Freshwater discharge from canals may affect the salinity essential feature of the designated critical habitat while excess nutrients can lead to decreased water transparency and decreased dissolved oxygen content in the water.

#### *State and Federal Activities That May Benefit Johnson's Seagrass Critical Habitat in the Action Area*

State and federal conservation measures exist to protect Johnson's seagrass and its habitat under an umbrella of management and conservation programs that address seagrasses in general (Kenworthy et al. 2006). These conservation measures must be continually monitored and assessed to determine if they will ensure the long-term protection of the species and the maintenance of environmental conditions suitable for its continued existence throughout its geographic distribution.

## **5 EFFECTS OF THE ACTION ON CRITICAL HABITAT**

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Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02).

The action area is within the boundary of Johnson's seagrass critical habitat (Unit J), and all 4 essential features are present at the project site. The 4 habitat features essential to the conservation of Johnson's seagrass are: (1) adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions; (2) adequate salinity levels, indicating a lack of very frequent or constant discharges of fresh or low-salinity waters; (3) adequate water transparency, which would allow sunlight necessary for photosynthesis; and (4) stable, unconsolidated sediments that are free from physical disturbance. All 4 essential features must be present in an area for it to function as critical habitat for Johnson's seagrass and the loss of 1 essential feature of Johnson's seagrass critical habitat will result in a total loss in the conservation function of the critical habitat in that area.

The adequate water quality and adequate water transparency essential features of Johnson's seagrass critical habitat may be affected by increased turbidity due to drilled shaft installation, pile driving, and vibratory hammer installation of piles and sheet piles; however, we believe this effect will be insignificant. Best Management Practices (BMPs) for controlling turbidity will be used wherever practical. Any outstanding turbidity is expected to be temporary, and will be

contained by turbidity curtains and temporary containment piles when practical, and will dissipate quickly due to high current velocities in the area.

We believe the proposed action will have no effect on the adequate salinity levels essential feature of Johnson's seagrass designated critical habitat because the proposed action lacks any potential to affect adequate salinity levels in the action area.

The proposed action is likely to adversely affect Johnson's seagrass critical habitat by removing the adequate water transparency essential feature due to shading from the pier caps being installed at the water line. Since the new guiderails are greater than 16 ft above MHWL, we believe the impact of shading by the bridge superstructure and guiderails will be insignificant, based on the height of the structure and the fact the sun will change positions throughout the day and seasonally, making shading impacts temporary and intermittent. In addition, we believe the proposed action is likely to adversely affect Johnson's seagrass critical habitat by removing or disrupting the stable, unconsolidated sediments essential feature by construction of the new bridge pilings and fender system.

First, we consider loss of the adequate water transparency essential feature. The adequate water transparency essential feature of Johnson's seagrass critical habitat may be affected by shading from the pier caps. We only expect adverse effects in the area immediately underneath the pier caps, as any shading by the guiderail bridges to nearby areas will be temporary in nature and therefore insignificant. In order to calculate adverse impacts from shading from the pier caps, we calculate the area of the west bridge pier caps ( $326 \text{ ft}^2$  each  $\times$  14 pier caps =  $4,564 \text{ ft}^2$ ) and add it to the area of the east bridge pier caps ( $113.1 \text{ ft}^2$  each  $\times$  16 pier caps =  $1,809.6 \text{ ft}^2$ ). Thus, we believe the new pier caps will adversely affect  $6,373.6 \text{ ft}^2$  ( $4,564 \text{ ft}^2 + 1,809.6 \text{ ft}^2 = 6,373.6 \text{ ft}^2$ ) of Johnson's seagrass critical habitat from the permanent removal of the adequate water transparency essential feature.

Next, we consider the permanent loss of the stable, unconsolidated sediments essential feature from the installation of drilled shafts. Since the footprint of the drilled shafts at the east and west bridge will be shaded by the pier caps described in the previous paragraph, we do not include them in these current calculations. The 56 drilled shafts along the causeway section of the project are located in riprap, both above and below the MHWL. The presence of riprap precludes the area from functioning as Johnson's seagrass critical habitat. Therefore, these drilled shaft locations will not be counted towards the loss of the stable, unconsolidated sediments essential feature. While the riprap will be removed prior to installation of the drilled shafts, it will be replaced after installation and no additional riprap will be installed. Because there is no net loss (or gain) of the stable, unconsolidated sediments essential feature, the installation of 56 drilled shafts will not adversely affect Johnson's seagrass critical habitat.

The project will also reconfigure the fender systems under the MacArthur Causeway and new elevated guiderails at both the west and east bridges. The project will remove approximately  $300 \text{ ft}^2$  (200 linear ft  $\times$  1.5 ft wide) of existing fenders, which will expose the stable unconsolidated sediment essential feature. The new fender system will occupy approximately  $576 \text{ ft}^2$  of stable unconsolidated sediment essential feature (384 linear ft  $\times$  1.5 ft wide). Therefore, the the

reconfiguration of the fender system will affect 276 ft<sup>2</sup> (576 ft<sup>2</sup> – 300 ft<sup>2</sup>) of Johnson’s seagrass critical habitat given the loss of the stable unconsolidated sediment essential feature.

Several project activities will result in temporary, reversible impacts to Johnson’s seagrass critical habitat. These include barge spudding, barge shading, installation of temporary trestles, and installation of shaft templates, and temporary containment coffercells and steel pipe piles. These activities are not expected to have permanent impacts to critical habitat. Therefore, these temporary impacts are insignificant and are not included in the estimates of permanent impacts to critical habitat.

Combining the total impacts to Johnson’s seagrass critical habitat from the loss of the adequate water transparency essential feature (6,373.6 ft<sup>2</sup>) and the stable unconsolidated sediment essential feature (276 ft<sup>2</sup>), we believe the project will adversely affect 6,649.6 ft<sup>2</sup> (0.15 ac)<sup>6</sup> of Johnson’s seagrass critical habitat (6,373.6 ft<sup>2</sup> + 276 ft<sup>2</sup>).

## 6 CUMULATIVE EFFECTS

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Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this Biological Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA and 50 CFR 402.14.

NMFS is not aware of any future projects that may contribute to cumulative effects. Within the action area, major future changes are not anticipated beyond the ongoing activities and processes described in the environmental baseline. The present human uses of the action area are expected to continue, though some may occur at increased levels, frequency, or intensity in the near future. Dock and marina construction will likely continue at current rates, with associated loss and degradation of seagrass habitat, including Johnson’s seagrass critical habitat. Because these activities are subject to USACE permitting and thus, the ESA Section 7 consultation requirement, they do not lead to cumulative non-federal effects to be discussed in this section. NMFS and the USACE have developed protocols to encourage the use of light-transmitting materials in future construction of docks constructed in or over submerged aquatic vegetation, marsh or mangrove habitat.<sup>7,8,9</sup> Even if all new docks are constructed in full compliance with the NMFS and USACE’s guidance, NMFS acknowledges that shading impacts, and thus, impacts to the water transparency essential feature, to Johnson’s seagrass will continue via dock construction. As NMFS and the USACE continue to encourage permit applicants to design and construct new docks in full compliance with the construction guidelines discussed above, and the recommendations in Adam (2012), Landry et al. (2008), and Shafer et al. (2008), NMFS believes

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<sup>6</sup> 1 ft<sup>2</sup>= 0.0000229568 ac Therefore, 41,614.2 ft<sup>2</sup> x (0.0000229568 ac/1ft<sup>2</sup>) = 0.9553 ac.

<sup>7</sup> Project Design Criteria A2.17 in U.S. Army Corps of Engineers Jacksonville District’s Programmatic Biological Opinion (JAXBO) issued by NMFS on November 20, 2017 (SER-2015-17616)

<sup>8</sup> Dock Construction Guidelines in Florida for Docks or Other Minor Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat U.S. Army Corps of Engineers/National Marine Fisheries Service, dated August 2001

<sup>9</sup> Key for Construction Conditions for Docks or Other Minor Structures Constructed in or Over Johnson’s Seagrass (*Halophila johnsonii*) National Marine Fisheries Service/U.S. Army Corps of Engineers, dated October 2002



that shading impacts to Johnson's seagrass will be reduced in the short- and long-term. Moreover, even with some shading from grated construction materials, researchers have found all 4 essential features necessary for Johnson's seagrass to persist under docks constructed of grated decking (Landry et al. 2008).

Upland development and associated runoff will continue to degrade the water quality essential feature necessary for Johnson's seagrass critical habitat. Flood control and imprudent water management practices will continue to result in freshwater inputs into estuarine systems, thereby degrading and altering the water quality and salinity essential features of Johnson's seagrass critical habitat.

Increased recreational vessel traffic will continue to result in damage to Johnson's seagrass and its designated critical habitat by improper anchoring, propeller scarring, and accidental groundings. Nonetheless, we expect that ongoing boater education programs and posted signage about the dangers to seagrass habitat from propeller scarring and improper anchoring may reduce impacts to Johnson's seagrass designated critical habitat, including that in Unit J.

## **7 DESTRUCTION/ADVERSE MODIFICATION ANALYSIS**

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NMFS's regulations define *destruction or adverse modification* to mean "a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species." (50 CFR 402.02). Alterations that may destroy or adversely modify critical habitat may include impacts to the area itself, such as those that would impede access to or use of the essential features. NMFS will generally conclude that a Federal action is likely to "destroy or adversely modify" designated critical habitat if the action results in an alteration of the quantity or quality of the essential physical or biological features of designated critical habitat, or that precludes or significantly delays the capacity of that habitat to develop those features over time, and if the effect of the alteration is to appreciably diminish the value of critical habitat for the conservation of the species. This analysis takes into account the geographic and temporal scope of the proposed action, recognizing that "functionality" of critical habitat necessarily means that it must now and must continue in the future to support the conservation of the species and progress toward recovery. Destruction or adverse modification does not depend strictly on the size or proportion of the area adversely affected, but rather on the role the action area serves with regard to the function of the overall designation, and how that role is affected by the action.

Recovery for Johnson's seagrass, as set forth in the final recovery plan (NMFS 2002), will be achieved when the following recovery objectives are met:

- (1) The species' present geographic range remains stable for at least 10 years, or increases.
- (2) Self-sustaining populations are present throughout the range at distances less than or equal to the maximum dispersal distance to allow for stable vegetative recruitment and genetic diversity.
- (3) Populations and supporting habitat in its geographic range have long-term protection (through regulatory action or purchase acquisition).

We evaluated the proposed action's expected effects on critical habitat to determine whether it will be able to continue to provide its intended functions in achieving these recovery objectives and supporting the conservation of the species.

The first recovery objective for Johnson's seagrass is for the present range of the species to remain stable for 10 years or to increase during that time. In the 5-year review (2007) of the status of the species, NMFS concluded that the first recovery objective had been achieved as of 2007. In fact, the species range had increased slightly northward at that time. We have no information indicating range stability has decreased since then. We determined that the proposed action will adversely affect a total of 6,649.6 ft<sup>2</sup> (0.15 ac) of Johnson's seagrass designated critical habitat. However, the action area is not at a boundary of the species' range, the affected area is very small, and the loss of this area for potential colonization will not affect the stability of the species' range now or in the future. Thus, we believe the proposed action's effects will not affect the critical habitat's ability to contribute to range stability for Johnson's seagrass.

The second recovery objective for Johnson's seagrass requires that self-sustaining populations be present throughout the range at distances less than or equal to the maximum dispersal distance for the species. Due to its asexual reproductive mode, self-sustaining populations are present throughout the range of species. As discussed above in the Designated Critical Habitat Likely to be Adversely Affected section, there are approximately 22,574 ac of Johnson's seagrass critical habitat. The loss of 6,649.6 ft<sup>2</sup> (0.15 ac) of designated critical habitat for Johnson's seagrass would equate to a loss of 0.0007% of Johnson's seagrass critical habitat (0.15 ac ÷ 22,574 ac × 100). In addition, within the action area, 15 additional projects removed 0.023% of Johnson's seagrass critical habitat (5.2 ac ÷ 22,574 ac × 100). Together, these projects removed 0.024% of critical habitat in the action area [(0.15 ac + 5.2 ac) ÷ 22,574 ac × 100]. The loss from this project, alone and in combination with the other projects in the action area, will not affect the conservation value of available critical habitat to an extent that it would affect Johnson's seagrass self-sustaining populations by adversely affecting the availability of suitable habitat in which the species can disperse in the future. Drifting fragments of Johnson's seagrass can remain viable in the water column for 4-8 days (Hall et al. 2006), and can travel several kilometers under the influence of wind, tides, and waves. Because of this, we believe that the permanent removal of critical habitat due to the proposed actions will not appreciably diminish the conservation value of critical habitat in supporting self-sustaining populations.

The third, and final, recovery objective is for populations of Johnson's seagrass and supporting habitat in the geographic range of Johnson's seagrass to have long-term protection through regulatory action or purchase acquisition. Though the affected portions of the project site will not be available for the long-term, thousands of acres of designated critical habitat are still available for long-term protection, which would include areas surrounding the action area.

Based on the above analysis, we conclude that the adverse effects on Johnson's seagrass critical habitat due to the proposed action will not impede achieving the 3 recovery objectives listed above and, therefore will not appreciably diminish the value of critical habitat for the conservation of the species.

## 8 CONCLUSION

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After reviewing the current status of Johnson's seagrass designated critical habitat, the environmental baseline, the effects of the proposed action, and the cumulative effects, it is our opinion that the loss of 6,649.6 ft<sup>2</sup> (0.15 ac) from the proposed action will not interfere with achieving the relevant habitat-based recovery objectives for Johnson's seagrass. It is our opinion that the proposed action will not impede the critical habitat's ability to support Johnson's seagrass conservation, despite permanent adverse effects. Therefore, we conclude that the action, as proposed, is likely to adversely affect, but is not likely to destroy or adversely modify, Johnson's seagrass designated critical habitat.

### 8.1 INCIDENTAL TAKE STATEMENT

NMFS does not anticipate that the proposed action will incidentally take any species and no take is authorized. Nonetheless, any take of any ESA-listed species shall be immediately reported to [takereport.nmfs@noaa.gov](mailto:takereport.nmfs@noaa.gov). Refer to the present Biological Opinion by title, Beach Corridor Rapid Transit, issuance date, and NMFS ECO tracking number, SERO-2020-02388. At that time, consultation must be reinitiated.

### 8.2 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

NMFS believes the following conservation recommendations are reasonable, necessary, and appropriate to conserve and recover Johnson's seagrass. NMFS strongly recommends that these measures be considered and adopted.

1. NMFS recommends that the USCG, in coordination with seagrass researchers and industry, support ongoing research on light requirements and transplanting techniques to preserve and restore Johnson's seagrass, and on collection of plants for genetics research, tissue culture, and tissue banking.
2. NMFS recommends that a report of all current and proposed USCG projects in the range of Johnson's seagrass be prepared and used by the USCG to assess impacts on the species from these projects, to assess cumulative impacts, and to assist in early consultation that will avoid and/or minimize impacts to Johnson's seagrass and its critical habitat. Information in this report should include location and scope of each project and identify the federal lead agency for each project. The information should be made available to NMFS.
3. NMFS recommends that the USCG conduct and support research to assess trends in the distribution and abundance of Johnson's seagrass. Data collected should be contributed to the Florida Fish and Wildlife Conservation Commission's Florida Wildlife Research Institute

to support ongoing geographic information system mapping of Johnson's seagrass and other seagrass distribution.

4. NMFS recommends that the USCG prepare an assessment of the effects of other actions under its purview on Johnson's seagrass for consideration in future consultations.

## **9 REINITIATION OF CONSULTATION**

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As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of taking specified in the proposed action is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the Biological Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

## **10 LITERATURE CITED**

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