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**NATIONAL MARINE FISHERIES SERVICE**  
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F/SER31:DG  
SERO-2024-01619

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Ref.: SAJ-2005-08448, Safe Harbor Marinas, Port Phoenix Marina Construction, North Fort Myers, Lee County, Florida

Dear Michael Ornella,

The enclosed Biological Opinion responds to your request for consultation with us, the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.) for the above referenced action. The Opinion has been given the NMFS tracking number SERO-2024-01619. Please use the NMFS tracking number in all future correspondence related to this action.

The Opinion considers the effects of the U.S. Army Corps of Engineers' (USACE) proposal to authorize the redevelopment of a full-service marina by the applicant Safe Harbor Marinas in North Fort Myers, Lee County, Florida on the following listed species and critical habitat: green sea turtle (North Atlantic Distinct Population Segment [DPS]), Kemp's ridley sea turtle, loggerhead sea turtle (Northwest Atlantic DPS), smalltooth sawfish (U.S. DPS), and designated critical habitat for smalltooth sawfish (U.S. DPS, Charlotte Harbor Estuary Unit). The Opinion is based on information provided by the USACE, the applicant, and the published literature cited within. NMFS concludes that the proposed action is not likely to adversely affect green sea turtle (North Atlantic DPS), Kemp's ridley sea turtle, loggerhead sea turtle (Northwest Atlantic DPS), and smalltooth sawfish (U.S. DPS). NMFS concludes that the proposed action is likely to adversely affect, but is not likely to result in the destruction or adverse modification of critical habitat for smalltooth sawfish (U.S. DPS).



We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and critical habitat. If you have any questions regarding this consultation, please contact Dawn Glasgow, Consultation Biologist, by email at [Dawn.Glasgow@noaa.gov](mailto:Dawn.Glasgow@noaa.gov).

Sincerely,

Andrew J. Strelcheck  
Regional Administrator

Enclosure (s):  
NMFS Biological Opinion SERO-2024-01619  
File: 1514-22.f.4

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

**Action Agency:** United States Army Corps of Engineers  
Permit number: SAJ-2005-08448

**Applicant:** Safe Harbor Marinas

**Activity:** Safe Harbor Port Phoenix Marina Construction

**Location:** North Fort Myers, Lee County, Florida

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

NMFS Tracking Number: SERO-2024-01619

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

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

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## ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

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ac	Acre(s)
°C	Degrees Celsius
CHEU	Charlotte Harbor Estuary Unit
CFR	Code of Federal Regulations
cm	Centimeter(s)
DAM	Destruction or Adverse Modification (of Critical Habitat)
dB	Decibels
DPS	Distinct Population Segment
ECO	Environmental Consultation Organizer
EFH	Essential Fish Habitat
ESA	Endangered Species Act of 1973, as Amended (16 U.S.C. § 1531 et seq.)
°F	Degrees Fahrenheit
ft	Foot/Feet
FR	Federal Register
ft <sup>2</sup>	Square Foot/Feet
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FHA	Federal Highway Administration
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Florida Fish and Wildlife Research Institute
HUA	High Use Area
in	Inch(es)
IPCC	Intergovernmental Panel on Climate Change
JaxBO	Jacksonville Biological Opinion
km	Kilometer(s)
LAA	Likely to Adversely Affect
lin ft	Linear Foot/Feet
m	Meter(s)
MHW	Mean High Water
mi	Mile(s)
mi <sup>2</sup>	Square Mile(s)
MIT	Massachusetts Institute of Technology
MLW	Mean Low Water
MLLW	Mean Lower Low Water
MMPA	Marine Mammal Protection Act
MMF	Marine Megafauna Foundation
MSA	Magnuson-Stevens Fishery Conservation and Management Act
N/A	Not Applicable
NAD 83	North American Datum of 1983
NE	No Effect
NLAA	May Affect, Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
Opinion	Biological Opinion, Conference Biological Opinion, or Draft Biological Opinion
PDC	Project Design Criteria

PK	Peak Sound Pressure Level
RMS	Root-Mean-Square Pressure Level
SERO PRD	NMFS Southeast Regional Office, Protected Resources Division
SAV	Submerged Aquatic Vegetation
SEL	Sound Exposure Level
SELcum	Cumulative Sound Exposure Level
SH	Shallow, Euryhaline Habitat
SPGP	State Programmatic General Permit
SSRIT	Smalltooth Sawfish Recovery Implementation Team
STSSN	Sea Turtle Stranding and Salvage Network
TTIEU	Ten Thousand Islands Everglades Unit
UNESCO	United Nations Educational, Scientific and Cultural Organization
U.S.	United States of America
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
YOY	Young-Of-The-Year

# 1 INTRODUCTION

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## 1.1 Overview

Section 7(a)(2) of the ESA, 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 NMFS and the USFWS share responsibilities for administering the ESA. Consultations on most ESA-listed marine species and their critical habitat are conducted between the federal action agency and NMFS (hereafter, may also be referred to as we, us, or our).

Consultation is required when a federal action agency determines that a proposed action “may affect” ESA-listed species or critical habitat and can be conducted informally or formally. Informal consultation is concluded after NMFS issues a Letter of Concurrence that concludes that the action is “not likely to adversely affect” ESA-listed species or critical habitat. Formal consultation is concluded after we issue a Biological Opinion (hereafter, referred to as an/the Opinion) that identifies whether a proposed action is “likely to jeopardize the continued existence of an ESA-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. An Opinion often states the amount or extent of anticipated incidental take of ESA-listed species that may occur, develops Reasonable and Prudent Measures necessary or appropriate to minimize such impact of incidental take on the species, and lists the Terms and Conditions to implement those measures. An Opinion may also develop Conservation Recommendations that help benefit ESA-listed species.

This document represents NMFS’s Opinion based on our review of potential effects of the USACE’s proposal to authorize the redevelopment of a full-service marina destroyed by Hurricane Charley in 2004 by Safe Harbors Marinas (the applicant) in North Fort Myers, Lee County, Florida on the following listed species and critical habitat: green sea turtle (North Atlantic Distinct Population Segment [DPS]), Kemp’s ridley sea turtle, loggerhead sea turtle (Northwest Atlantic DPS), smalltooth sawfish (U.S. DPS), and designated critical habitat for smalltooth sawfish (U.S. DPS, Charlotte Harbor Estuary Unit). Our Opinion is based on information provided by the USACE, the applicant, and the published literature cited within.

Updates to the regulations governing interagency consultation (50 CFR part 402) were effective on May 6, 2024 (89 FR 24268). We are applying the updated regulations to this consultation. The 2024 regulatory changes, like those from 2019, were intended to improve and clarify the consultation process, and, with one exception from 2024 (offsetting reasonable and prudent measures), were not intended to result in changes to the Services’ existing practice in implementing Section 7(a)(2) of the Act (89 FR 24268; 84 FR 45015). We have considered the prior rules and affirm that the substantive analysis and conclusions articulated in this Opinion would not have been any different under the 2019 regulations or pre-2019 regulations.

## 1.2 Consultation History

The following is the consultation history for the NMFS ECO tracking number SERO-2024-01619 Safe Harbor Port Phoenix Marina Reconfiguration.

On July 11, 2024, we received a request for informal consultation under Section 7 of the ESA from the USACE to redevelop an existing marina as a full service marina by Safe Harbor Marinas in North Fort Myers, Lee County, Florida in a letter dated July 11, 2024.

On September 3, 2024, we notified the USACE this will likely be a formal consultation since the marina has been defunct/non-operational for 20 years and therefore, NMFS does not consider this an existing marina.

On December 18, 2024, we requested additional information (RAI) regarding project details with a request for supporting documents (e.g. marina plans) referenced in the consultation request.

On January 22, 2025, we sent an email to the USACE reminding them the RAI response would be due February 2<sup>nd</sup>. On February 4, 2025, we sent an additional email letting the USACE know the 45-day due date had passed and asked if they required an extension or whether they preferred to have the consultation request withdrawn. The USACE asked for an additional extension and agreed to provide the requested information by February 17, 2025. On February 13, 2025, the USACE requested an additional extension to February 21, 2025, to allow time to finish discussions with the applicant. On February 18, 2025, we received the response to our RAI, but it did not include the supporting documents necessary to complete consultation.

On February 21, 2025, we emailed USACE to request the missing supporting documents (e.g. marina plans) that were initially requested in the December 18, 2024 RAI. The marina plans were sent later that day.

On March 6, 2025, we sent an email to the USACE requesting additional information regarding dredging to which they responded on March 12, 2025.

On March 14, NMFS held an internal meeting resulting in the decision to move forward with a formal consultation with an LAA determination for smalltooth sawfish critical habitat.

On March 26, 2025, we informed the USACE that NMFS would continue with a formal consultation given the proposed dredge depths would likely adversely affect smalltooth sawfish critical habitat (shallow euryhaline water essential feature). We sent a second request for additional information related to Project Details, and requested confirmation/agreement to NMFS's revisions given significant edits were made based on the supplemental information provided.

On March 27, 2025, we received a final response in which the USACE stated they reviewed and commented in the RAI, and agreed with NMFS's comments and edits. NMFS initiated formal consultation.

On August 21, 2025, we informed the USACE the biological opinion is currently under internal review and we requested the specific amount of proposed dredging within the shallow euryhaline feature. The USACE PM replied on August 28, 2025 with the information requested.

2 PROPOSED ACTION

2.1 Project Details

2.1.1 Project Description

The Lee County Board of County Commissioners (the applicant) applied for a Department of the Army permit pursuant to Section 10 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. § 403) to redevelop an existing, previously permitted marina, with the same number of slips in a new configuration and maintenance dredging to previously authorized depths. The overall proposed plans include the construction of a fuel dock, ship’s store, and a restaurant (Figure 1). The project site is located at 1667 and 1687 Inlet Drive, Section 16, Township 44 South, Range 24 East, in North Fort Myers, Lee County, Florida. The application was assigned the file number SAJ-2008-08448 (LOP-MAO). The Corps initially requested initiation of expedited informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) for the Safe Harbor Port Phoenix Marina. However, the consultation cannot be concluded informally given the previously permitted marina was destroyed by Hurricane Charley in 2004 and has not been operational for 20 years since, and adverse effects to ESA-listed smalltooth sawfish critical habitat (Charlotte Harbor Estuary Unit (CHEU) are expected.

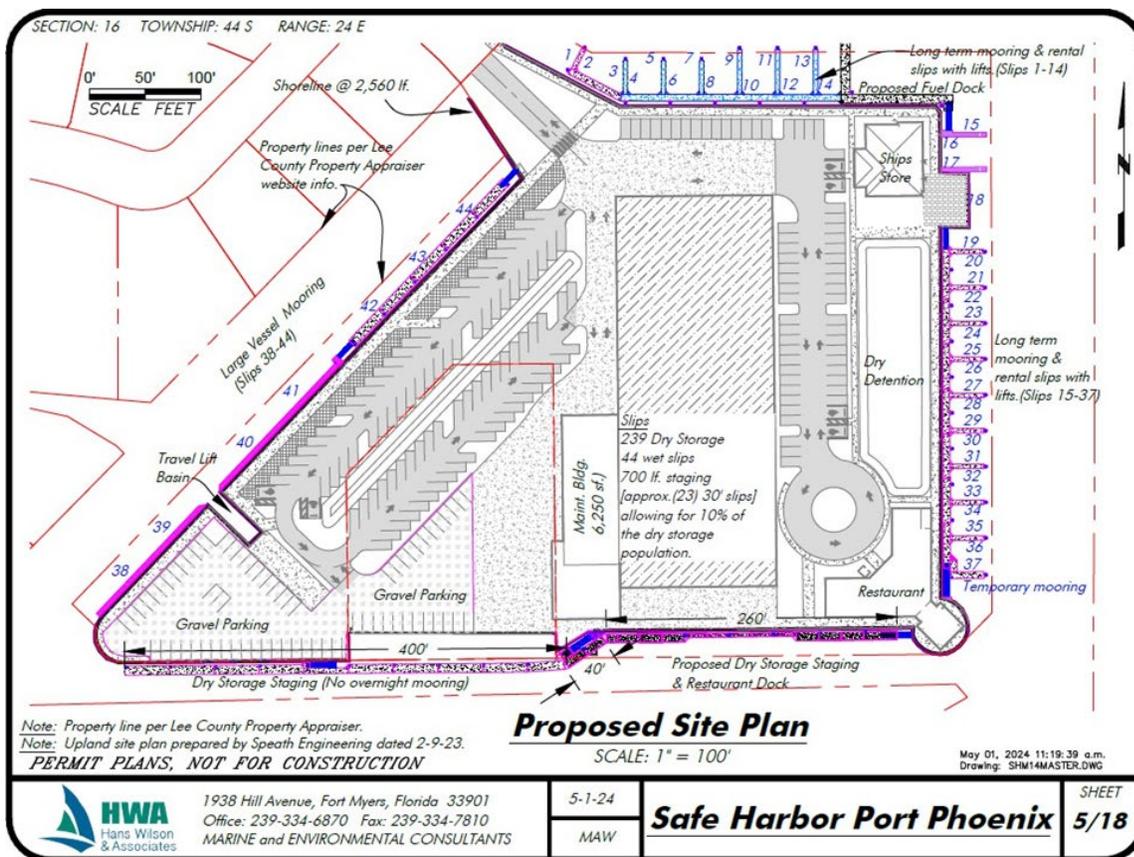


Figure 1. Project Proposed Site Plan

The project footprint includes the upland portion of the marina that consists of approximately

6.17-acs of land; and approximately 2.56-ac proposed dredging and construction footprint with approximately 16,620-ft<sup>2</sup> of over-water structures, and approximately 2,152-lin ft of seawall surrounding the marina island. The former marina historically had 239 dry and 44 wet slips. The marina basin is located in a cove along the Caloosahatchee River that opens to the Caloosahatchee River at its southeastern corner and is approximately 16.7 navigable miles from the Gulf of America (formerly Gulf of Mexico). The proposed project includes removal of existing overwater structures (i.e. fixed wood docks and pilings) along 2,560-lin ft of shoreline. The proposed project will add mostly floating docking facilities with 2 fixed piers (located near the proposed ship's store at the northeast corner) and 2 fixed wood docks (1 on each side of the travel lift basin at the southwest corner) in a new configuration. Additionally, the proposed dredging will occur in areas beneath the surrounding dock locations to previously authorized and maintained depths (-5 feet) to ensure navigable access and mooring at the docks. The federal authorization to replace 2,344-lin ft of existing seawalls was issued on February 14, 2024 via the SPGP (DEP Permit #0331109-002EE and COE SPGP VI-R1). Work is expected to take place over approximately 1 year following the issuance of permits and authorizations.

Additional project details:

- Turbidity curtains – The use of turbidity curtains will follow the National Marine Fisheries Service's [\*Protected Species Construction Conditions \(NMFS 2021a\)\*](#). The proposed turbidity curtains will stay in the water during all phases of construction and adjusted to surround working areas as the project progresses. Upland erosion control devices (e.g., silt fences, hay bales) will be in place throughout construction to prevent sediment from entering surface waters and to contain turbidity.
- Removal/relocation of existing structures is proposed:
  - Removal of 16,620-ft<sup>2</sup> of existing fixed wood docks and pilings along 2,560-lin ft of shoreline. Chains will be wrapped around pilings to pull them out. If necessary, the contractor will jet around pilings to loosen the soil and then pull them out. If a piling is embedded in a rock layer and cannot be extracted, it will be cut off at the mudline;
  - All material and debris will be disposed of at an upland, self-contained facility
- Overwater structures and in-water structures are proposed:
  - Reconfigure the existing fixed docks with a mixture of floating and fixed docks within the same area, totaling 16,620-ft<sup>2</sup> of overwater structure;
  - All floating docks (including the fuel dock) will be pre-assembled and moved into place using temporary anchor pilings. Once the location is verified correct, the permanent anchor pilings are installed.
  - The number, size, and type of pilings used are detailed in Table 1.
  - The historically permitted slip count is 239 dry and 44 wet slips. This slip count would remain the same with the proposed action.

**Table 1. Pile Installation**

Pile Type and Material	<i>Metal, Round</i>	<i>Wood, Round</i>
Pile Diameter or Sheet Pile width (inches)	<i>18-in</i>	<i>10-in</i>
Number of Piles or Sheet Piles Total	<i>63</i>	<i>147</i>
Installation Method	<i>Vibratory Hammer</i>	<i>Jetting</i>
Number of Strikes per Pile/Sheet Pile (if using impact hammer) or Number of Seconds of Vibration per Pile/Sheet Pile (if using vibratory hammer)	<i>900 seconds</i>	
Number of Piles/Sheet Piles Installed per Day (if using impact or vibratory hammer)	<i>5</i>	<i>10</i>
Duration of pile driving activity (days)	<i>45-60</i>	<i>45-60</i>
Substrate and water depth in pile installation area (pre-dredge)	<i>Sand, between 1 and 5-ft</i>	<i>Sand, between 1 and 5-ft</i>
Confined Space or Open Water?	<i>Confined Space</i>	<i>Confined Space</i>
Noise abatement used	<i>Vibratory hammer use</i>	<i>None</i>

- All work will be performed via shallow draft barge and/or uplands
- Benthic resource surveys were conducted on February 20, 2022. Results determined no seagrasses were present in the marina basin. Ponar grab samples were also taken on February 15, 2022. The substrate consists of soft organic muds, silty sands, and shell fragments;
- Mangroves are present on the south side of the marina island and are only proposed to have the waterward branches trimmed for installation of the floating dock. The mangrove fringe is approximately 185-ft-long (4,470-ft<sup>2</sup>). The trimming will take place along the fringe facing the water, landward to the waterward limit of the prop roots. There are no other mangroves that will be impacted;
- Maintenance Dredging is proposed (Figure 2):
  - Current depths in proposed dredge area range from -1 to -6 feet
  - Mechanical dredging of approximately 111,048-ft<sup>2</sup> (2.56-acs) in areas adjacent to the upland marina facilities and below the existing/proposed docking structures;
  - Approximately 4,629-yd<sup>3</sup> of material to be removed and placed in the uplands at the project site and removed to USACE verified upland facility for disposal;
  - Depths of the dredge will be -5 feet MLW, which is the current authorized depth for the marina through previous authorizations under the same file number.
- Project vessels will be present:
  - Shallow draft and construction barge

- Speeds will vary and are dependent on contractor selection and type of vessel being used. Vessel speeds will be reduced while maintaining sufficient maneuverability and navigation.
- The exact travel routes to and from the proposed project will be determined based on contractor selection and restricted to existing navigation channels of the Caloosahatchee River.

Work in uplands is proposed, including staging and dredged material management. The effects of land-based activities do not extend into the water or otherwise effect listed species under NMFS jurisdiction, Therefore, this aspect of the proposed action will not be considered further.

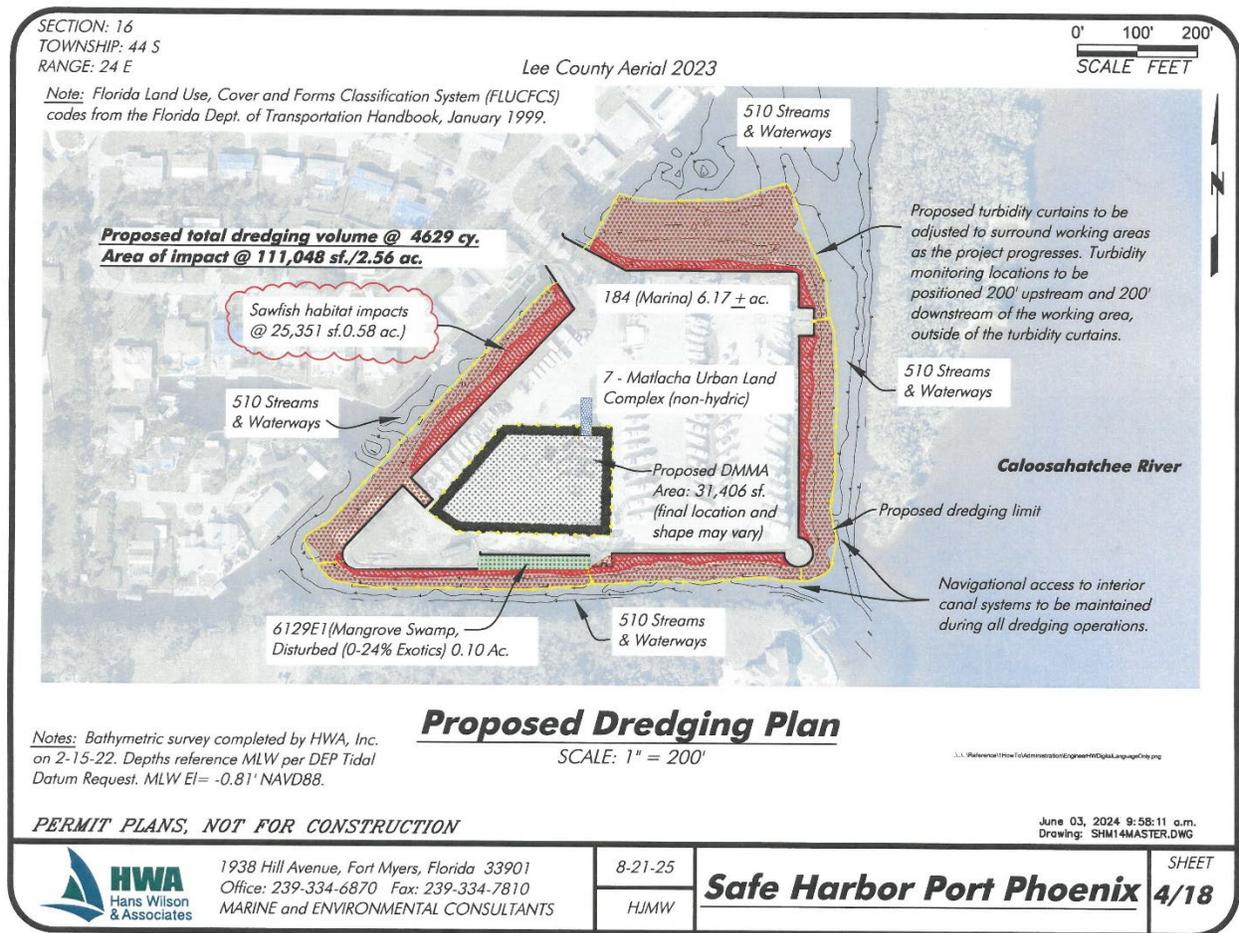


Figure 2. Project Proposed Dredging Plan

### 2.1.2 Mitigation Measures

- **Protected Species Construction Conditions:** The Permittee shall comply with National Marine Fisheries Service's [Protected Species Construction Conditions \(NMFS 2021a\)](#).

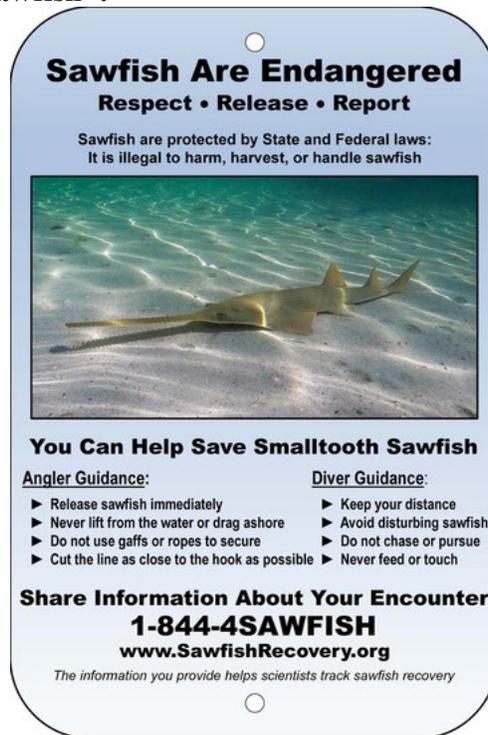
- **Vessel Strike Avoidance Measures:** The Permittee shall comply with the [Vessel Strike Avoidance Measures and Reporting for Mariners, \(NMFS. 2021b\)](#), for ESA-listed species.
- **Daylight Hours:** All work will occur during daylight hours.
- **Noise Abatement Measures:** No more than 10 wood piles per day or 5 metal piles per day shall be installed.
  - **Turbidity Curtains:** Prior to all construction activities, including removal of the existing docks, turbidity control devices will be installed in a manner to contain disturbed sediments within the limits of construction of the project and protect mangrove prop roots adjacent, and near the construction area, and will be installed, maintained, and monitored in adherence to the [Protected Species Construction Conditions \(NMFS 2021a\)](#). Turbidity monitoring locations to be positioned 200-ft upstream and 200-ft downstream of the working area, outside of the turbidity curtains.
- **Staging:** All construction staging will be sited in an upland location. No stock piling of debris or equipment will occur in wetlands or other surface waters.
- **Debris:** Ensure debris is prevented from entering the environment
- **Dredging near mangroves:** The applicant will follow the JaxBO PDC A.3.5.2, that states, “for minor dredging: If red mangroves are present, dredging, excavation, or disposal is not allowed within 5-ft of all red mangrove prop roots.”
- **Mangrove Trimming:** The applicant is proposing to trim the existing mangroves located on the south side of the marina island for installation of the floating dock (Figure 2). The mangrove fringe is approximately 185-ft-long by 24-ft-wide (4,470-ft<sup>2</sup>). The lateral waterward branches will be trimmed above the MHW and landward to the waterward limit of the prop roots. Mangrove trimming is regulated by the FDEP in this region, and consistent with this authority, mangrove trimming refers to the removal (using hand equipment such as chain saws and/or machetes) of lateral branches (i.e., no alteration of the trunk of the tree) in a manner that ensures survival of the tree (JaxBO, PDC AP.12). There are no other mangroves present that will be impacted. The applicant will follow FDEP mangrove trimming guidance to reduce the risk of mortality to red mangroves, including:
  - Mangrove trimming will occur between the months of October and March. This is the time of year that mangroves experience the least amount of growth
- The applicant will report all sightings of smalltooth sawfish at the property to the FWC via E-mail: [Sawfish@MyFWC.com](mailto:Sawfish@MyFWC.com), or telephone: 844-472-9347 (1-844-4SAWFISH).

### 2.1.3 Best Practices

- The applicant will report all future sightings of smalltooth sawfish at the property to the FWC via E-mail: [Sawfish@MyFWC.com](mailto:Sawfish@MyFWC.com), or telephone: 844-472-9347 (1-844-4SAWFISH).
- Upon completion, NMFS-approved educational signs will be posted in visible locations. Applicable signs, as well as location/placement, and specification guidance are located and available for download at the NMFS's [NOAA Protected Species-Educational Signs](https://www.fisheries.noaa.gov/southeast/consultations/protected-species-educational-signs) website: <https://www.fisheries.noaa.gov/southeast/consultations/protected-species-educational-signs>.
- - “Save Protected Marine Life - Dolphins, Sea Turtles, and Manta Rays”:



○ “Report a Sawfish”:



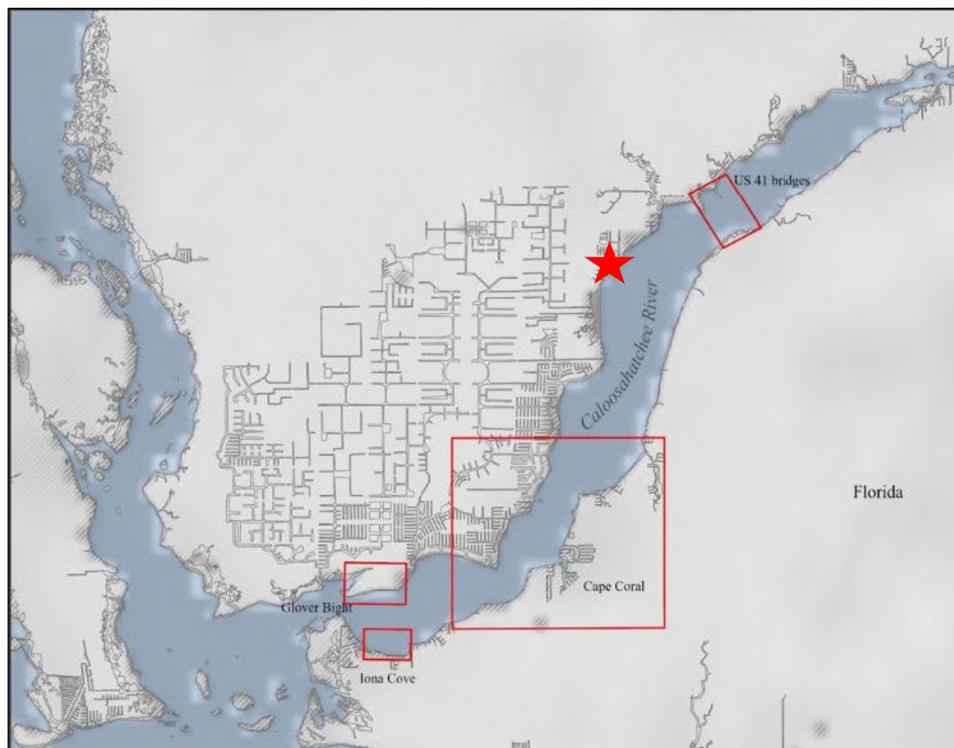
- No fishing will be allowed within the marina. Fishing could result in the potential incidental take of listed species (e.g. sea turtles and smalltooth sawfish)
- A monofilament recycling bin will be available at the fuel dock to prevent fishing line and debris from being disposed of in the water or on the shore and to reduce the risk of sea turtle or smalltooth sawfish entanglement in, or ingestion of, marine debris. The receptacle will be constructed, clearly labeled, maintained in working order, and emptied frequently to ensure it does not overflow and that fishing lines are disposed of properly according to instructions provided at <http://mrrp.myfwc.com>.

## 2.2 Action Area

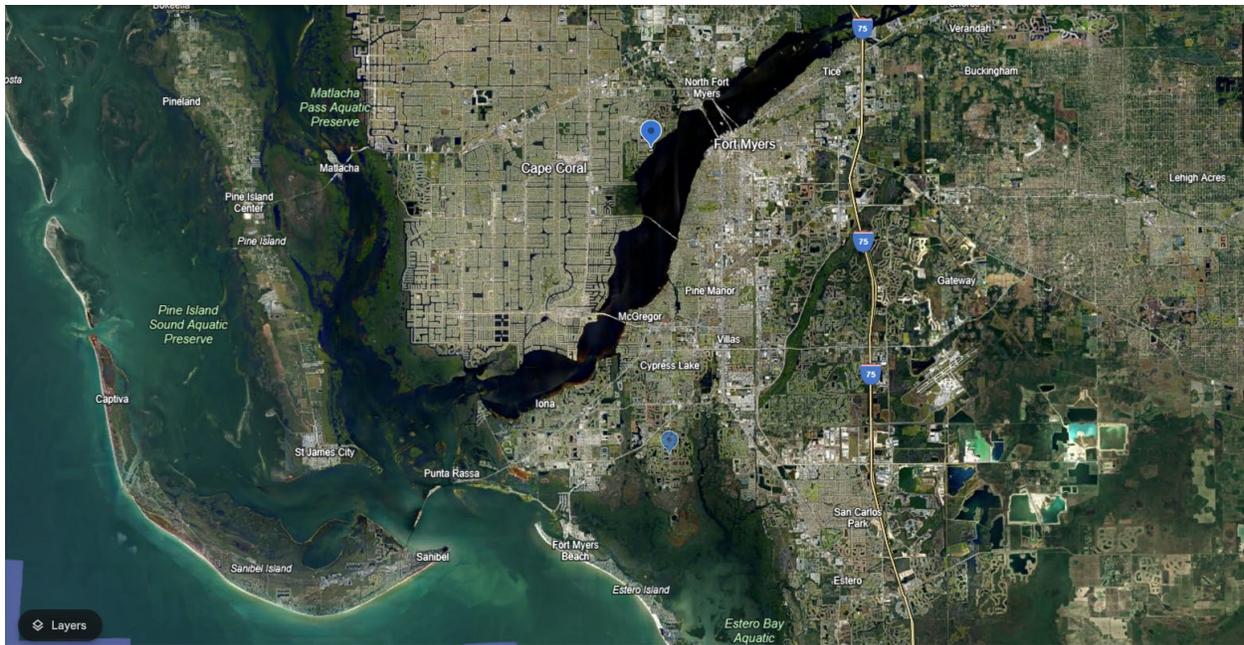
The project site is located at 26.638831°, -81.908836° (NAD 83) in North Fort Myers, Lee County, Florida in a non-operational marina basin on Waterway Estates property that historically contained 239 dry and 44 wet slips (Figure 3). The proposed marina basin is located in a cove along the northwest side of the Caloosahatchee River in Smalltooth Sawfish Critical Habitat (Charlotte Harbor Estuary Unit) between the Cape Coral and US 41 Bridge HUAs (Figure 4). The northern and southwest corners of the marina basin are open to a series of manmade canals. The marina basin opens to the Caloosahatchee River at its southeastern corner, the only outlet, and is approximately 16.7-navigable miles from the Gulf of America (formerly Gulf of Mexico) (Figure 5).



**Figure 3. Marina Basin with Action Area in Red, and Project Footprint in Blue**



**Figure 4. Project Site at 1667 and 1687 Inlet Drive, North Fort Myers, Florida, Relative to Current Juvenile High Use Areas in the Caloosahatchee River as Modified from Poulakis et al. 2011**



**Figure 5. Project Site at 1667 and 1687 Inlet Drive, North Fort Myers, Florida Relative to the Caloosahatchee River and Gulf of America (©2023 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 CFR 402.02). For the purposes of this federal action, the action area includes the upland portion of the marina that consists of approximately 6.17-acrs of land, a 2.56-ac proposed dredging and construction footprint with few structures and dry slips for vessels, and a shoreline armored by approximately 2,152-lin ft of seawall surrounding the marina island. In addition to the immediate project location, the action area also includes the maximum noise radius for the piling installations of approximately 300-ft, and submerged habitat within the immediate vicinity of the project site that will be affected by the proposed action, including the submerged habitat within the boundary of the turbidity curtain (Figure 3). The waters within the site ranges between 1 and 2-ft in small sections of the basin, mostly situated on the eastern shoreline against the seawall, a result of shoaling and accumulation of sediment between protruding structures. The rest of the marina basin and access channel ranges between 3 and 6-ft (see *SERO-2024-01619 Safe Harbor Port Phoenix Marina Reconfiguration\_20240521-Drawings*, Sheet 3). Benthic resource surveys conducted on February 20, 2022, determined no seagrasses were present in the marina basin. Ponar grab samples taken on February 15, 2022, indicate the substrate consists of soft organic muds, silty sands, and shell fragments. A mangrove fringe is present on the south side of the marina island and is approximately 185-ft-long (4,470-ft<sup>2</sup>).

### 3 EFFECTS DETERMINATIONS

Please note the following abbreviations are only used in **Table 2** and **Table 4** and are not, therefore, included in the list of acronyms: E = endangered; T = threatened; P = Proposed; LAA = likely to adversely affect; NLAA = may affect, not likely to adversely affect; NE = no effect.

#### 3.1 Effects Determinations for ESA-Listed Species

##### 3.1.1 Agency Effects Determination(s)

We have assessed the ESA-listed species that may be present in the action area and our determination of the project’s potential effects is shown in **Table 2** below.

**Table 2. ESA-listed Species in the Action Area and Effect Determinations**

Species (DPS)	ESA Listing Status	Listing Rule/Date	Most Recent Recovery Plan (or Outline) Date	USACE Effect Determination	NMFS Effect Determination
<b>Sea Turtles</b>					
Green sea turtle (North Atlantic DPS)	T	81 FR 20057/ April 6, 2016	October 1991	<u>NLAA</u>	<u>NLAA</u>
Kemp’s ridley sea turtle	E	35 FR 18319/ December 2, 1970	September 2011	<u>NLAA</u>	<u>NLAA</u>
Loggerhead sea turtle (Northwest Atlantic DPS)	T	76 FR 58868/ September 22, 2011	December 2008	<u>NLAA</u>	<u>NLAA</u>
<b>Fishes</b>					
Smalltooth sawfish (U.S. DPS)	E	68 FR 15674/ April 1, 2003	January 2009	<u>NLAA</u>	<u>NLAA</u>

##### 3.1.2 Effects Analysis for ESA-Listed Species Not Likely to be Adversely Affected by the Proposed Action

Physical Effects:

ESA-listed sea turtle and fish species may be physically injured if struck by construction equipment or material. The Corps believes this effect will be extremely unlikely to occur due to the ability of these species to move away from the project site if disturbed. All supporting equipment (barges and tow boats) will be shallow draft and will maintain a minimum of 1-ft of clearance above the existing bottom. Mobile species are able to avoid this type of slow-moving

equipment and placement of material. In addition, the implementation of NMFS's [\*Protected Species Construction Conditions \(NMFS 2021a\)\*](#) will require all construction workers to observe water-related activities for the presence of these species. If a protected species is seen within 100-yds of the active daily construction operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 150-ft of a protected species. Operation of any mechanical construction equipment shall cease immediately if a protected species is seen within a 150-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition. Further, construction would be limited to daylight hours so construction workers would be more able to see protected species, if present, and avoid any potential interactions with them.

Sea turtles and some species of ESA-listed fishes are susceptible to vessel strikes, which could result from increased vessel traffic. The applicant will implement NMFS's [\*Vessel Strike Avoidance Measures and Reporting for Mariners, \(NMFS. 2021b\)\*](#) to reduce the risk of vessel strikes to ESA-listed species. Although the redeveloped marina will house a maximum of 283 boats, we do not believe this will necessarily result in increased vessel traffic in the area. More likely, the new marina will relocate and redistribute vessels already operating in the area of Lee County, Florida. With no significant increase in vessel traffic, we believe the potential effect on sea turtles and ESA-listed fishes resulting from the proposed action is extremely unlikely to occur. High-speed recreational boats can strike sea turtles, leading to injury or death. However, a NMFS Protected Resources Division analysis suggests that it would take an introduction of approximately 200 new vessels to an area to result in a take of 1 sea turtle in any single year (Barnette, 2018). Additionally, smalltooth sawfish do not typically swim at the surface given that they are demersal species (swimming along the water bottom); therefore, we do not expect there to be an increased risk of vessel strike for smalltooth sawfish due to the development of this marina. Thus, physical injury due to being struck by construction equipment or material, or vessel strikes, is not likely to adversely affect green, Kemp's ridley and loggerhead sea turtles and smalltooth sawfish.

#### Habitat Effects:

ESA-listed species might be adversely affected by their inability to access the project areas for foraging, and/or nursery habitat, due to their avoidance of construction activities, related noise, and physical exclusion from areas blocked by turbidity curtains. Although sea turtles and ESA-listed fish species will be temporarily unable to access the construction areas, these effects will be insignificant, given the projects' limited footprints and construction periods. Additionally, turbidity curtains will be removed after construction, and will not appreciably block use of the areas by ESA-listed species.

ESA-listed species may be affected by the placement of in-water structures. We believe the effect to ESA-listed species from the potential loss of habitat that could be used for foraging or resting as a result of the proposed action is insignificant. Habitat alteration due to placement of structures described in Section 1 above would total approximately 16,620-ft<sup>2</sup>; however, it is largely a replacement of historically existing structures within the same area, with no increase in square footage. Additionally, a large portion of the historically existing fixed docks will be

replaced with floating docks, increasing available benthic habitat. The potential direct impacts of each piling on the benthos could range from the cross-sectional area of each piling to a concentric area several times as large as the cross-sectional area of each piling. However, individually and cumulatively when viewed on the areal scale, we believe this loss will not appreciably reduce the abundance of estuarine and marine prey.

The marina basin does not contain submerged aquatic vegetation or other resources utilized by ESA-listed sea turtles. However, the marina basin is situated in smalltooth sawfish critical habitat (CHEU) and contains the two features essential for smalltooth sawfish conservation: red mangroves (approximately 4,470-ft<sup>2</sup>) and shallow euryhaline waters characterized by depths between the MHW line and 3-ft at MLLW. These essential features provide forage and refuge habitat for juvenile smalltooth sawfish. The red mangroves will be trimmed following the Jacksonville Biological Opinion PDC A.3.5.2 regarding trimming near mangroves, and the FDEP regulations for mangrove trimming. The project site is in a sheltered cove and has been routinely dredged and maintained since its inception. Shoaling as a result of storms has reduced the water level around the marina, which will require dredging for safe navigation and mooring resulting in the permanent loss of approximately 2.56-acs of shallow euryhaline habitat. Nevertheless, smalltooth sawfish excluded from the project area during dredging will be able to return to, and use, areas with similar available habitat nearby. Thus, the inability to access foraging areas within the construction site due to proposed construction activities is not likely to adversely affect green, Kemp's ridley and loggerhead sea turtles and smalltooth sawfish.

#### Noise Effects

Noise created by pile driving activities can physically injure animals or change animal behavior in the affected areas. Animals can be physically injured in 2 ways. First, immediate adverse effects can occur if a single noise event exceeds the threshold for direct physical injury. Second, adverse physical effects can result from prolonged exposure to noise levels that exceed the daily cumulative sound exposure level for the animals. Noise can also interfere with an animal's behavior, such as migrating, feeding, resting, or reproducing and such disturbances could constitute adverse behavioral effects.

When an impact hammer strikes a pile, a pulse is created that propagates through the pile and radiates sound into the water, the ground substrate, and the air. Pulsed sounds underwater are typically high-volume events that have the potential to cause hearing injury. Vibratory pile driving produces continuous, non-pulsed sounds that can be tonal or broadband. In terms of acoustics, the sound pressure wave is described by the peak sound pressure level (PK, which is the greatest value of the sound signal), the root-mean-square pressure level (RMS, which is the average intensity of the sound signal over time), and the sound exposure level (SEL, which is a measure of the energy that takes into account both received level and duration of exposure). Further, the cumulative sound exposure level (SEL<sub>cum</sub>) is the measure of energy that takes into account the received sound pressure level over a 24-hour period. For underwater sounds, a reference pressure of 1-micropascal (μPa) is commonly used to describe sounds in terms of decibels (dB). Thus, 0-dB on the decibel scale would be a measure of sound pressure of 1-μPa. NMFS has determined that there are no PK potential effects to ESA-listed sea turtles, fishes, and marine mammals resulting from continuous, non-pulsed sounds associated with vibratory pile-

driving. Further, NMFS has determined that there are no SEL<sub>cum</sub> potential effects to ESA-listed fishes resulting from continuous, non-pulsed sounds associated with vibratory pile-driving. NMFS uses the U.S. Navy Phase III criteria for all noise thresholds (U.S. Department of the Navy, 2017). As of December 2021, potential effects to ESA-listed species may occur when impact or vibratory pile driving produces sounds that exceed the following thresholds in Table 3. Below, PK and RMS are referenced to dB re: 1-μPA, the relative unit used to specify the intensity of sound underwater. Further, SEL and cumulative SEL are referenced to dB re: 1-μPA<sup>2</sup>-second.

**Table 3. Impact Pile Driving Sound Measurement Thresholds for ESA-listed Species in the Southeast Region**

Type of Sound Pressure Effect	Type of Pile Driving	Threshold By ESA-Listed Species
Peak Pressure Injury (PK)	Vibratory	<ul style="list-style-type: none"> <li>• None for all species</li> </ul>
	Impact	<ul style="list-style-type: none"> <li>• 206-dB for all fish species, regardless of size</li> <li>• 232-dB for sea turtles</li> <li>• 219-dB for low-frequency cetaceans (i.e., Rice’s, North Atlantic Right, Sei, and Fin whales)</li> <li>• 230-dB for mid-frequency cetaceans (i.e., Sperm whale)</li> </ul>
Cumulative Exposure Injury (SEL <sub>cum</sub> )	Vibratory	<ul style="list-style-type: none"> <li>• None for all fish species</li> <li>• 220-dB for sea turtles</li> <li>• 199-dB for low-frequency cetaceans (i.e., Rice’s, North Atlantic Right, Sei, and Fin whales)</li> <li>• 198-dB for mid-frequency cetaceans (i.e., Sperm whale)</li> </ul>
	Impact	<ul style="list-style-type: none"> <li>• 183-dB for fish species less than 2-grams</li> <li>• 187-dB for fish species greater than 2-grams</li> <li>• 204-dB for sea turtles</li> <li>• 183-dB for low-frequency cetaceans (i.e., Rice’s, North Atlantic Right, Sei, and Fin whales)</li> <li>• 185- dB for mid-frequency cetaceans (i.e., Sperm whale)</li> </ul>
Behavioral Disturbances (RMS)	Vibratory	<ul style="list-style-type: none"> <li>• 150-dB RMS for all fish species</li> <li>• 175-dB RMS for sea turtles</li> <li>• 120-dB RMS for all cetaceans</li> </ul>
	Impact	<ul style="list-style-type: none"> <li>• 150-dB RMS for all fish species, regardless of size</li> <li>• 175-dB RMS for all sea turtles</li> <li>• 160-dB RMS for all cetaceans</li> </ul>

The NMFS Multi-species Pile Driving Tool (dated May 2022) was used to calculate the radii of physical injury and behavioral effects on ESA-listed species that may be located in the action area based on the above measurements of underwater sound. The applicant proposes to install steel piles via vibratory hammer for a total of 63 piles; 5 piles per day during daylight hours. The 147 wood pilings will be installed via jetting.



### 3.2 Effects Determinations for Critical Habitat

#### 3.2.1 Agency Effects Determination(s)

We have assessed the critical habitat(s) that overlap with the action area and our determination of the project's potential effects is shown in **Table 4** below.

**Table 4. Critical Habitat in the Action Area and Effect Determinations**

Species (DPS)	Critical Habitat Unit in the Action Area	Critical Habitat Rule/Date	USACE Effect Determination	NMFS Effect Determination (Critical Habitat)
<b>Fishes</b>				
Smalltooth sawfish (U.S. DPS)	<u>Charlotte Harbor Estuary Unit</u>	74 FR 45353/ September 2, 2009	<u>NLAA</u>	<u>LAA</u>

#### 3.2.2 Critical Habitat Likely to be Adversely Affected by the Proposed Action

We have determined smalltooth sawfish (U.S. DPS) critical habitat CHEU is likely to be adversely affected by the proposed action and thus require further analysis. We provide greater detail on the potential effects to critical habitat from the proposed action in the Effects of the Action (Section 6.2) and whether those effects, when considered in the context of the Status of the Critical Habitat (Section 4.1), the Environmental Baseline (Section 5), and the Cumulative Effects (Section 7), are likely to cause destruction or adverse modification of critical habitat.

## 4 STATUS OF ESA-LISTED CRITICAL HABITAT CONSIDERED FOR FURTHER ANALYSIS

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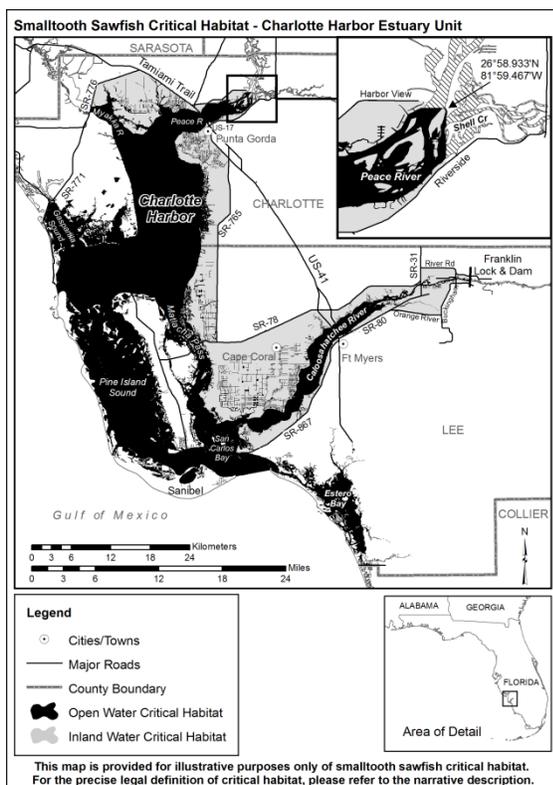
### 4.1 Status of the Critical Habitat Considered for Further Analysis

#### *Smalltooth Sawfish Critical Habitat*

The U.S. DPS of smalltooth sawfish was listed as endangered on April 1, 2003; however, at that time, NMFS was unable to determine critical habitat. After funding additional studies necessary for the identification of specific habitats and environmental features important for the conservation of the species, establishing a smalltooth sawfish recovery team, and reviewing the best scientific data available, NMFS issued a Final Rule (74 Federal Register [FR] 45353; see also 50 Code of Federal Regulations [CFR] 226.218) to designate critical habitat for the U.S. DPS of smalltooth sawfish on September 2, 2009. Through the additional studies, researchers identified nursery areas in Southwest Florida and centered the critical habitat designations around these nurseries. The critical habitat consists of 2 units located along the Southwestern Coast of Florida: the CHEU, which is comprised of approximately 221,459-ac (346-mi<sup>2</sup>) of coastal habitat, and the TTIEU, which is comprised of approximately 619,013-ac (967-mi<sup>2</sup>) of coastal habitat.

### *Critical Habitat Unit Affected by this Action*

This consultation focuses on an activity occurring in the CHEU, which encompasses portions of Charlotte and Lee Counties (Figure 7). The CHEU is comprised of Charlotte Harbor, Gasparilla Sound, Matlacha Pass, Pine Island Sound, San Carlos Bay, and Estero Bay. The unit is fed by the Myakka and Peace Rivers to the north and the Caloosahatchee River to the east. A series of passes between barrier islands connect the CHEU with the Gulf of America (formerly Gulf of Mexico). The CHEU is a relatively shallow estuary with large areas of SAV, oyster bars, saltwater marsh, freshwater wetlands, and mangroves. Freshwater flows from the Caloosahatchee River are controlled by the Franklin Lock and Dam, which periodically releases water, which thereby affects downstream salinity regimes. The CHEU boundaries are defined in detail in the Final Rule (74 FR 45353; see also 50 CFR 226.218).



**Figure 7. Map of Smalltooth Sawfish Critical Habitat – Charlotte Harbor Estuary Unit**

### *Essential Features of Critical Habitat*

The recovery plan developed for the smalltooth sawfish, which represents NMFS's best judgment about the objectives and actions necessary for the species' recovery, identified a need to increase the number of juvenile smalltooth sawfish developing into adulthood by protecting or restoring nursery habitat (NMFS 2009). NMFS determined that without sufficient habitat, the population was unlikely to increase to a level associated with low extinction risk and de-listing. Therefore, within the 2 critical habitat units NMFS identified 2 habitat features essential for the conservation of this species: (1) red mangroves, and (2) shallow, euryhaline habitats characterized by water depths between the MHW line and 3-ft (0.9-m) measured at MLLW

(Final Rule, 74 FR 45353). These essential features of critical habitat provide juveniles refuge from predation and forage opportunities within their nursery habitat. One or both of these essential features must be present in an action area for it to function as critical habitat for smalltooth sawfish.

### *Habitat Use*

Juvenile smalltooth sawfish, identified as those up to 3 years of age or approximately 8-ft (2.4-m) in length (Simpfendorfer et al. 2008), inhabit the shallow waters of estuaries and can be found in sheltered bays, dredged canals, along banks and sandbars, and in rivers (NMFS 2000). Juvenile smalltooth sawfish occur in euryhaline waters (i.e., waters with a wide range of salinities) and are often closely associated with muddy or sandy substrates, and shorelines containing red mangroves (Simpfendorfer 2001; 2003). The structural complexity of red mangrove prop roots creates a unique habitat used by a variety of fish, invertebrates, and birds. Juvenile smalltooth sawfish, particularly YOY (measuring less than 39.4-in [100-cm] in length), use these areas as both refuge from predators and forage grounds, taking advantage of the large number of fish and invertebrates found there.

Tracking data from the Caloosahatchee River in Florida indicate very shallow depths and specific salinity ranges are important abiotic factors influencing juvenile smalltooth sawfish movement patterns, habitat use, and distribution (Simpfendorfer et al. 2011). An acoustic tagging study in a developed region of Charlotte Harbor, Florida, identified the importance of mangroves in close proximity to shallow-water habitat for juvenile smalltooth sawfish, stating that juveniles generally occur in shallow water within 328-ft (100-m) of mangrove shorelines (Simpfendorfer et al. 2010). Juvenile smalltooth sawfish spend the majority of their time in waters shallower than 13-ft (4-m) deep (Simpfendorfer et al. 2010) and are seldom found deeper than 32-ft (10-m) (Poulakis and Seitz 2004). Simpfendorfer et al. (2010) also indicated the following developmental differences in habitat use: the smallest YOY juveniles generally used water shallower than 1.6-ft (0.5-m), had small home ranges, and exhibited high levels of site fidelity. Although small juveniles exhibit high levels of site fidelity for specific nursery habitats for periods of time lasting up to 3 months (Wiley and Simpfendorfer 2007), they undergo small movements coinciding with changing tidal stages. These movements often involve moving from shallow sandbars at low tide and among red mangrove prop roots at higher tides (Simpfendorfer et al. 2010), behavior likely to reduce the risk of predation (Simpfendorfer 2006). As juveniles increase in size, they begin to expand their home ranges (Simpfendorfer et al. 2010; Simpfendorfer et al. 2011), eventually moving to more offshore habitats where they likely feed on larger prey and eventually reach sexual maturity.

Researchers have identified several areas within the Charlotte Harbor Estuary that are disproportionately more important to juvenile smalltooth sawfish, based on intra- or inter-annual capture rates during random sampling events within the estuary (Poulakis 2012; Poulakis et al. 2011). The areas, which were termed “high use areas” in Poulakis et al. (2011), correspond with areas where public encounters are most frequently reported. Use of these “high use areas” can be variable within and among years based on the amount and timing of freshwater inflow. Smalltooth sawfish use “high use areas” further upriver during drought (i.e., high salinity) conditions and areas closer to the mouth of the Caloosahatchee River during times of high

freshwater inflow (Poulakis et al. 2011). At this time, researchers are unsure what specific biotic (e.g., presence or absence of predators and prey) or abiotic factors (e.g., flow rate, water temperature, etc.) influence this habitat selection. Still, they believe a variety of conditions in addition to salinity, such as temperature, dissolved oxygen, water depth, shoreline vegetation, and food availability, may influence smalltooth sawfish habitat selection (Poulakis et al. 2011).

### *Status and Threats to Critical Habitat*

Modification and loss of smalltooth sawfish critical habitat is an ongoing threat contributing to the current status of the species. Activities such as agricultural and urban development, commercial activities, dredge-and-fill operations, boating, erosion, and diversions of freshwater runoff contribute to these losses (South Atlantic Fishery Management Council 1998). Large areas of coastal habitat were modified or lost between the mid-1970s and mid-1980s within the United States (Dahl and Johnson 1991; USFWS 1999). Since then, rates of loss have decreased even though habitat loss continues. Between 1998 and 2004, approximately 2,450 ac (3.8 mi<sup>2</sup>) of intertidal wetlands consisting of mangroves or other estuarine shrubs were lost along the Atlantic and Gulf coasts of the United States (Stedman and Dahl 2008). In another study, Orlando Jr. et al. (1994) analyzed 18 major Southeastern estuaries and recorded over 703-mi (1,131-km) of navigation channels and 9,844-mi (15,842-km) of shoreline with modifications. Additionally, changes to the natural freshwater flows into estuarine and marine waters through construction of canals and other water-control devices have altered the temperature, salinity, and nutrient regimes, reduced both wetlands and SAV coverage, and degraded vast areas of coastal habitat utilized by smalltooth sawfish (Gilmore 1995; Quigley and Flannery 2002; Reddering 1988; Whitfield and Bruton 1989). Juvenile sawfish and their critical habitat are particularly vulnerable to these kinds of habitat losses or alterations due to the juveniles' affinity for (and developmental need of) shallow, estuarine systems. Although many forms of habitat modification are currently regulated, some permitted direct and/or indirect damage to habitat from increased urbanization still occurs and is expected to continue in the future.

In Florida, coastal development often involves the removal of mangroves, the armoring of shorelines through seawall construction, and the dredging of canals. This is especially apparent in master plan communities such as Cape Coral and Punta Gorda, which are located within the Charlotte Harbor Estuary. These communities were created through dredge-and-fill projects to increase the amount of waterfront property available for development, but in doing so, developers removed the majority of red mangrove habitat from the area. The canals created by these communities require periodic dredging for boat access, further affecting the shallow, euryhaline essential feature of critical habitat. Development continues along the shorelines of Charlotte Harbor in the form of docks, boat ramps, shoreline armoring, utility projects, and navigation channel dredging.

To protect critical habitat, federal agencies must ensure that their activities are not likely to result in the destruction or adverse modification of the physical and biological features that are essential to the conservation of sawfish, or the species' ability to access and use these features (ESA Section 7(a)(2); see also 50 CFR 424.12(b) [discussing essential features]). Therefore, proposed actions that may impact critical habitat require an analysis of potential impacts to each essential feature. As mentioned previously, there are 2 essential features of smalltooth sawfish

critical habitat: (1) red mangroves; and (2) shallow, euryhaline habitats characterized by water depths between the MHW line and 3-ft (0.9-m) measured at MLLW. The USACE oversees the permitting process for residential and commercial marine development in the CHEU. The FDEP and their designated authorities also regulate mangrove removal in Florida. All red mangrove removal permit requests within smalltooth sawfish critical habitat necessitate ESA Section 7 consultation. NMFS Protected Resources Division tracks the loss of these essential features of smalltooth sawfish critical habitat.

### *Threats to Critical Habitat*

#### Dock and Boat Ramp Construction

The USACE recommends that applicants construct docks in accordance with the NMFS-USACE [\*Dock Construction Guidelines in Florida for Docks or Other Minor Structures Constructed in or over Submerged Aquatic Vegetation \(SAV\), Marsh, or Mangrove Habitat\*](#) (“Dock Construction Guidelines”) when possible. The current dock construction guidelines allow for some amount of mangrove removal; however, it is typically restricted to either (1) trimming to facilitate a dock, or (2) complete removal up to the width of the dock extending toward open water, which the guidelines define as a width of 4-ft.

Installation or replacement of boat ramps is often part of larger projects such as marinas, bridge approaches, and causeways where natural and previously created deepwater habitat access channels already exist. Boat ramps can result in the permanent loss of both the red mangrove and the shallow, euryhaline habitat features of critical habitat for smalltooth sawfish.

#### Marina Construction

Marinas have the potential to adversely affect aquatic habitats. Marinas are typically designed to be deeper than 3-ft MLLW to accommodate vessel traffic; therefore, most existing marinas lacking essential features are unlikely to function as critical habitat for smalltooth sawfish. The expansion of existing marinas and creation of new marinas can result in the permanent loss of large areas of this nursery habitat.

#### Bulkhead and Seawall Construction

Bulkheads and other shoreline stabilization structures are used to protect adjacent shorelines from wave and current action and to enhance water access. These projects may adversely impact critical habitat for smalltooth sawfish by removal of the essential features through direct filling and dredging to construct vertical or riprap seawalls. Generally, vegetation plantings, sloping riprap, or gabions are environmentally-preferred shoreline stabilization methods instead of vertical seawalls because they provide better quality fish and wildlife habitat. Nevertheless, placement of riprap material removes more of the shallow euryhaline essential feature than a vertical seawall. In addition, many seawalls built along unconsolidated shorelines require the removal of red mangroves to accommodate the seawalls.

### Cable, Pipeline, and Transmission Line Construction

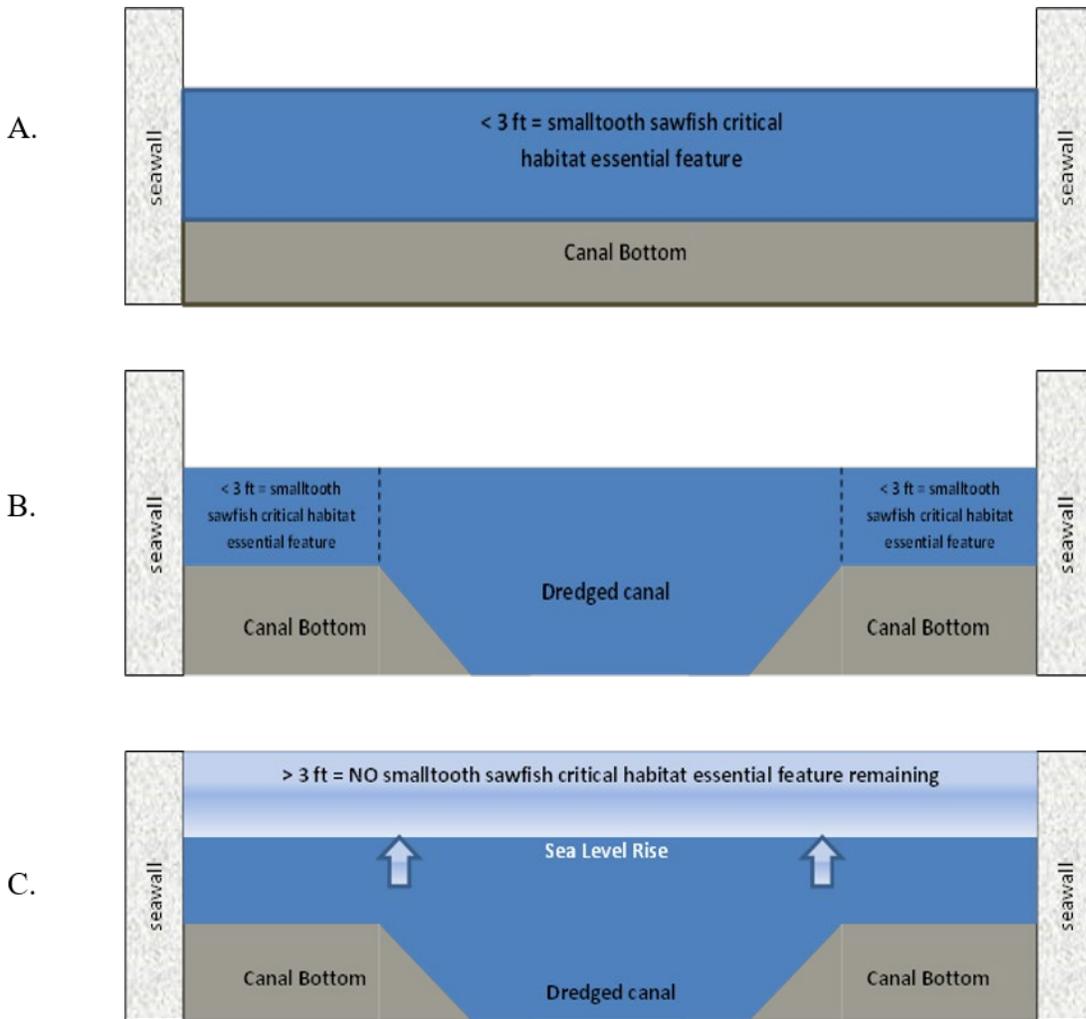
While not as common as other activities, excavation of submerged lands is sometimes required for installing cables, pipelines, and transmission lines. Construction may also require temporary or permanent filling of submerged habitats. Open-cut trenching and installation of aerial transmission line footers are activities that have the ability to temporarily or permanently impact critical habitat for smalltooth sawfish.

### Transportation Infrastructure Construction

Potential adverse effects from federal transportation projects in smalltooth sawfish critical habitat (CHEU) include operations of the FHA, USACE, and the FEMA. Construction of road improvement projects typically follow the existing alignments and expand to compensate for the increase in public use. Transportation projects may impact critical habitat for smalltooth sawfish through installation of bridge footers, fenders, piles, and abutment armoring, or through removal of existing bridge materials by blasting or mechanical efforts.

### Dredging

Riverine, nearshore, and offshore areas are dredged for navigation, construction of infrastructure, and marine mining. An analysis of 18 major Southeastern estuaries conducted in 1993-1994 demonstrated that over 7,000-km of navigation channels have already been dredged (Orlando Jr. et al. 1994). Habitat effects of dredging include the loss of submerged habitats by disposal of excavated materials, turbidity and siltation effects, contaminant release, alteration of hydrodynamic regimes, and fragmentation of physical habitats (Gulf of Mexico Fishery Management Council 1998; Gulf of Mexico Fishery Management Council 2005; South Atlantic Fishery Management Council 1998). In the CHEU, dredging to maintain canals and channels constructed prior to the critical habitat designation, limits the amount of available shallow, euryhaline essential feature to the edges of waterways and these dredging activities can disturb juveniles that are using these areas. At the time of critical habitat designation, many previously dredged channels and canals existed within the boundaries of the critical habitat units; however, we are unsure which of those contained the shallow-water essential feature at that time. It is likely that many of these channels and canals were originally dredged deeper than 3-ft MLLW, but they have since shoaled in and now contain the essential feature of shallow, euryhaline habitat. Therefore, maintenance dredging impacts are counted as a loss to this essential feature, even though the areas may or may not have contained the essential feature at time of designation (see Figure 9, Diagrams A and B).



**Figure 8. Diagram A depicts a cross section of a historically dredged channel/canal within the boundaries of the critical habitat units that has not been maintained. Diagram B depicts the typical cross section of a maintenance-dredged channel/canal. Diagram C depicts a cross section of a maintained dredged channel/canal after sea level rise of > 1-ft.**

Construction, Operations and Maintenance of Impoundments and Other Water Level Controls

Federal agencies such as the USACE have historically been involved in large water control projects in Florida. Agencies sometimes propose impounding rivers and tributaries for such purposes as flood control, salt-water intrusion prevention, or creation of industrial, municipal, and agricultural water supplies. Projects to repair or replace water control structures may affect smalltooth sawfish critical habitat by limiting sufficient freshwater discharge, which could alter the salinity of estuaries. The ability of an estuary to function as a nursery depends upon the quantity, timing, and input location of freshwater inflows (Garmestani and Percival 2005; Norton et al. 2012; USEPA 1994). Estuarine ecosystems are vulnerable to the following man-made disturbances: (1) decreases in seasonal inflow caused by the removal of freshwater upstream for agricultural, industrial, and domestic purposes; (2) contamination by industrial and sewage discharges; (3) agricultural runoff carrying pesticides, herbicides, and other toxic pollutants; and (4) eutrophication (e.g., influx of nutrients such as nitrates and phosphates most often from

fertilizer runoff and sewage) caused by excessive nutrient inputs from a variety of nonpoint and point sources. Additionally, rivers and their tributaries are susceptible to natural disturbances, such as floods and droughts, whose effects can be exacerbated by these man-made disturbances.

As stated above, smalltooth sawfish show an affinity for a particular salinity range, moving downriver during wetter months and upriver during drier months to remain within that range (Simpfendorfer et al. 2011). Therefore, water management decisions that affect salinity regimes may impact the functionality of critical habitat. This may result in smalltooth sawfish following specific salinity gradients into less advantageous habitats (e.g., areas with less shallow-water or red mangrove habitat). Furthermore, large changes in water flow over short durations would likely escalate movement patterns for smalltooth sawfish, thereby increasing predation risk and energy output. Researchers are currently looking into the effects of large-scale freshwater discharges on smalltooth sawfish and their designated critical habitat. The most vulnerable portion of the juvenile sawfish population to water-management outfall projects appears to be smalltooth sawfish in their first year of life. Newborn smalltooth sawfish remain in smaller areas irrespective of salinity, which potentially exposes them to greater osmotic stress (a sudden change in the solute concentration around a cell, causing a rapid change in the movement of water across its cell membrane), and impacts the nursery functions of sawfish critical habitat (Poulakis et al. 2013; Simpfendorfer et al. 2011).

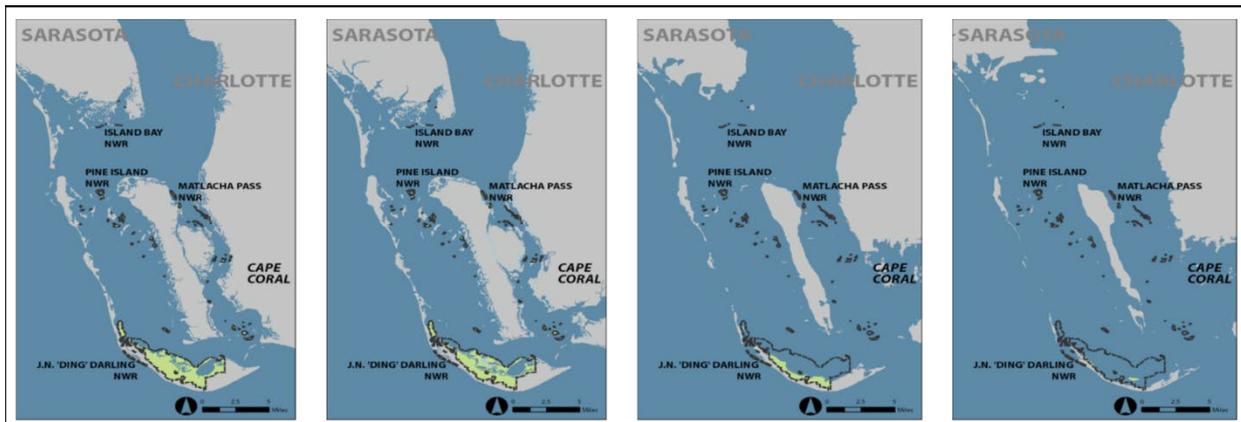
#### Changing Environmental Conditions

The Intergovernmental Panel on Climate Change (IPCC) has stated that "it is unequivocal that human influence has warmed the atmosphere, ocean, and land" (IPCC 2007; IPCC 2021). Some of the likely effects commonly mentioned are sea level rise, increased frequency of severe weather events, changes in the amount and timing of precipitation, and changes in air and water temperatures (EPA 2025; NOAA 2025).

Though the impacts on smalltooth sawfish cannot, for the most part, be predicted with any degree of certainty, we can project some effects to sawfish critical habitat. We know that both essential features (red mangroves and shallow, euryhaline waters less than 3-ft deep at MLLW) will be impacted by changing environmental conditions. Sea level rise is expected to exceed 3.3 ft (1-m) globally by 2100, according to the most recent publications, exceeding the estimates of the Fourth Assessment of the IPCC (Meehl et al. 2007; Pfeffer et al. 2008; Rahmstorf et al. 2007). Mean sea level rise projections have increased since the Fourth Assessment because of the improved physical understanding of the components of sea level, the improved agreement of process-based models with observations, and the inclusion of ice-sheet dynamical changes (IPCC 2013). A 1-m sea level rise in the state of Florida is within the range of recent estimates by 2080 (Pfeffer et al. 2008; Rahmstorf et al. 2007).

Sea level increases would affect the shallow-water essential feature of smalltooth sawfish critical habitat within the CHEU. A 2010 study by the MIT forecasted sea level rise in a study area with significant overlap with the CHEU (Vargas-Moreno and Flaxman 2010). The study investigated possible trajectories of future transformation in Florida's Greater Everglades landscape relative to 4 main drivers: climate change, shifts in planning approaches and regulations, population change, and variations in financial resources. MIT used (IPCC 2007) sea level modeling data to

forecast a range of sea level rise trajectories from low, to moderate, to high predictions (Figure 10). The effects of sea level rise on available shallow-water habitat for smalltooth sawfish would be exacerbated in areas where there is shoreline armoring (e.g., seawalls). This is especially true in canals where the centerlines are maintenance-dredged deeper than 3-ft (0.9 m) for boat accessibility. In these areas, the areas that currently contain the essential feature depth (less than 3-ft at MLLW) will be reduced along the edges of the canals as sea level rises (see previous Figure 9, Diagram C).



**Figure 9. From Left to Right: Current Shoreline, + 3.5-in (+ 9-cm); + 18.5-in (+ 47-cm); and + 38.97-in (+ 99-cm) Sea Level Rise by 2060<sup>1</sup>**

Along the Gulf Coast of Florida, and South Florida in particular, rises in sea level will impact mangrove resources. As sea levels rise, mangroves will be forced landward in order to remain at a preferred water inundation level and sediment surface elevation, which is necessary for successful growth. This retreat landward will not keep pace with conservative projected rates of elevation in sea level (Gilman et al. 2008). This forced landward progression poses the greatest threat to mangroves in areas where there is limited or no room for landward or lateral migration (Semenuk 1994). Such is the case in areas of the CHEU where landward mangrove growth is restricted by shoreline armoring and coastal development. This man-made barrier will prohibit mangroves from moving landward and will result in the loss of the mangrove essential feature.

Other threats to mangroves result from climate change: fluctuations in precipitation amounts and distribution, seawater temperature, carbon dioxide (CO<sub>2</sub>) levels, and damage to mangroves from increasingly severe storms and hurricanes (McLeod and Salm 2006). A 25% increase in precipitation globally is predicted by 2050 (McLeod and Salm 2006), but the specific geographic distribution will vary, leading to increases and decreases in precipitation at the regional level. Changes in precipitation patterns caused by climate change may adversely affect the growth of mangroves and their distribution (Field 1995; Snedaker 1995). Decreases in precipitation will increase salinity and inhibit mangrove productivity, growth, seedling survival, and spatial coverage (Burchett et al. 1984). Decreases in precipitation may also change mangrove species composition, favoring more salt-tolerant types (Ellison 2010). Increases in precipitation may

<sup>1</sup> Adapted from Vargas-Moreno, J. C., and M. Flaxman. 2010. Addressing the challenges of climate change in the greater everglades landscape. Massachusetts Institute of Technology, Department of Urban Studies and Planning. Project Sheet November, 2010, Cambridge, MA.

benefit some species of mangroves, increasing spatial coverage and allowing them to out-compete other salt marsh vegetation (Harty 2004). Even so, potential mangrove expansion requires suitable habitat for mangroves to increase their range, which depends to a great extent on patterns and intensity of coastal development (i.e., bulkhead and seawall construction).

Seawater temperature changes will have potential adverse effects on mangroves as well. Many species of mangroves show an optimal shoot density in sediment temperatures between 59-77 degrees °F (15-25 °C) (Hutchings and Saenger 1987). Yet, at temperatures between 77-95°F (25-35°C), many species begin to show a decline in leaf structure and root and leaf formation rates (Saenger and Moverley 1985). Temperatures above 95°F lead to adverse effects on root structure and survivability of seedlings (UNESCO 1991) and temperatures above 100.4°F (38°C) lead to a cessation of photosynthesis and mangrove mortality (Andrews et al. 1984). Although impossible to forecast precisely, sea surface ocean temperatures are predicted to increase 1.8-3.6°F (1-2°C) by 2060 (Chapter 11 [Intergovernmental Panel on Climate Change 2013]), which will in turn impact underlying sediment temperatures along the coast. If mangroves shift pole-ward in response to temperature increases, they will at some point be limited by temperatures at the lower end of their optimal range and available recruitment area. This is especially true when considering already armored shorelines in residential communities such as those within and surrounding the CHEU of critical habitat for smalltooth sawfish.

As atmospheric CO<sub>2</sub> levels increase, mostly resulting from manmade causes (e.g., burning of fossil fuels), the world's oceans will absorb much of this CO<sub>2</sub>, causing potential increases in photosynthesis and mangrove growth rates. This increase in growth rate, however, would be limited by lower salinities expected from CO<sub>2</sub> absorption in the oceans (Ball et al. 1997), and by the availability of undeveloped coastline for mangroves to expand their range. A secondary effect of increased CO<sub>2</sub> concentrations in the oceans is the deleterious effect on coral reefs' ability to absorb calcium carbonate (Hoegh-Guldberg et al. 2007), and subsequent reef erosion. Eroded reefs may not be able to buffer mangrove habitats from waves, especially during storm/hurricane events, causing additional physical effects.

Finally, the anticipated increase in the severity of storms and hurricanes may also impact mangroves. Tropical storms are expected to increase in intensity and/or frequency, which will directly impact existing mangroves that are already adversely impacted by increased seawater temperatures, CO<sub>2</sub>, and changes in precipitation (Cahoon et al. 2003; Trenberth 2005). The combination of all of these factors may lead to reduced mangrove height (Ning et al. 2003). Further, intense storms could result in more severe storm surges and lead to potential changes in mangrove community composition, mortality, and recruitment (Gilman et al. 2006). Increased storm surges and flooding events could also affect mangroves' ability to photosynthesize (Gilman et al. 2006) and the oxygen concentrations in the mangrove lenticels (Ellison 2010).

## **5 ENVIRONMENTAL BASELINE**

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### **5.1 Overview**

This section describes the effects of past and ongoing human and natural factors contributing to the current status of smalltooth sawfish, their habitats (including the CHEU designated critical

habitat), and ecosystem within the action area without the additional effects of the proposed action. In the case of ongoing actions, this section includes the effects that may contribute to the projected future status of the species, their habitats, and ecosystem. The environmental baseline describes the smalltooth sawfish and smalltooth sawfish critical habitat health based on information available at the time of the consultation.

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 which are contemporaneous with the consultation in process. The impacts to listed species or designated critical habitat from Federal agency activities or existing Federal facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

Focusing on the impacts of the activities in the action area specifically, allows us to assess the prior experience and state (or condition) of the endangered and threatened individuals, and areas of critical habitat that occur in an action area, that will be exposed to effects from the action under consultation. This focus is important because, in some states or life history stages, or areas of their ranges, listed individuals or critical habitat features will commonly exhibit, or be more susceptible to, adverse responses to stressors than they would be in other states, stages, or areas within their distributions. These localized stress responses or stressed baseline conditions may increase the severity of the adverse effects expected from the proposed action.

### **5.1.1 Baseline Status of Critical Habitat Considered for Further Analysis**

As stated in Section 2.2 (Action Area), the proposed action is located within the boundaries of the CHEU of smalltooth sawfish designated critical habitat at a defunct historic marina basin located on Waterway Estates property at 1667 and 1687 Inlet Drive, North Fort Myers, Lee County, Florida. The proposed marina basin is located in a cove along the northwest side of the Caloosahatchee River. The northern and southwest corners of the marina basin are open to a series of manmade canals. The marina basin opens to the Caloosahatchee River at its southeastern corner, the only outlet, and is approximately 16.7 navigable miles from the Gulf of America (formerly Gulf of Mexico). The waters within the site range between 1 and 2 ft in small sections of the basin, mostly situated on the eastern shoreline against the seawall, a result of shoaling and accumulation of sediment between protruding structures. The rest of the marina basin and access channel ranges between 3 and 6 ft. Benthic resource surveys were conducted on February 2, 2022 and determined no seagrasses were present in the marina basin. Ponar grab samples were also taken on February 15, 2022. The substrate consists of soft organic muds, silty sands, and shell fragments. A mangrove fringe is present on the south side of the marina island and is approximately 185-ft long (4,470-ft<sup>2</sup>).

The action area is situated between two documented HUAs for juvenile smalltooth sawfish within the CHEU (Poulakis et al. 2011) at a distance of approximately 4 mi upriver from the

Cape Coral HUA and approximately 1-mi downriver from the US 41 Bridges HUA. As stated above, HUAs correspond with areas where public encounters are most frequently reported. There has been one encounter reported (a capture) within the action area (US Sawfish Recovery Encounter Database).

## **5.2 Additional Factors Affecting the Baseline Status of ESA-Listed Species and Critical Habitat Considered for Further Analysis**

### **5.2.1 Federal Actions**

We have consulted on several USACE shoreline stabilization and dock construction projects in the greater residential canal system where the project is located since the effective date of critical habitat designation (i.e., October 2, 2009). However, other than the proposed action, no other federal actions are known to have occurred or have had effects to smalltooth sawfish designated critical habitat within the action area, as per a review of our Protected Resources Division's completed consultation database by the consulting biologist on November 21, 2025.

### **5.2.2 State and Private Actions**

Examples of nonfederal activities that may adversely affect designated critical habitat for smalltooth sawfish in the action area include residential in-water activities that do not require federal permits or otherwise have a federal nexus. The direct and indirect impacts from these activities are difficult to quantify but may include loss or degradation of red mangroves or shallow, euryhaline habitat from unauthorized mangrove trimming, shoreline stabilization, or in-water construction. NMFS does not have any knowledge of state or private actions occurring in the action area that would not also require a federal permit; the likelihood of a project occurring in the action area that does not require a federal permit for in-water construction work is very small. Where possible, conservation actions in ESA Section 10 permits, ESA Section 6 cooperative agreements, and state permitting programs are being implemented or investigated to monitor or study impacts from these sources.

### **5.2.3 Habitat Modification and Degradation**

Smalltooth sawfish habitat, in general, and designated critical habitat, specifically, have been degraded or modified throughout the Southeastern United States from agriculture, urban development, commercial activities, channel dredging, boating activities, and the diversion of freshwater runoff. The habitat within the CHEU will likely continue to experience the same types of actions described in Section 4 (Status of Critical Habitat Considered for Further Analysis).

### **5.2.4 Stochastic Events**

Stochastic events, such as hurricanes, are common throughout the range of smalltooth sawfish, especially in the current core of its range (i.e., South and Southwest Florida). These events are by nature unpredictable and their effect on the survival and recovery of the species and on critical habitat are unknown; however, they have the potential to impede the survival and recovery

directly if animals die as a result of them, or indirectly if habitat, especially critical habitat, is damaged as a result of these disturbances. Hurricanes Irma (2017), Ian (2022), Helene (2024), and Milton (2024) likely damaged habitat, including mangroves, in and around the action area.

### **5.2.5 Changing Environmental Conditions**

Many threats to smalltooth sawfish critical habitat are expected to be exacerbated by the effects of changing environmental conditions. Potential increases in sea level may impact the availability of nursery habitat, particularly shallow, euryhaline habitat and red mangrove lined, low-lying coastal shorelines (Intergovernmental Panel on Climate Change 2014; Wanless et al. 2005). For example, nursery habitat could be negatively affected by increased temperatures, salinities, and acidification of coastal waters (Snedaker 1995), (Wanless et al. 2005), (Scavia et al. 2002), as well as increased runoff and erosion due to the expected increase in extreme storm events (Intergovernmental Panel on Climate Change 2014; Wanless et al. 2005). These alterations of the marine environment due to changing environmental conditions could affect the distribution of shallow, euryhaline habitat, which would ultimately affect the distribution, physiology, and growth rates of red mangroves. These alterations could potentially eliminate red mangroves from particular areas. The magnitude of the effects of changing environmental conditions on smalltooth sawfish critical habitat are difficult to predict, yet, when combined with the cyclical loss of habitat from extreme storm events, a decrease in the red mangrove essential feature of smalltooth sawfish critical habitat is likely (Norton et al. 2012; Scavia et al. 2002). However, the proposed action is of such a small scale, scope, and limited period that it is not very likely to contribute to, or be affected cumulatively by, changing environmental conditions.

### **5.2.6 Conservation and Recovery Actions Shaping the Environmental Baseline**

Federal EFH consultation requirements pursuant to the MSA can minimize and mitigate for losses of wetland and preserve valuable foraging and developmental habitat that is used by juvenile smalltooth sawfish, including areas that have been designated as smalltooth sawfish critical habitat. NMFS has designated mangrove and estuarine habitats as EFH as recommended by the Gulf of Mexico Fishery Management Council. Both essential features are critical components of areas designated as EFH and receive a basic level of protection under the MSA to the extent that the MSA requires minimization of impacts to EFH resources.

## **6 EFFECTS OF THE ACTION**

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### **6.1 Overview**

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 but that are not part of the action. A consequence is caused by the proposed action if the effect would not occur but for the proposed action and the effect 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).

In this section of our Opinion, we assess the effects of the action that are likely to adversely affect critical habitat. The analysis in this section forms the foundation for our destruction or adverse modification analysis in Section 8. The quantitative and qualitative analyses in this section are based upon the best available commercial and scientific data on species biology and the effects of the action.

## **6.2 Effects of the Proposed Action on Critical Habitat Considered for Further Analysis**

The proposed action area is within the boundary of the CHEU of smalltooth sawfish critical habitat. The physical and biological features essential to the conservation of the U.S. DPS of smalltooth sawfish, which provide nursery area functions, are: (1) shallow, euryhaline habitats characterized by water depths between the MHW line and 3-ft (0.9-m) measured at MLLW, and (2) red mangroves. We believe the proposed action will affect the shallow, euryhaline habitat essential feature of smalltooth sawfish designated critical habitat as outlined below.

Because the proposed action will not remove or permanently restrict access to red mangroves, there are no potential routes of adverse effects to the red mangrove essential feature of smalltooth sawfish designated critical habitat. In addition, there are no other potential routes of effect to the red mangrove essential feature.

We believe the proposed action may affect the shallow, euryhaline habitat essential feature of smalltooth sawfish critical habitat as outlined below. Some of those pathways are not likely to adversely affect the critical habitat and some are likely to result in adverse effects. We describe these routes of effect and the consequences to the shallow, euryhaline habitat essential feature of smalltooth sawfish critical habitat in the following sections.

### **6.2.1 Routes of Effect that Are Not Likely to Adversely Affect Critical Habitat**

The applicant is proposing to trim the existing mangroves located on the south side of the marina island for installation of the floating dock. The mangrove fringe is approximately 185-ft-long by 24-ft-wide (4,470-ft<sup>2</sup>). The lateral waterward branches will be trimmed above the MHW and landward to the waterward limit of the prop roots. Mangrove trimming is regulated by the FDEP in this region, and consistent with this authority, mangrove trimming refers to the removal (using hand equipment such as chain saws and/or machetes) of lateral branches (i.e., no alteration of the trunk of the tree) in a manner that ensures survival of the tree (JaxBO, PDC AP.12). There are no other mangroves present that will be impacted. The applicant will follow FDEP mangrove trimming guidance to reduce the risk of mortality to red mangroves, including:

- Mangrove trimming will occur between the months of October and March. This is the time of year that mangroves experience the least amount of growth.

Therefore, the proposed mangrove trimming will not result in the loss of, and therefore is not likely to adversely affect, the red mangrove critical habitat essential feature.

### **6.2.2 Routes of Effect that Are Likely to Adversely Affect Critical Habitat**

We believe the proposed action is likely to adversely affect smalltooth sawfish designated critical habitat due to the permanent removal of approximately 0.58-ac (25,351-ft<sup>2</sup>) of the

shallow, euryhaline habitat essential feature, which provides forage, shelter, or other nursery habitat functions for juvenile smalltooth sawfish. Because we calculate and track losses to the shallow, euryhaline habitat essential feature of critical habitat in acres, we convert the project's effects from square feet to acres and use acres in the analyses below (i.e., 0.58-ac, where  $1\text{-ft}^2 = 0.0000229568\text{-ac}$ ). We estimated that the total amount of shallow, euryhaline habitat in CHEU at the effective date of species listing (May 1, 2003) was approximately 84,480-ac. While the available shallow, euryhaline essential feature will be diminished, the proposed action is not severing or preventing juvenile smalltooth sawfish access to alternate habitat with this essential feature in the surrounding area. Still, some ecological function provided to juvenile smalltooth sawfish currently using the area, and conservation benefits to future juvenile sawfish in terms of the shallow, euryhaline essential feature, will be lost; therefore, we believe the project is likely to adversely affect critical habitat in the CHEU.

## **7 CUMULATIVE EFFECTS**

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ESA Section 7 regulations require NMFS to consider cumulative effects in formulating its Opinions (50 CFR 402.14). Cumulative effects include the effects of future state or private actions, not involving federal activities, that are reasonably certain to occur within the action area considered in this Opinion (50 CFR 402.02). NMFS is not aware of any future projects that may contribute to cumulative effects within this action area. Within the action area, the ongoing activities and processes described in the environmental baseline are expected to continue and NMFS did not identify any additional sources of potential cumulative effect.

## **8 DESTRUCTION OR 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" critical habitat if the action results in an alteration of the quantity or quality of the essential physical or biological features of critical habitat and if the effect of the alteration is to appreciably diminish the value of critical habitat as a whole 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 the critical habitat must now and must continue in the future to support the conservation of the species and progress toward recovery. The analysis takes into account any changes in amount, distribution, or characteristics of the critical habitat that will be required over time to support the successful recovery of the species. 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 and the affected critical habitat serves with regard to the function of the overall critical habitat designation, and how that role is affected by the action.

## **8.1 Protect and Restore Smalltooth Sawfish Habitat (Recovery Objective #2)**

In establishing Recovery Objective #2 of the smalltooth sawfish recovery plan, we recognized that recovery and conservation of smalltooth sawfish depends on the availability and quality of nursery habitats. Historically, juvenile sawfish were documented in mangrove and non-mangrove habitats in the Southeastern United States. Due to the protections provided by the Ten Thousand Islands National Wildlife Refuge, Everglades National Park, and the Florida Keys National Marine Sanctuary, much of the historic juvenile smalltooth sawfish habitat in Southwest Florida has remained high-quality juvenile habitat. Recovery Regions G, H, and I in Southwest Florida extend from the Manatee River on the West Coast of Florida, south through Everglades National Park and the Florida Keys to Caesar Creek on the Southeast Coast of Florida. The CHEU is in Recovery Region G. While much of the CHEU is protected by the Charlotte Harbor Preserve State Park system and the Estero Bay Aquatic Preserve, it is also highly anthropomorphically influenced.

The recovery plan states that for the 3 recovery regions with remaining high-quality habitats (i.e., Recovery Regions G, H, and I), juvenile habitats “must be maintained over the long term at or above 95% of the acreage available at the time of listing” (NMFS, 2009). To ensure that a proposed action will not impede Recovery Objective #2, we determine whether the critical habitat unit will be able to maintain 95% of the areas containing each essential feature after taking into account project impacts in the context of the status of the critical habitat, the environmental baseline, and cumulative effects. While the CHEU is only a part of the larger Recovery Region G, and the 95% protection threshold applies across not just Recovery Region G, but also Recovery Regions H and I, the threshold is still useful for evaluating the impacts at the individual recovery region level and for sub-units of the recovery regions. The CHEU contains the only known nursery areas within Recovery Region G; thus, we believe it is appropriate to evaluate impacts at the level of the unit. In addition, functioning critical habitat contains either one or both of the essential features, and the essential features were selected based on their role in facilitating recruitment of juvenile animals into the adult population, which the recovery plan likewise seeks to conserve and protect. Consequently, we also believe it is appropriate to consider whether 95% of each of the essential features of critical habitat in the CHEU is maintained. Therefore, below we estimate the percent impact the proposed action will have on the shallow, euryhaline habitat essential features of critical habitat within the CHEU. As stated above, the proposed action will not affect the red mangrove essential feature of smalltooth sawfish critical habitat.

### **8.1.1 Shallow, Euryhaline Essential Feature Impacts**

We estimated that 84,480-ac of shallow, euryhaline habitat (abbreviated SH throughout this section) was available within the CHEU at the effective date of species listing (i.e., May 1, 2003) (Table 5, Line 1). As discussed above, we must determine whether a proposed action’s impact will interfere with long-term maintenance of this essential feature at or above 95% of the acreage available at the time of listing; however, loss of critical habitat was not formally monitored until the effective date of critical habitat designation (i.e., October 2, 2009). Therefore, we must estimate habitat loss that occurred during the period between the effective date of species listing and the effective date of critical habitat designation (i.e., May 1, 2003 – October 2, 2009).

To do this, we use an 84-month dataset of our completed Section 7 consultations (October 3, 2009 – September 30, 2016), including yearly losses due to programmatic consultations, to generate a rate of loss that can then be used to back-calculate the loss of SH between the effective date of species listing and the effective date of critical habitat designation. We rely on this dataset because using approximately 7 years of information helps avoid over- or under-estimating the rate of habitat loss due to any potential inter-annual variability associated with economic growth and contraction that may have occurred in that time. Our consultations completed during this time indicate that 17.60-ac of SH in the CHEU was lost due to federal agency actions.

Based on these losses, we estimate a monthly loss rate of SH in the CHEU using the following equation:

$$\begin{aligned}
 & \textit{Monthly loss rate of SH (CHEU)} \\
 & = \textit{SH lost through federal agency actions} \div 84 \textit{ months} \\
 & \qquad \qquad \qquad = 17.60 \textit{ ac} \div 84 \textit{ months} \\
 & \qquad \qquad \qquad = 0.21 \textit{ ac per month}
 \end{aligned}$$

Assuming the same monthly loss rate, we back-calculate the loss of SH in the 77 months between the effective date of species listing and the effective date of critical habitat designation (i.e., May 1, 2003 – October 2, 2009) in the CHEU using the following equation:

$$\begin{aligned}
 & \textit{SH lost prior to critical habitat designation (CHEU)} \\
 & \qquad \qquad \qquad = 0.21 \textit{ ac per month} \times 77 \textit{ months} \\
 & = 16.17 \textit{ ac (Table 5, Line 2)}
 \end{aligned}$$

Next, we determine the loss of SH since the effective date of critical habitat designation. Due to the high frequency of relatively small projects affecting smalltooth sawfish critical habitat, we update the losses to the shallow, euryhaline habitat essential feature from federal actions every 12 months (i.e., January 1). From the effective date of critical habitat designation through December 31, 2024, 77.70-ac of SH in the CHEU has been lost due to federal agency actions (Table 5, Line 3). While this amount of loss only takes into account projects with a federal nexus requiring ESA Section 7 consultation, there are very few projects without a federal nexus that could affect shallow, euryhaline habitat in the CHEU as most in-water construction projects require federal authorization.

Using this information, we calculate the SH currently available in CHEU using the following equation:

$$\begin{aligned}
 & \textit{SH currently available (CHEU)} \\
 & = \textit{SH at time of species listing} - (\textit{SH lost prior to critical habitat designation} \\
 & \qquad \qquad \qquad + \textit{SH lost since critical habitat designation}) \\
 & = 84,480 \textit{ ac} - (16.17 \textit{ ac} + 77.70 \textit{ ac}) \\
 & = 84,386.13 \textit{ ac (REF\_Ref55311166 \h \* MERGEFORMAT Table 3, Line 4)}
 \end{aligned}$$

We calculate the amount of SH that must be maintained in the CHEU per Recovery Objective #2 using the following equation:

$$\begin{aligned}
 & \textit{SH that must be maintained (CHEU)} \\
 &= \textit{SH at time of species listing} \times 95\% \\
 &= 84,480 \textit{ ac} \times 0.95 \\
 &= 80,256 \textit{ ac} \textit{ ( REF _Ref55311166 \h \* MERGEFORMAT Table 3, Line 5)}
 \end{aligned}$$

The proposed action would result in the permanent loss of 0.58 acs (**Table 5**, Line 6). Using the above results, we estimate the total amount of SH lost in the CHEU since species listing, including losses from the proposed action using the following equation:

$$\begin{aligned}
 & \textit{\% SH lost since species listing (CHEU)} \\
 &= [(\textit{SH lost due to this project} + \textit{SH lost prior to critical habitat designation} \\
 & \quad + \textit{SH lost since critical habitat designation}) \\
 & \quad \div \textit{Total SH at time of species listing}] \times 100 \\
 &= [(0.58 \textit{ ac} + 16.17 \textit{ ac} + 77.70 \textit{ ac}) \div 84,480 \textit{ ac}] \times 100 \\
 &= (94.45 \textit{ ac} \div 84,480 \textit{ ac}) \times 100 \\
 &= 0.111802\% \textit{ ( REF _Ref55311166 \h \* MERGEFORMAT Table 3, Line 7)}
 \end{aligned}$$

Thus, we estimate the percent of SH remaining within the CHEU as:

$$\begin{aligned}
 & \textit{\% SH remaining (CHEU)} \\
 &= 100\% - \textit{\% SH lost since species listing (CHEU)} \\
 &= 100\% - 0.111802\% \\
 &= 99.888198\% \textit{ ( REF _Ref55311166 \h \* MERGEFORMAT Table 3, Line 8)}
 \end{aligned}$$

**Table 5. Summary of Impacts to the Shallow, Euryhaline Habitat Essential Feature**

Shallow, Euryhaline Habitat in the CHEU	Acs
1. Available at the time of species listing	84,480
2. Losses prior to critical habitat designation	16.17
3. Losses since critical habitat designation	77.70
4. Available as of January 1, 2025	84,386.13
5. Area that must be maintained per Recovery Plan	80,256 (95% of 84,480)
6. Affected by the proposed action	0.58
7. Affected since species listing (including the proposed action)	94.45 (0.111802% of 84,480)
8. Remaining	84,385.55 (99.888198% of 84,480)

### **8.1.2 Summary of Impacts to the Essential Features**

Very small percentages of the essential features of smalltooth sawfish designated critical habitat have been affected by federal agency actions since the effective date of species listing. Including losses from the proposed action, 99.888198% of the SH essential feature (Table 5, Line 8) available at the time of species listing remain in the CHEU. Thus, the loss of the shallow euryhaline essential feature associated with the proposed action, in combination with losses since we listed the species, does not provide any impediment to effectively protecting 95% of juvenile habitat in the CHEU available at the effective date of species listing, and therefore will not be an impediment to Recovery Objective #2.

### **8.2 Ensure Smalltooth Sawfish Abundance Increases (Recovery Objective #3)**

In establishing Recovery Objective #3, we recognized that it was important that sufficient numbers of juvenile sawfish inhabit several nursery areas across a diverse geographic area to ensure survivorship and growth and to protect against the negative effects of stochastic events within parts of their range. To meet this objective, Recovery Region G (i.e., CHEU) must support sufficiently large numbers of juvenile sawfish to ensure that the species is viable in the long-term and can maintain genetic diversity. Recovery Objective #3 requires that the relative abundance of small juvenile sawfish (< 200-cm) either increases at an average annual rate of at least 5% over a 27-year period, or juvenile abundance is at greater than 80% of the carrying capacity of the recovery region.

Assessing the effect of the proposed action on small juvenile abundance is made difficult by the state of available data. Since the designation of critical habitat and the release of the recovery plan in 2009, ongoing studies have been in place to monitor the U.S. DPS of smalltooth sawfish. FWC FWRI is conducting a study in the CHEU that is supported primarily with funding provided by NMFS through the ESA Section 6 Species Recovery Grants Program, while Florida State University and the NOAA NMFS Southeast Fisheries Science Center Panama City Laboratory have focused studies in the TTIEU. The intent of these studies is to determine the abundance, distribution, habitat use, and movement of smalltooth sawfish. Early indications are that juvenile sawfish are at least stable, due in large part to ESA-listing of the species and designation of critical habitat. While it may be too early to state definitively that juveniles within CHEU are surviving to adulthood, researchers consistently capture newborn smalltooth sawfish, particularly within “high use areas,” indicating adult smalltooth sawfish are pupping within Recovery Region G. Available data from the adjacent Recovery Region H (i.e., TTIEU) indicate that adult smalltooth sawfish are also reproducing within this recovery region and that the juvenile population trend is at least stable and possibly increasing—though variability is high (Carlson and Osborne 2012; Carlson et al. 2007). With no other data to consider, the abundance trend in the TTIEU represents the best data available for assessing the population trends in the CHEU. Therefore, we do not believe the loss of habitat associated with the proposed action, in combination with the losses to date, will impede the 5% annual growth objective for the juvenile population within Recovery Region G.

## **9 CONCLUSION**

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We reviewed the Status of the Critical Habitat, the Environmental Baseline, the Effects of the Action, and the Cumulative Effects using the best available data.

We conclude that the permanent loss of 0.58-acs of shallow, euryhaline essential feature of designated critical habitat for smalltooth sawfish due to the proposed action will not interfere with achieving the relevant habitat-based recovery objectives for smalltooth sawfish and will not impede the critical habitat's ability as a whole to support the conservation of smalltooth sawfish, despite permanent adverse effects. Therefore, given the nature of the proposed action and the information provided above, we conclude that the action, as proposed, is not likely to destroy or adversely modify the critical habitat of smalltooth sawfish.

## **10 INCIDENTAL TAKE STATEMENT**

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### **10.1 Overview**

NMFS does not anticipate that the proposed action will incidentally take any ESA-listed species under our purview and no take is authorized in this Opinion. Nonetheless, as soon as the USACE becomes aware of any take of an ESA-listed species under NMFS's purview that occurs during the proposed action, the USACE shall report the take to NMFS SERO PRD via the [NMFS SERO Endangered Species Take Report Form](https://forms.gle/85fP2da4Ds9jEL829) (<https://forms.gle/85fP2da4Ds9jEL829>). This form shall be completed for each individual known reported capture, entanglement, stranding, or other take incident. Information provided via this form shall include the title, Safe Harbor Port Phoenix Marina Reconfiguration, the issuance date, and ECO tracking number, SERO-2024-01619, for this Opinion; the species name; the date and time of the incident; the general location and activity resulting in capture; condition of the species (i.e., alive, dead, sent to rehabilitation); size of the individual, behavior, identifying features (i.e., presence of tags, scars, or distinguishing marks), and any photos that may have been taken. At that time, consultation may need to be reinitiated.

## **11 CONSERVATION RECOMMENDATIONS**

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Section 7(a)(1) of the ESA directs federal agencies to utilize their authority to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation Recommendations identified in Opinions can assist action agencies in implementing their responsibilities under Section 7(a)(1). Conservation recommendations are discretionary activities designed to minimize or avoid adverse effects of a proposed action on ESA-listed species or critical habitat, to help implement recovery plans, or to develop information. The following conservation recommendations are discretionary measures that NMFS believes are consistent with this obligation and therefore should be carried out by the federal action agency:

1. Continue public outreach and education on smalltooth sawfish and smalltooth sawfish critical habitat in an effort to minimize interactions, injury, and mortality.

2. Provide funding to conduct directed research on smalltooth sawfish that will help further our understanding about the species (e.g., implement a relative abundance monitoring program which will help define how spatial and temporal variability in the physical and biological environment influence smalltooth sawfish) in an effort to predict long-term changes in smalltooth sawfish distribution, abundance, extent, and timing of movements.
3. Fund surveys of detailed bathymetry and mangrove coverage within smalltooth sawfish critical habitat. Lee County and the USACE recently funded such surveys within the Cape Coral municipality. Data is needed from other municipalities within the CHEU to establish a more accurate baseline assessment of both critical habitat essential features (red mangroves and shallow-water areas).
4. Fund and support restoration efforts that rehabilitate and create shallow, euryhaline and mangrove fringe habitats within the range of smalltooth sawfish.
5. **Special Smalltooth Sawfish Conservation Request:** The proposed marina basin is located in a cove along the northwest side of the Caloosahatchee River in designated Smalltooth Sawfish Critical Habitat CHEU (Figure 7). The northern and southwest corners of the marina basin are open to a series of manmade canals. The marina basin opens to the Caloosahatchee River at its southeastern corner and is the only outlet from the marina (Figure 3). Smalltooth sawfish critical habitat essential features (i.e. red mangroves and shallow euryhaline water less than 3-ft. deep at MLLW) are present within, and adjacent to the marina basin. The marina is also situated between two Smalltooth Sawfish High Use Areas (HUAs) (Figure 4) that serve as core nursery habitat (see the [Smalltooth Sawfish and Smalltooth Sawfish Critical Habitat Consultation Framework](#), February 2023). The Cape Coral HUA is located approximately 4-mi downriver of the marina, and the US 41 Bridges is located approximately 1-mi upriver of the marina. These two HUAs are based on FWRI acoustic tracking and public reporting data (Dr. G. Poulakis FWRI pers. comm. to Dr. D. Glasgow and J. Cavanaugh, NMFS SERO PRD November 23, 2024). These data show juvenile Smalltooth Sawfish utilize the surrounding area and likely the marina itself as nursery habitat for refuge, migrating, and foraging. Additionally, the CHEU critical habitat where the project is located provides vitally important nursery habitat for pupping, YOY, and juvenile sawfish. Juveniles spend several years in these HUAs before venturing out of the Caloosahatchee, out through Charlotte Harbor, and into the Gulf of America (formerly Gulf of Mexico). In U.S. waters, smalltooth sawfish have greatly declined since the beginning of the 1900s as a consequence of historical fishing mortality and habitat loss. In recent years, development and hurricanes have impacted Smalltooth Sawfish critical habitat and these events coupled with the recent, devastating unusual mortality event in the Florida Keys, have negatively impacted Smalltooth Sawfish recovery. As an added conservation measure, NMFS asks the USACE or applicant, Safe Harbor Marinas, to purchase much needed acoustic telemetry tags for FWRI researchers to track sawfish movements within the Caloosahatchee River. Acoustic telemetry data may answer key questions regarding habitat use and movement patterns, which are critical components of the species' recovery plan. There are several acoustic receivers in this area of the Caloosahatchee; however, receivers only track tagged sawfish, therefore the deployment of additional tags

is essential to track sawfish. Although the tags may seem expensive, they last for approximately 10 years and there is a tremendous amount of human effort to find and tag sawfish pups and juveniles. The applicant's collaboration with researchers in agreeing to purchase several tags for FWRI aligns with Safe Harbor's Sustainability and Environmental Stewardship goals and most importantly, will ensure FWRI can tag additional sawfish and therefore collect additional data that are essential to gaining a better understanding of how this endangered ray utilizes the habitat between these two HUAs so that resource managers can develop adaptive management strategies to protect the species and further recovery efforts. If the applicant agrees to assist with this tagging research effort, they can contact Dr. Gregg Poulakis, lead researcher for Smalltooth Sawfish Research at FWRI at [Gregg.Poulakis@myfwc.com](mailto:Gregg.Poulakis@myfwc.com).

To stay abreast of actions that minimize or avoid adverse effects or benefit listed species or their habitat, we request notification of the implementation of any conservation recommendations.

## **12 REINITIATION OF CONSULTATION**

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This concludes formal consultation on the proposed action. As provided in 50 CFR 402.16, reinitiation of formal consultation is required and shall be requested by the USACE, where discretionary federal action agency involvement or control over the action has been retained, or is authorized by law, and if: (a) the amount or extent of incidental take specified in the Incidental Take Statement is exceeded, (b) new information reveals effects of the action on listed species or critical habitat in a manner or to an extent not considered in this Opinion, (c) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion, or (d) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the USACE must immediately request reinitiation of formal consultation and project activities may only resume if the USACE establishes that such continuation will not violate Sections 7(a)(2) and 7(d) of the ESA.

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