DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, JACKSONVILLE DISTRICT
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-8175

February 7, 2025

Regulatory Division

PUBLIC NOTICE

SAJ-2006-07246 (PGP-RSS)

PROPOSED REISSUANCE OF PROGRAMMATIC GENERAL PERMIT SAJ-96

MINOR ACTIVITIES IN PINELLAS COUNTY, FLORIDA

TO WHOM IT MAY CONCERN:

To simplify and speed processing of Department of the Army permits for minor, substantially similar activities, the Jacksonville District, U.S. Army Corps of Engineers (Corps) proposes to reissue the Programmatic General Permit (PGP) SAJ-96. The reissued SAJ-96 would authorize minor activities in navigable waters of the United States (U.S.) in Pinellas County, Florida.

The current PGP will expire on April 29, 2025. The proposed reissuance adds the following activities: construction of living shorelines and oyster reefs, and repair and replacement of existing boat ramps. The following activities have been removed from the proposed reissuance: new seawall construction. The proposed reissuance also updates and reorganizes the terms and conditions. The draft SAJ-96 is included at the end of this Public Notice.

Minor activities that would be covered under the SAJ-96 include the following, pursuant to Section 404 of the Clean Water Act (33 U.S.C. § 1344) and/or Section 10 of the Rivers and Harbors Act (33 U.S.C. § 403):

1. Single-family residential dock facilities, designed to accommodate not more than four (4) motorized vessel slips, provided any slips in excess of two (2) are limited to personal watercraft (which includes any seawall mounted personal watercraft lifts and davits). This includes normal appurtenances such as boat hoists, boat shelters with open sides, floating docks, stairways, walkways, lower landings, mooring pilings and dolphins. This also includes maintenance, reconfiguration and removal activities.

2. Minor structures and modifications within existing, previously authorized multi-family residential and commercial dock facilities. This includes normal appurtenances such as boat hoists, boat shelters with open sides, floating docks, stairways, walkways, mooring pilings, dolphins, and maintenance and removal of same. This also includes maintenance, reconfiguration and removal activities, so

long as the activities do not result in dredging, additional slips, dock spaces, or expansion of any kind.

3. Shoreline stabilization activities, including the construction of new rip rap revetments, and repair or replacement of seawalls, bulkheads, backfill, rip rap revetments and seawall footers for single-family residential properties.

4. Construction of living shorelines and oyster reefs in unvegetated, nearshore waters along shorelines.

5. Maintenance dredging of existing slips at single-family docks to restore adequate depth for vessel movement.

6. Repair and replacement of existing boat ramps.

Activities would occur within navigable waters of the U.S. in Pinellas County, not including geographic exclusion areas listed in the permit or areas otherwise excluded by the terms and conditions of the permit.

BACKGROUND:

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403), PGP SAJ-96 was issued on July 13, 2007 and reissued on July 17, 2014 and. The current version of SAJ-96 was reissued on April 29, 2020 and is due to expire on April 29, 2025. This PGP provides general authority to Pinellas County Water and Navigation to issue federal authorization on behalf of the Corps for private single-family docks and appurtenances, shoreline stabilization, minor structures at existing facilities, and maintenance dredging at single-family docks within Pinellas County, Florida. The most recent version of SAJ-96 has been verified 5,376 times by Pinellas County between June 2020 and December 2024.

The Corps anticipates continued utilization of the SAJ-96 to address future requests for minor work within the authorized geographic area. This PGP improves efficiencies for the review and verification of minor activities, thus improving service to the regulated public. This PGP will be coordinated with Federal and State resource agencies to address federal laws such as the National Historic Preservation Act and the Fish and Wildlife Coordination Act.

The term “Programmatic General Permit” means a Department of the Army authorization that is issued on a regional (District) basis for a category of activities when: those activities are substantially similar in nature and cause only minimal individual and cumulative impacts. General permits reduce the burden of the regulatory program on the public and ensure timely issuance of permits while effectively administering the laws and regulations which establish and govern the program. General permits are reviewed every five (5) years. After five (5) years, general permits

may be reissued, suspended, or revoked.

An assessment of the cumulative impacts of work authorized under a general permit is performed prior to authorization. In most instances, projects which comply with the conditions of a general permit can receive project specific authorization. Projects that do not comply with the conditions of a general permit may still receive authorization via an individual permit, but the application must be individually evaluated and coordinated with third parties, including the federal and state resource agencies. Review of an application for an individual permit takes additional time to complete as conflict resolution may be required.

The implementation of SAJ-96 simplifies and expedites the permit process for the authorized activities. This PGP will avoid unnecessary duplication and eliminate the need for separate approval from the Corps for minor work located in navigable waters of the United States in Pinellas County when that work is authorized by Pinellas County Water and Navigation. The reduction in duplication will ensure timely approvals can be granted to projects that singularly and cumulatively have minor impact on the environment. County applicants will apply for a Water and Navigation permit utilizing the Pinellas County Access Portal (https://aca-prod.accela.com/pinellas/Default.aspx). Applications will be reviewed for impacts to aquatic resources, endangered species, navigation, archaeological or historic sites, as well as construction requirements and consistency with the Pinellas County Water and Navigation Code (https://library.municode.com/fl/pinellas_county/codes/code_of_ordinances?nodeId=PTIIPICOCO_CH58EN_ARTXVWANARE).

AVOIDANCE AND MINIMIZATION INFORMATION:

The SAJ-96 would authorize activities that are minor and commonplace. The proposed terms and conditions of the SAJ-96 require activities proposed for authorization to be minimal in nature and avoid aquatic resources to the maximum extent.

COMPENSATORY MITIGATION:

The SAJ-96 would not authorize activities which would result in adverse impacts to wetlands or any other special aquatic sites. Due to the minor nature of impacts, no compensatory mitigation will be required for the proposed activities.

CULTURAL RESOURCES:

The Corps has determined that the reissuance of the PGP SAJ-96 has “no effect” on historic properties in compliance with Section 106 of the National Historic Preservation Act (NHPA) and the guidelines of 33 C.F.R. Part 325, Appendix C. The Corps will consult directly on this determination with the Florida State Historic Preservation Office (SHPO) and the appropriate federally recognized tribes by separate letter.

No activity shall be authorized under this PGP which is likely to adversely affect historic properties listed on, or eligible for listing on the National Register of Historic Places.

ENDANGERED SPECIES:

For each activity proposed for authorization under the SAJ-96, Pinellas County will confirm whether the activity meets the requirements of the Corps of Engineers, Jacksonville District, and the State of Florida Effect Determination Key for the Manatee in Florida (Manatee Key), dated April 2013 (addendum May 2019). Activities that do not reach a programmatic concurrence from the Manatee Key may not be verified under this PGP.

For each activity proposed for authorization under the SAJ-96, Pinellas County will confirm whether the activity meets the requirements of the Corps of Engineers, Jacksonville District, U. S. Fish and Wildlife Service, Jacksonville Ecological Services Field Office and State of Florida Effect Determination Key for the Wood Stork in Central and North Peninsular Florida (Wood Stork Key), dated September 2008. Activities that do not reach a programmatic concurrence from the Wood Stork Key may not be verified under this PGP.

For each activity proposed for authorization under the SAJ-96, Pinellas County will confirm whether the activity meets the requirements of the Jacksonville District's Programmatic Biological Opinion (JAXBO). Activities not meeting the requirements of JAXBO may not be verified under this PGP.

ESSENTIAL FISH HABITAT (EFH):

This notice initiates consultation with the National Marine Fisheries Service on EFH as required by the Magnuson-Stevens Fishery Conservation and Management Act 1996. Our initial determination is that the reissuance of the SAJ-96 and subsequent activities to be authorized under the SAJ-96 would not have a substantial adverse impact on EFH or Federally managed fisheries in Pinellas County given the proposed General and Special Conditions of the SAJ-96 which limit the use of the SAJ-96 to activities which do not result in direct or indirect substantial adverse impacts to EFH. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

WATER QUALITY CERTIFICATION:

The Corps will request general water quality certification from the Florida Department of Environmental Protection.

COASTAL ZONE MANAGEMENT CONSISTENCY:

The Corps will request general coastal zone consistency concurrence from the Florida Department of Environmental Protection.

IMPACT ON NATURAL RESOURCES:

Coordination with U.S. Fish and Wildlife Service, Environmental Protection Agency (EPA), the National Marine Fisheries Services, and other Federal, State, and local agencies, environmental groups, and concerned citizens generally yields pertinent environmental information that is instrumental in determining the impact the proposed action will have on the natural resources of the area.

EVALUATION:

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including cumulative impacts thereof; among these are conservation, economics, esthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food, and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people.

The Corps is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other Interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this determination, comments are used to assess impacts to endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

REQUEST FOR PUBLIC HEARING:

Any person may request a public hearing. The request must be submitted in writing to the District Engineer within the designated comment period of the notice and must state the specific reasons for requesting the public hearing.

COMMENTS regarding the potential authorization of the SAJ-96 should be submitted in writing within 30 days from the date of this notice. Comments should be submitted via the Regulatory Request System public notice module at

https://rrs.usace.army.mil/rrs/public-notices. Alternatively, you may submit written comments to Rachel S. Somerville at rachel.s.somerville@usace.army.mil.

QUESTIONS concerning this public notice should be directed to Rachel S. Somerville at rachel.s.somerville@usace.army.mil, or by telephone at 904-232-1444.

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DEPARTMENT OF THE ARMY PERMIT
PROGRAMMATIC GENERAL PERMIT
SAJ-2006-07246

SAJ-96

MINOR ACTIVITIES IN PINELLAS COUNTY, FLORIDA

I. Permittee: Recipient of a verification of a Programmatic General Permit (PGP) SAJ-96 from the Pinellas County Water and Navigation Section.

NOTE: The term "you" and its derivatives, as used in this permit, means the Permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

II. Effective Date: The effective date would be the date of issuance.

III. Expiration Date: Five (5) years from the date of issuance.

This PGP will be valid for a period of five (5) years from the effective date specified above unless suspended or revoked by the District Engineer prior to that date. If SAJ-96 expires or is revoked prior to completion of the authorized work, authorization of activities that have commenced or are under contract to commence in reliance on SAJ-96 will remain in effect provided the activity is completed within 12 months of the date SAJ-96 expired or was revoked.

IV. Issuing Office: Regulatory Division, Jacksonville District.

V. Authorized Activities: The following activities are authorized by SAJ-96, in accordance with the terms and conditions of this permit:

1. Single-family residential dock facilities, designed to accommodate not more than four (4) motorized vessel slips, provided any slips in excess of two (2) are limited to personal watercraft (which includes any seawall mounted personal watercraft lifts and davits). This includes normal appurtenances such as boat hoists, boat shelters with open sides, floating docks, stairways, walkways, lower landings, mooring pilings and dolphins. This also includes maintenance, reconfiguration and removal activities.

2. Minor structures and modifications within existing, previously authorized multi-family residential and commercial dock facilities. This includes normal appurtenances such as boat hoists, boat shelters with open sides, floating docks,

stairways, walkways, mooring pilings, dolphins, and maintenance and removal of same. This also includes maintenance, reconfiguration and removal activities, so long as the activities do not result in dredging, additional slips, dock spaces, or expansion of any kind within waters of Pinellas County.

3. Shoreline stabilization activities, including the construction of new rip rap revetments, and repair or replacement of seawalls, bulkheads, backfill, rip rap revetments and seawall footers for single-family residential properties.

4. Construction of living shorelines and oyster reefs in unvegetated, nearshore waters along shorelines.

5. Maintenance dredging of existing slips at single-family docks to restore adequate depth for vessel movement.

6. Repair and replacement of existing boat ramps.

VI. Geographic Area: This PGP applies to navigable waters of the United States located within Pinellas County, unless otherwise an excluded area listed in paragraph VII of this permit.

VII. Excluded Areas: The use of this PGP is not authorized in:

1. Manatee Protection Areas, including No entry zones, listed at 50 C.F.R. § 17.108;

2. Bartow Power Plant Warm Water Aggregation Area (WWAA) and Important Manatee Area (IMA; **Attachment A**);

3. The Spring Bayou/Whitcomb Bayou IMA (**Attachment B**);

4. The Harbor Isle, Harbor Isle Unit 1, and Harbor Isle Unit 2 developments, St. Petersburg, Pinellas County, Florida **(Attachment C)**;

5. Areas on or contiguous to sandy beaches fronting the Gulf of Mexico;

6. State parks; and

7. Federal Civil Works projects, including but not limited to:

    a. Federal channels, including the limits of the channel and a setback of 100 feet from either side of the channel design edge.

b. Federal rights-of-way or easements.

c. All other Federal projects: No work is authorized that modifies, alters, or is built upon or adjacent to a Federal project.

VIII. Pre-Construction Notification Procedures: To be authorized under this PGP, you must first submit an application for a Water and Navigation permit, including satisfactory drawings, to Pinellas County Water and Navigation section. Applications will be reviewed for consistency with the Pinellas County Water and Navigation Code (https://library.municode.com/fl/pinellas_county/codes/code_of_ordinances?nodeId=PTIIPICOCO_CH58EN_ARTXVWANARE). Do not proceed with the proposed work until Pinellas County Water and Navigation section issues written verification that the proposed project meets the requirements of this PGP and Pinellas County Water and Navigation Code and is authorized. After receipt of written verification, you are authorized to perform work in accordance with the terms and conditions specified in this permit instrument and any project-specific terms and conditions in the verification.

IX. Terms and Conditions:

A. TERMS AND CONDITIONS APPLICABLE TO ALL ACTIVITIES:

1. **Reporting Address:** The Permittee shall submit all reports, notifications, documentation, and correspondence required by the general and special conditions of this permit to one (not all) of the following addresses:

   a. For document uploads: Pinellas County Access Portal (https://aca-prod.accela.com/pinellas/Default.aspx)

   b. For electronic mail (preferred): WaterNavPermits@pinellas.gov (not to exceed 15 MB).

   c. For standard mail: Pinellas County Public Works, 22211 U.S. Highway 19 N., Clearwater, FL 33765.

   The Permittee shall reference their associated Pinellas County Water and Navigation permit number, on all submittals.

2. **Self-Certification:** Within 60 days of completion of the work authorized by this permit, the Permittee shall complete the attached “Self-Certification Statement of Compliance” form **(Attachment D)** and submit it to the Pinellas County Water and Navigation section. In the event that the completed work deviates in any manner from the authorized work, the Permittee shall describe the deviations

between the work authorized by this permit and the work as constructed on the "Self-Certification Statement of Compliance" form. The description of any deviations on the "Self-Certification Statement of Compliance" form does not constitute approval of any deviations by the Pinellas County Water and Navigation section or the Corps.

3. **Work Type Exclusions:** This PGP does not authorize the following:

    a. Construction of living, fueling or fuel storage facilities over navigable waters of the U.S.

    b. Structures that support large commercial vessels, including ferries, tankers and cargo ships.

4. **Manatee Key:** Prior to issuance of a verification, Pinellas County Water and Navigation will review the activity in accordance with the dichotomous key titled, *The Corps of Engineers, Jacksonville District, and the State of Florida Effect Determination Key for the Manatee in Florida – April 2013* (Manatee Key), including the May 13, 2019, addendum, to determine potential effects to manatees. All projects which are determined to "*may affect*" or "*may affect, not likely to adversely affect*" (with individual concurrence) the manatee and/or its designated critical habitat and require coordination with the U.S. Fish and Wildlife Service are not authorized by this permit. Note: The Manatee Key may be subject to revision at any time. The most recent version of the Manatee Key will be utilized during the evaluation of the permit application. The 2013 Manatee Key, the May 13, 2019, Manatee Key addendum, and the 2011 Manatee Programmatic Biological Opinion can be accessed on the Jacksonville District Regulatory Division's Source Book page at http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx.

5. **Manatee Conditions for In-Water Work:** The Permittee must comply with the *Standard Manatee Conditions for In-Water Work – 2011* **(Attachment E).** Note: The manatee conditions may be subject to revision at any time. The most recent version of these conditions will be utilized during the evaluation of the permit application.

6. **Jacksonville District Programmatic Biological Opinion (JAXBO):** Prior to issuance of a verification, Pinellas County Water and Navigation will review the activity in accordance with the *U.S. Army Corps of Engineers Jacksonville District's Programmatic Biological Opinion, November 2017* (JAXBO).

    a. Activities must be consistent with the JAXBO, including all applicable

Project Design Criteria (PDCs), conditions and exclusions, in order to be eligible for verification under this PGP.

b. Structures and activities authorized under this PGP must be constructed and operated in accordance with all applicable PDCs contained in the JAXBO, based on the permitted activity. Failure to comply with applicable PDCs will constitute noncompliance with this permit. In addition, failure to comply with the applicable PDCs, where a take of listed species occurs, would constitute an unauthorized take. The National Marine Fisheries Service-Protected Resources Division is the appropriate authority to determine compliance with the Endangered Species Act for species and critical habitat under its purview. Note: The JAXBO may be subject to revision at any time. The most current version of the JAXBO must be utilized during the design and construction of the permitted work. The most current version of the JAXBO can be accessed on the Jacksonville District Regulatory Division's Source Book page in the Endangered Species section at: http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx.

7. **Essential Fish Habitat:** Unless the following conditions outlined in 7a.-c. below are met, no work will be authorized by this PGP which may result in direct or indirect adverse impacts to the following essential fish habitats: estuarine emergent vegetated wetlands (flooded saltmarshes, brackish marsh and tidal creeks), estuarine scrub/shrub (mangrove fringe), submerged aquatic vegetation, oyster reefs and shell banks, tidal freshwater (palustrine) wetlands, tidal freshwater submerged aquatic vegetation (SAV), corals, and live/hard bottom habitats. Indirect effects include secondary and cumulative effects.

a. In order to avoid adverse impacts to SAV, marsh or mangrove habitats from dock construction, docks proposed in areas where SAV, marsh or mangrove habitats are present shall be designed to comply with the "*Construction Guidelines in Florida for Minor Piling Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh, or Mangrove Habitat, Army Corps of Engineers/National Marine Fisheries Service – November 2017*" **(Attachment F)**. Note: *The Dock Construction Guidelines* may be subject to revision at any time. The most recent version will be utilized during the evaluation of the permit application. *The Dock Construction Guidelines* can be accessed on the Jacksonville District, Regulatory Division's Source Book page at http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book

b. Where SAV presence on a specific site is expected but may not currently

exist due to causes such as seasonal die-off, a structure authorized under this RGP shall adhere to the Dock Construction Guidelines unless a survey performed between June 1 and September 30 confirms year-round absence of SAV at the project site. Surveys must be conducted in accordance with the *Submerged Aquatic Vegetation Survey Guidelines - May 07, 2017* **(Attachment G).** Note: The survey guidelines may be subject to revision at any time. The most recent version will be utilized during the evaluation of the permit application. The *Submerged Aquatic Vegetation Survey Guidelines* can be accessed on the Jacksonville District, Regulatory Division's Source Book page at http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book

c. In order to avoid adverse impacts to coral and live/hard bottom habitats from in-water construction activities in areas where coral and hard bottom habitats are present, corals shall be relocated in accordance with *Florida Fish and Wildlife Conservation Commission (FWC) Coral and Octocoral Mitigation Relocation Recommendations* **(Attachment H)**. Surveys to identify coral and octocoral resources should be conducted prior to application, and resource survey summary reports should be submitted with an application. Coral relocation is not authorized under this PGP to be used as a compensatory mitigation measure to offset direct effects from a project. Note: *The Coral and Octocoral Relocation Recommendations* may be subject to revision at any time. The most recent version will be utilized during the evaluation of the permit application. *The Coral and Octocoral Relocation Recommendations* can be accessed on the FWC's Special Activity Licenses page: https://myfwc.com/license/saltwater/special-activity-licenses/
or at https://myfwc.com/media/kn5px1o0/fwc-coral-and-octocoral.pdf

8. **Oyster relocation:** In order to avoid adverse impacts to oyster habitat in areas where in-water construction activities are proposed, oyster habitat shall be relocated to comparable intertidal water depths, sediment (bottom) composition, salinity, and tidal inundation frequency within the general project area prior to commencement of the authorized work. Surveys to identify oyster habitat should be conducted prior to the SAJ-96 permit application, and results of the resource survey/summary report should be submitted with the application. A detailed oyster habitat relocation plan with site drawings should also be included with the permit application.

9. **Navigation:** No structure authorized under this PGP may interfere with general navigation. The following measures shall be implemented to ensure safe navigation:

a. Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the Permittee's expense on authorized facilities in navigable waters of the United States.

b. To maintain no less than 50% of the open-water portion of the waterbody available for public use, structures constructed on canals or channels must not extend more than 25% of the width of the waterbody. “Open-water portion” does not include areas of dense shoreline vegetation such as mangroves.

c. The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration of the structures or work herein authorized, or if in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the U.S. Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

10. Cultural Resources/Historic Properties Construction Conditions:

a. No structure or work shall adversely affect, impact or disturb properties listed in the National Register of Historic Places (NRHP) or those eligible for inclusion in the NRHP.

b. If, during permitted activities, items that may have historic or archaeological origin are observed, the Permittee shall immediately cease all activities within 25 meters of the discovery that may result in the destruction of these resources and shall prevent his/her employees from further removing, or otherwise damaging, such resources. The Permittee shall notify both the Florida Department of State, Division of Historical Resources, Compliance Review Section at (850)-245-6333 and the Corps, of the observations within the same business day (8 hours). Examples of submerged historical, archaeological or cultural resources which may be deeply buried in sediment or above them, or protruding into the water, include shipwrecks, shipwreck debris fields (such as steam engine parts, or wood planks and beams), anchors, ballast rock, concreted iron objects, concentrations of coal, prehistoric watercraft (such as log "dugouts"), and

other evidence of human activity. The Corps shall coordinate with the State Historic Preservation Office (SHPO) and the appropriate Tribal Historic Preservation Office(s) (THPO) to assess the significance of the discovery. Appropriate actions for the resolution of adverse effects will be determined following initiation of these steps and under consultation with the SHPO and THPO(s). Project activities shall not resume without verbal and/or written authorization from the Corps.

c. Additional cultural resources assessments may be required of the permit area in the case of unanticipated discoveries and, if deemed necessary by the Corps in consultation with the SHPO and THPO(s) when appropriate, in accordance with 36 C.F.R. Part 800 or 33 C.F.R. Part 325, Appendix C (5). Based on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend, or revoke the permit in accordance with 33 C.F.R. § 325.7. Such activity shall not resume on non-federal lands without written authorization from the SHPO for finds under State jurisdiction, and from the Corps.

d. In the event that unmarked human remains are identified on non-federal lands, they will be treated in accordance with Section 872.05 Florida Statutes. All work and ground disturbing activities within a 100-meter diameter of the unmarked human remains shall immediately cease and the Permittee shall immediately notify the medical examiner, Corps, and State Archaeologist within the same business day (8-hours). The Corps shall then notify the SHPO and initiate the *Agreement Between the Jacksonville District, U.S. Army Corps of Engineers, and the Seminole Tribe of Florida Regarding Proposed Actions that may Adversely Affect American Indian Burial Resources*. This agreement emphasizes that the resolution of effects to Native American burial resources will be accomplished whereby avoidance is the first priority and minimization or mitigation is only considered as a last resort. Appropriate actions for the resolution of the adverse effects will be determined following initiation of these steps and under consultation with the SHPO and THPO(s). Based on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend, or revoke the permit in accordance with 33 C.F.R. § 325.7. On federal or tribal lands, or situations where the Archaeological Resources Protection Act of 1979 or Native American Graves Protection and Repatriation Act of 1990 applies, the Permittee shall notify the Corps who will notify the SHPO and THPO(s). Once activities have ceased as a result of any of the situations identified in this Special Condition, they shall not resume without written authorization from the Corps.

11. **Discretionary Authority:** Conformance with the descriptions and criteria contained herein does not guarantee authorization under this PGP. The District Engineer reserves the right to require that any request for authorization under this PGP be processed by the Corps as a regional general permit, a nationwide permit, or an individual permit.

B. TERMS AND CONDITIONS APPLICABLE TO SINGLE-FAMILY RESIDENTIAL DOCKS AND APPURTENANT STRUCTURES

1. **Number of Vessel Slips Authorized:**

    a. Single-family residential dock facilities authorized under this PGP shall be designed to accommodate not more than four (4) motorized vessels.

    b. Motorized vessel slips in excess of two (2) may only be used for personal watercraft (which includes any seawall mounted personal watercraft lifts and davits).

    c. Dry storage slips (i.e., motorized vessel storage on land) count toward the total slip number. Slips for non-motorized vessels (such as kayaks, canoes, and paddleboards) and associated launching areas for non-motorized vessels do not count toward the total slip number.

C. TERMS AND CONDITIONS APPLICABLE TO MINOR STRUCTURES AND MODIFICATIONS AT EXISTING MULTI-FAMILY RESIDENTIAL AND COMMERCIAL DOCKING FACILITIES:

1. **Multi-family residential and commercial docking facilities:** Multi-slip facilities include commercial marinas, private multi-family docks, dry storage facilities and any other similar structures or activities that provide access to the water for multiple (five slips or more) motorized watercraft.

2. **Minor Structures:** Minor structures include normal appurtenances such as boat hoists, boat shelters with open sides, floating docks, stairways, walkways, lower landings, mooring pilings, dolphins, and maintenance of same.
3. **Modifications:** Reconfiguration of existing docking facilities within an authorized multi-family residential and commercial docking area.

4. **Previous authorization:** to qualify for this PGP, multi-family residential and commercial docking facilities must have previous federal authorization.
5. **Number of Vessel Slips Authorized:**

a. The addition of minor structures at existing, previously authorized multi-family residential and commercial docking structures may not provide new access for motorized vessels or improve an existing access to allow increased motorized vessel usage.

b. Modifications at existing, previously authorized multi-family residential and commercial docking structures may not result in dredging, additional slips, dock spaces, or expansion of any kind within waters of the United States in Pinellas County.

c. Dry storage slips (i.e., motorized vessel storage on land) count toward the total motorized vessel slip number. Slips for non-motorized vessels (such as kayak, canoe and paddleboard) and associated launching areas for non-motorized vessels do not count toward the total motorized vessel slip number.

6. This PGP does not authorize activities at municipal or commercial fishing piers.

D. TERMS AND CONDITIONS APPLICABLE TO SHORELINE STABILIZATION ACTIVITIES:

1. **Fill Material:** Only clean fill material is authorized. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance in toxic amounts, in accordance with Section 307 of the Clean Water Act.

2. **Erosion Control:** No fill material is placed in excess of the minimum needed for erosion protection.

3. **Construction Restrictions:** The activity is no more than 500 feet in length along the bank. The activity will not exceed an average of one (1) cubic yard per running foot, as measured along the length of the treated bank, below the plane of the high tide line.

E. TERMS AND CONDITIONS APPLICABLE TO LIVING SHORELINE AND OYSTER REEF ACTIVITIES:

1. **Waterward Limit:** The structures and fill area, including sand fills, sills, breakwaters, or reefs, cannot extend into the waterbody more than 10 feet from

the mean high-water line.

2. **Construction Restrictions:** The activity is not authorized to extend more than 500 feet in length along the bank and must have 5 ft gaps at least every 75 ft in length. Structures and fills must be the minimum necessary for the establishment and maintenance of the living shoreline and oyster reef.

3. **Artificial Reefs:** This PGP does not authorize the construction or deployment of artificial reefs.

F. TERMS AND CONDITIONS APPLICABLE TO MAINTENANCE DREDGING AT SINGLE-FAMILY BOAT SLIPS:

1. **Limitations:** Maintenance dredging is limited to the removal of accumulated sediment to restore adequate depths at existing single-family boat slips.

2. **Multi-Family Residential and Commercial Docking Areas:** Maintenance dredging of boat slips within multi-family residential and commercial docking areas is not authorized under the PGP.

3. **Hopper Dredging:** This PGP does not authorize hopper dredging.

4. **New dredging:** This PGP does not authorize new dredging.

G. TERMS AND CONDITIONS APPLICABLE TO REPAIR AND REPLACEMENT OF EXISTING SINGLE-FAMILY RESIDENTIAL BOAT RAMPS:

1. **Limitations:** This activity is restricted to the repair and replacement of a currently serviceable existing boat ramp, with previous federal authorization. Repair and replacement the boat ramp must occur within the same footprint of the existing boat ramp. The boat ramp is limited to a maximum of one (1) boat, not to exceed 20 feet in width.

2. **Fill Material:** The discharge of dredged or clean fill material into waters of Pinellas County cannot exceed 50 cubic yards. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance in toxic amounts, in accordance with Section 307 of the Clean Water Act.

3. **Multi-Family Residential and Commercial Boat Ramps:** Repair and replacement of boat ramps within multi-family residential and commercial docking areas are not authorized under the PGP.

X. General Conditions:

1. The time limit for completing the work authorized ends **Five (5) years from the date of issuance**.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify the Army Corps of Engineers Tampa Permits Section office at 813-769-7073 or TampaReg@usace.army.mil and Pinellas County Water and Navigation at 727-464-4170 or WaterNavPermits@pinellas.gov of what you have found. The Corps will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with the permit verification, you must obtain the signature and mailing address of the new owner in the space on the transfer page provided below **(Attachment I)** and forward a copy of the permit verification and executed transfer page to the Tampa Regulatory Office at 10117 Princess Palm Avenue, Suite 120, Tampa, Florida 33610 or TampaReg@usace.army.mil to validate the transfer of the authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit.

6. You must allow representatives from the Corps or its delegated authority to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

XI. Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity

described above pursuant to:

☒ Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403)

☒ Section 404 of the Clean Water Act (33 U.S.C. § 1344)

☐ Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. § 1413)

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or Construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 3 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

6. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 C.F.R. § 325.7 or enforcement procedures such as those contained in 33 C.F.R. § 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 C.F.R. § 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ _____

(DISTRICT ENGINEER) (DATE)
Brandon L. Bowman
Colonel, U.S. Army
District Commander

Attachments to Department of the Army Programmatic General Permit SAJ-96

Attachment A: Bartow Power Plant WWAA and IMA

Attachment B: The Spring Bayou/Whitcomb Bayou IMAs

Attachment C: Map of Harbor Isle, St. Petersburg, Pinellas County, Florida

Attachment D: Self-Certification Form

Attachment E: Standard Manatee Conditions for In-water Work, dated 2011

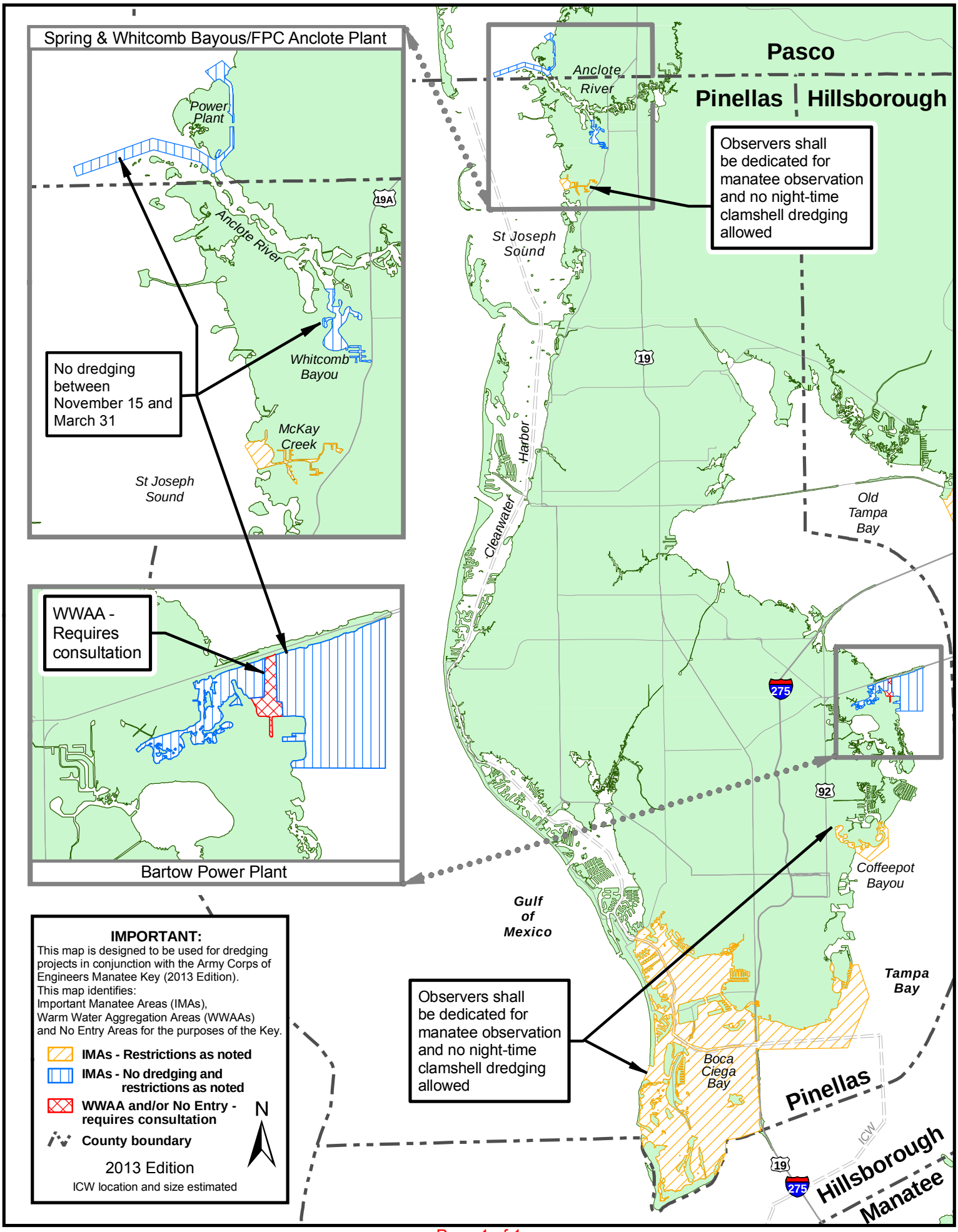
Attachment F: Dock Construction Guidelines, dated November 2017

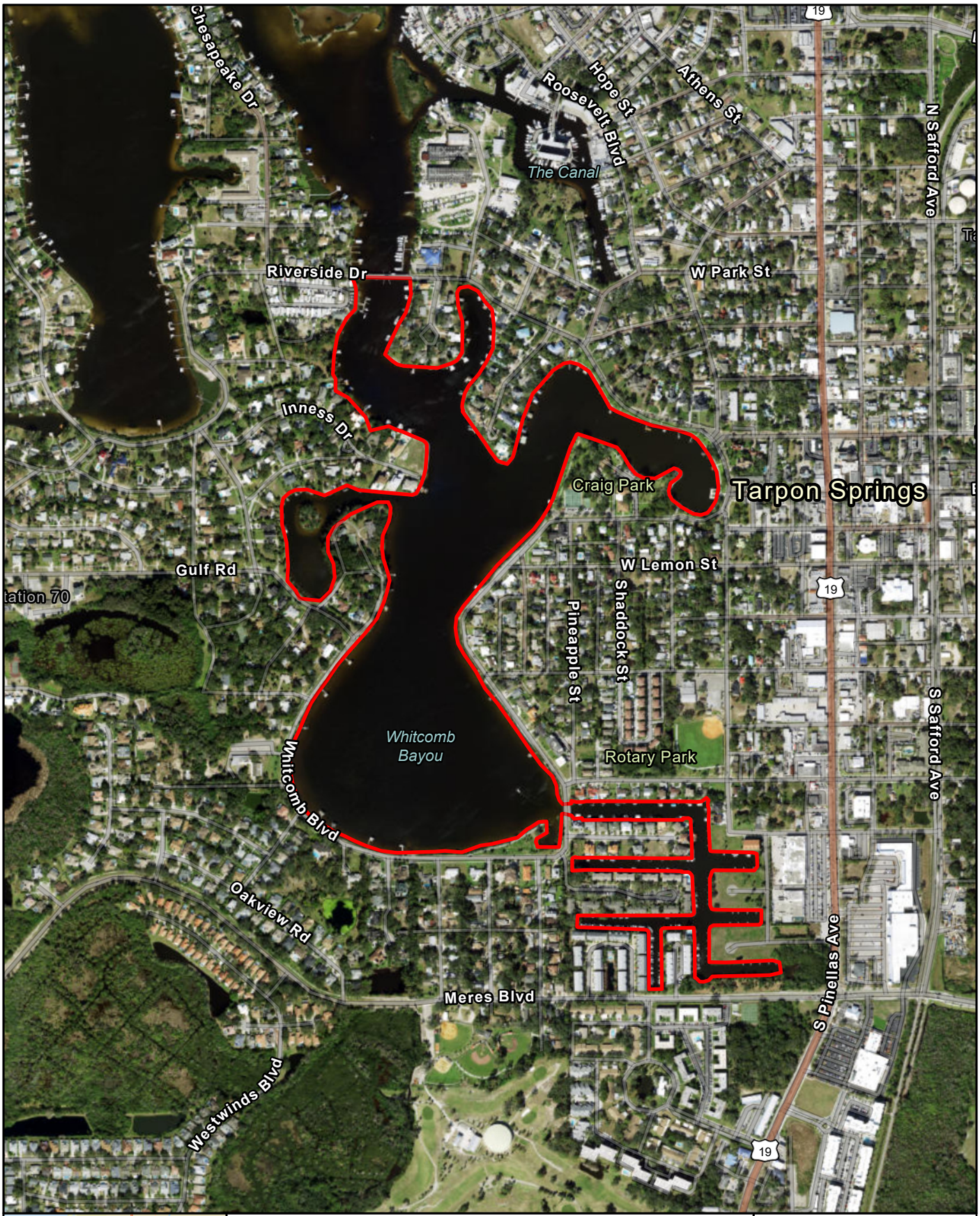
Attachment G: Submerged Aquatic Vegetation Survey Guidelines, dated May 07, 2017

Attachment H: FWC Coral and Octocoral Mitigation Relocation Recommendations, dated 2021

Attachment I: Transfer Request Form

Pinellas and Pasco Counties

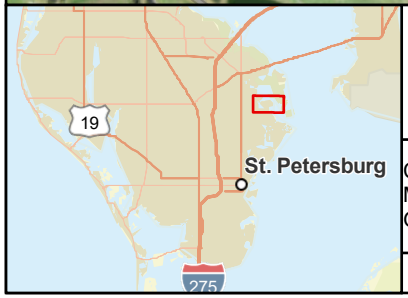




Spring Bayou/Whitcomb Bayou IMA Excluded Areas, Pinellas County

Esri Community Maps Contributors, County of Pinellas, FDEP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, County of Pinellas, FDEP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Maxar

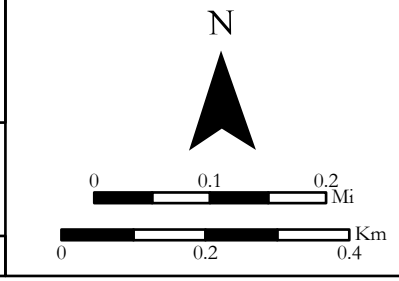
Coordinate System: NAD 1983 2011 Florida GDL Albers



Harbor Isle Subdivision, St. Petersburg, Pinellas County, Florida

County of Pinellas, FDEP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri Community Maps Contributors, University of South Florida, City of Tampa, County of Pinellas, FDEP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar

Coordinate System: NAD 1983 Florida GDL Albers



Print Form | Save As

U.S. Army Corps of Engineers (USACE)

CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.

Form Approved - OMB No. 0710-0003 Expires 2027-10-31

The Agency Disclosure Notice (ADN)

The Public reporting burden for this collection of information, 0710-0003, is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PURPOSE: This form is used by recipients of U.S. Army Corps of Engineer Regulatory permits to certify compliance with the permit terms and conditions.

Your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, Jacksonville District, Regulatory Office.

The certification can be submitted by email at SAJ-rd-enforcement @usace.army.mil or by mail at the below address:

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, Jacksonville District, Regulatory Office.

U.S. Army Corps of Engineers
Jacksonville District Office
Street Address: P.O. Box 4970, Attn: Enforcement Section
City: Jacksonville State: Florida Zip Code: 32232

COMPLETED BY THE CORPS

Corps Action Number: _____

Permit Type: WND Permit

General Permit Number and Name (*if applicable*): _____

Name of Permittee: _____

Project Name: _____

Project Location (*physical address*): _____

PERMITTEE'S CERTIFICATION

Date Work Started: _____

Date Work Completed: _____

Enclose photographs showing the completed project (*if available*).

I _____ hereby certify that the work authorized by the above referenced permit has been completed in accordance with all of the permit terms and conditions, and that any required compensatory mitigation has been completed in accordance with the permit conditions.

Name	Date	Signature

ENG FORM 6285, OCT 2024 PREVIOUS EDITIONS ARE OBSOLETE.

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

CAUTION: MANATEE HABITAT

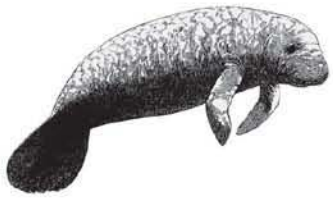
All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:



Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat
U.S. Army Corps of Engineers/National Marine Fisheries Service
November 2017

Submerged Aquatic Vegetation:

1. Avoidance. The piling-supported structure shall be aligned so as to minimize the size of the footprint over SAV beds.

2. The height of piling-supported structure shall be a minimum of 5 feet above MHW/OHW as measured from the top surface of the decking.

3. The width of the piling-supported structure is limited to a maximum of 4 feet. A turnaround area is allowed for piling-supported structures greater than 200 feet in length. The turnaround is limited to a section of the piling-supported structure no more than 10 feet in length and no more than 6 feet in width. The turnaround shall be located at the midpoint of the piling-supported structure.

4. Over-SAV bed portions of the piling-supported structure shall be oriented in a north-south orientation to the maximum extent that is practicable.

5. a. If possible, terminal platforms shall be placed in deep water, waterward of SAV beds or in an area devoid of SAV beds.

b. If a terminal platform is placed over SAV areas and constructed of grated decking, the total size of the platform shall be limited to 160 square feet. The grated deck material shall conform to the specifications stipulated below. The configuration of the platform shall be a maximum of 8 feet by 20 feet. A minimum of 5 feet by 20 feet shall conform to the 5-foot height requirement; a 3 feet by 20 feet section may be placed 3 feet above MHW to facilitate boat access. The long axis of the platform should be aligned in a north-south direction to the maximum extent that is practicable.

c. If the terminal platform is placed over SAV areas and constructed of planks, the total size of the platform shall be limited to 120 square feet. The configuration of the platform shall be a maximum of 6 feet by 20 feet of which a minimum 4-foot wide by 20-foot long section shall conform to the 5-foot height requirement. A section may be placed 3 feet above MHW to facilitate boat access. The 3 feet above MHW section shall be cantilevered. The long axis of the platform should be aligned in a north-south direction to the maximum extent that is practicable. If the 3feet above MHW section is constructed with grating material, it may be 3 feet wide.

6. One uncovered boat lift area is allowed. A narrow catwalk (2 feet wide if planks are used, 3 feet wide if grating is used) may be added to facilitate boat maintenance along the outboard side of the boat lift and a 4-foot wide walkway may be added along the stern end of the boat lift, provided all such walkways are elevated 5 feet above MHW. The catwalk shall be cantilevered from the outboard mooring pilings (spaced no closer than 10 feet apart).

7. Pilings shall be installed in a manner which will not result in the formation of sedimentary deposits("donuts" or "halos") around the newly installed pilings. Pile driving is the preferred method of installation, but jetting with a low pressure pump may be used.

8. The spacing of pilings through SAV beds shall be a minimum of 10 feet on center.

9. The gaps between deckboards shall be a minimum of ½ inch.

October 2002 - Grid Specifications and Suppliers Section modified to add an additional vendor of materials.
February 2003 – Manufacturer name changed from ChemGrate to FiberGrate
May 2003 - The terms dock and pier were removed and replaced by the term piling-supported structure, to clarify our intent.
March 2008 – Added requirement for 43% open space in grids; added additional manufacturer of grating.
November 2017 – Manufacturer of grated material updated to include Voyager Industries.

Marsh:

1. The piling-supported structure shall be aligned so as to have the smallest over-marsh footprint as practicable.

2. The over-marsh portion of the piling-supported shall be elevated to at least 4 feet above the marsh floor.

3. The width of the piling-supported is limited to a maximum of 4 feet. Any exceptions to the width must be accompanied by an equal increase in height requirement.

Mangroves.

1. The width of the piling-supported structure is limited to a maximum of 4 feet.

2. Mangrove clearing is restricted to the width of the piling-supported structure.

3. The location and alignment of the piling-supported structure should be through the narrowest area of the mangrove fringe.

Grid Specifications and Suppliers

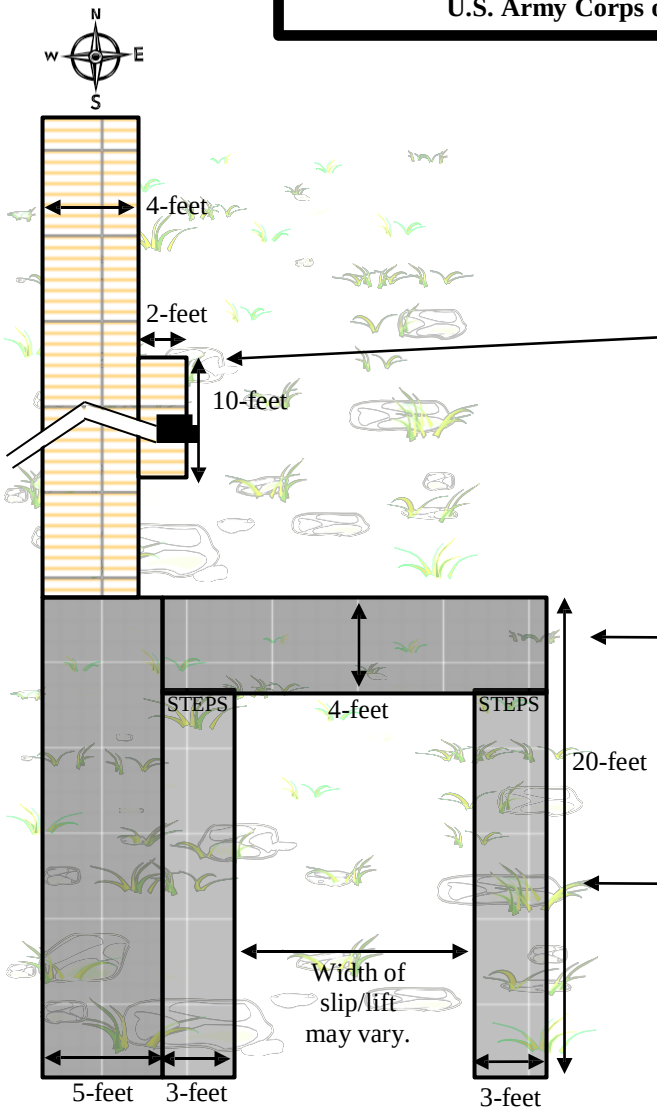
The following information does not constitute a U.S. Army Corps of Engineers endorsement or advertisement for any particular provider and is provided only as an example for those interested in obtaining these materials for piling-supported structure construction. Light-transmitting materials are made of various materials shaped in the form of grids, grates, lattices, etc., to allow the passage of light through the open spaces. **All light-transmitting materials used in construction for minor piling-supported structures shall have a minimum of forty-three (43) percent open space.**

A type of fiberglass grate panel is manufactured by SeaSafe (Lafayette, LA; phone: 1-800-326-8842) and FiberGrate (1-800-527-4043). A type of plastic grating is manufactured by ThruFlow Interlocking Panels (1-888-478-3569). Plastic grate panels are also distributed by Southern Pine Lumber Company (Stuart, FL; 772-692-2300). Grated panels can be obtained from Titan Deck/Voyager Industries (Brandon, MN; 877-207-4136; www.titandeck.net). Panels are available in a variety of sizes and thicknesses. For safety, the grate should contain an anti-slip texture which is integrally molded into the top surface. The manufacturer or local distributor should be consulted to ensure that the load-bearing capacity of the selected product is sufficient to support the intended purpose. Contact the manufacturer(s) for product specifications and a list of regional distributors.

October 2002 - Grid Specifications and Suppliers Section modified to add an additional vendor of materials.
February 2003 – Manufacturer name changed from ChemGrate to FiberGrate
May 2003 - The terms dock and pier were removed and replaced by the term piling-supported structure, to clarify our intent.
March 2008 – Added requirement for 43% open space in grids; added additional manufacturer of grating.
November 2017 – Manufacturer of grated material updated to include Voyager Industries.

DOCK EXAMPLE — GRATED TERMINAL PLATFORM

Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat
U.S. Army Corps of Engineers/National Marine Fisheries Service—August 2001



OVERHEAD PLAN VIEW

"GRATED DECKING"
Means manufactured with a minimum of 43% open space.

Spacing of pilings through SAV beds shall be a minimum of 10-feet on center.

MIDPOINT TURNAROUND
Only for docks over 200-feet long.

LIFT ONLY
No roof.
Vessel should be stored as high above MHW as possible .

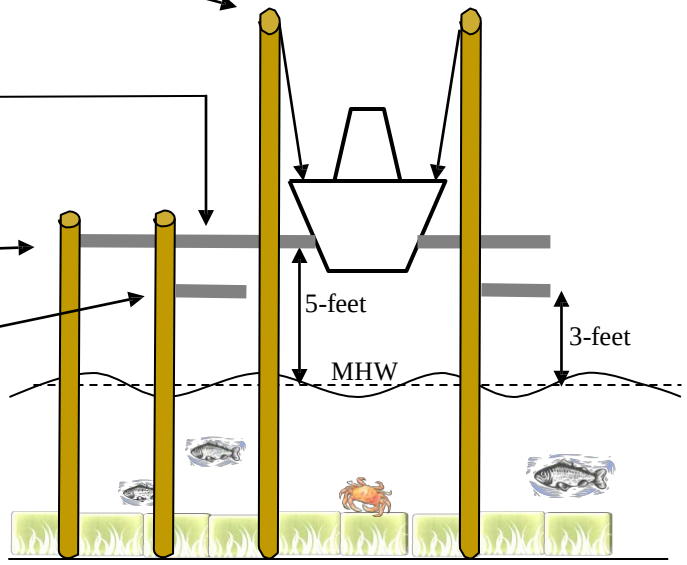
STERN WALKWAY
Allowed if lift constructed.
May be less than 4-feet wide if longer slip is needed.

MINIMUM HEIGHT
No less than 5-feet above MHW

ACCESS CATWALKS
3-feet wide if grated decking.
3-feet above MHW to facilitate boat access.
Cantilevered off main structures; no additional pilings.

NOTES:

- Not to scale.
- All widths are maximum dimension.
- All heights are minimum dimension.
- Piling supported structures over SAV should be oriented north-south to the extent practicable.
- MHW = mean high water

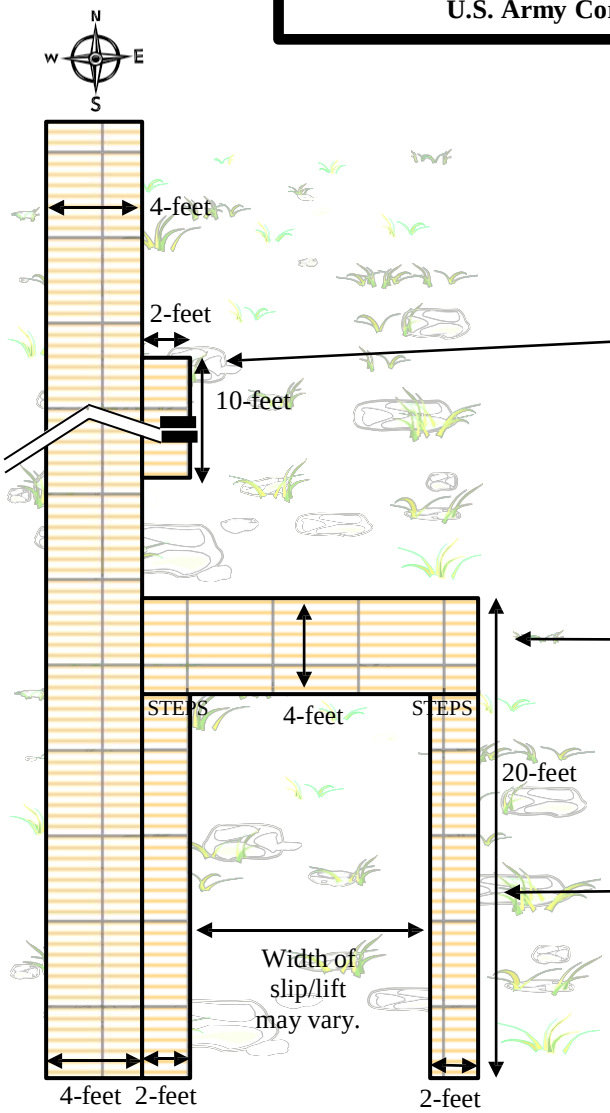


FRONT PLAN VIEW

VER: 201407

DOCK EXAMPLE — WOOD PLANK TERMINAL PLATFORM

Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat
U.S. Army Corps of Engineers/National Marine Fisheries Service—August 2001



OVERHEAD PLAN VIEW

The gaps between deckboards shall be a minimum of 1/2 inch.

Spacing of pilings through SAV beds shall be a minimum of 10-feet on center.

MIDPOINT TURNAROUND
Only for docks over 200-feet long.

LIFT ONLY
No roof.
Vessel should be stored as high above MHW as possible .

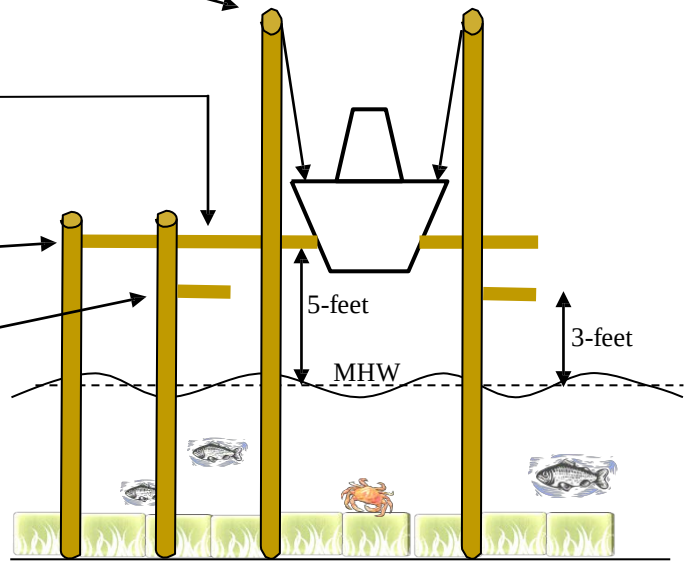
STERN WALKWAY
Allowed if lift constructed.
May be less than 4-feet wide if longer slip is needed.

MINIMUM HEIGHT
No less than 5-feet above MHW

ACCESS CATWALKS
2-feet wide if wood decking.
3-feet above MHW to facilitate boat access.
Cantilevered off main structures; no additional pilings.

NOTES:

- Not to scale.
- All widths are maximum dimension.
- All heights are minimum dimension.
- Piling supported structures over SAV should be oriented north-south to the extent practicable.
- MHW = mean high water



FRONT PLAN VIEW

VER: 201407

Guidance on Surveys for Potential Impacts to Submerged Aquatic Vegetation

Office of Resilience and Coastal Protection
Florida Department of Environmental Protection

Dec. 8, 2020

Contents

1.0 Introduction 4
1.1 Purpose of Monitoring Guidance 4
1.2 Regulatory Basis for Monitoring 4
1.3 Submerged Aquatic Vegetation 5
2.0 Survey Protocols 6
2.1 Timing of Surveys 6
2.2 Surveys for Planning and Permitting 6
2.2.1 Desktop Assessment of Available Information 7
2.2.2 Reconnaissance Survey 8
2.2.3 Mapping and Characterization Survey 8
2.3 Permit-Required Surveys for Documenting Potential Unauthorized Impacts 11
2.3.1 Minimal Monitoring for Projects with Low-Risk of Impacts 11
2.3.2 Comprehensive Monitoring to Document Potential Unauthorized Impacts 12
2.3.3 Monitoring Events – Survey Schedule 12
2.3.4 Monitoring Area(s) 14
2.3.5 Sampling Design 15
2.3.6 Monitoring Methods 17
3.0 Quality Control/Quality Assurance 21
3.1 Qualifications for Biologists 21
3.2 *In-situ* Calibration 21
3.3 Data Management 22
3.4 Amendment of Survey Protocols 22
3.5 Addressing Potential Conflicts of Interest 22
4.0 Notification and Reporting for Permit-Required Surveys 23
4.1 Notification of Survey Initiation/Completion 23
4.2 Submittal of Data 23
4.3 Map Deliverables 24
4.4 Submittal of Reports 24
4.4.1 Reporting for Projects with Low-Risk of Impacts 24
4.4.2 Reporting for Comprehensive Monitoring 24
4.5 Evaluation of As-built Survey Results and Physical Monitoring Data 25
4.6 Notification of Impacts 26

4.7 Submittal of Impact Assessment Report 26
4.8 Submittal of Corrective Action Plan 26
5.0 LITERATURE CITED 27

1.0 Introduction

1.1 Purpose of Monitoring Guidance

The purpose of this document is to provide guidance on Florida Department of Environmental Protection-approved monitoring protocols to document potential impacts to submerged aquatic vegetation (SAV) that can be used to make the permitting process more efficient, predictable and consistent. Aspects of this document are intended to be scalable and adaptable to work for a wide range of projects statewide. This document is intended to assist those applying for permits issued by the Beaches Inlets and Ports Program (BIPP) in Tallahassee, including Joint Coastal Permits (JCP) and Environmental Resource Permits (ERP). The Submerged Lands and Environmental Resource Coordination program has reviewed this guidance and determined it is generally applicable to ERPs that are issued by district offices, water management districts and other delegated local governments. However, each project is unique and coordination with the department (including BIPP staff, district office staff and aquatic preserve staff, depending upon the project location) is strongly encouraged during the planning phase prior to an applicant's decision to use this guidance document. For example, if *Halophila johnsonii* may be present in the project area, then more intensive sampling may be required by the department (and/or by federal agencies) to be compliant with the South Atlantic Regional Biological Opinion (SARBO; NMFS 2020) and the Final Recovery Plan for Johnson's Seagrass (NMFS 2002).

This document is not currently adopted by rule or statute. Requirements (e.g., protocols, timelines and deliverables) described herein will only become binding on applicants/permittees who choose to accept them as a means of fulfilling regulatory requirements, as monitoring requirements that will be included as specific conditions of permits. Means and methods other than those described herein may be proposed by the applicant and will be subject to review and acceptance by the department under applicable rules and statutes.

1.2 Regulatory Basis for Monitoring

Submerged aquatic vegetation is an economically and ecologically valuable natural resource. In fact, seagrasses are deemed essential to the oceans, gulfs, estuaries and shorelines of the state according to Section 253.04(3)(a) Florida Statutes (F.S.). Therefore, these resources are managed and regulated by the state, including the department (FWC 2003). Construction can negatively impact SAV (Erftemeijer

and Lewis 2006; Short et al. 2017). Direct impacts can occur as a result of removal of SAV via dredging or burial of SAV from filling. Construction can cause physical damage to SAV outside the dredge or fill template (authorized boundaries), including mechanical damage due to equipment or anchoring. Additionally, projects may cause shading, sedimentation and other changes to water quality (e.g., turbidity, salinity or temperature) that could adversely affect SAV.

The department requires reasonable assurance the permitted activities will not adversely affect the habitat of fish, wildlife and listed species, including SAV habitats, pursuant to Section 373.414(1)(a)2, Florida Statutes (F.S.), and Sections 62-330.301(1)(d) and 62-330.302(1)(a)2, *Florida Administrative Code* (F.A.C.), and Section 10.2.2(a) of the ERP Applicant's Handbook Volume 1. Therefore, information on SAV habitats within the potential influence of projects is required to be provided with applications for ERP and JCP projects to provide reasonable assurance the rules and statutes of the department will be met. Information on SAV within the influence of projects can be used to identify and implement practicable measures to avoid or minimize potential impacts to fish and wildlife habitats, pursuant to Section 10.2.1 of the ERP Applicant's Handbook Volume 1 and Subsection 18-21.004(2)(i), F.A.C. If impacts to SAV are unavoidable, then mitigation shall be required to ensure no net loss of functions, pursuant to Section 373.414(1)(b), 18-21(2)(i), F.A.C., and Section 10.3.1 of the ERP Applicant's Handbook Volume 1. If compensatory mitigation is required to offset impacts to SAV, then surveys are required to provide information necessary to implement the Uniform Mitigation Assessment Method (UMAM), Rule 62-345 F.A.C., which describes how the department calculates the amount of compensatory mitigation needed to offset impacts to surface waters, including SAV habitats (pursuant to Section 373.414(18), F.S.). Moreover, the department may require monitoring of SAV habitats as a condition of ERP and JCP permits to document potential unauthorized impacts to resources that may occur as a result of construction activities, pursuant to Section 373.413(1), F.S and Section 62-4.070(3), F.A.C. The department has the authority to issue any permit with specific conditions necessary to provide reasonable assurance that department rules can be met, pursuant to Section 62-4.070(3) F.A.C.

1.3 Submerged Aquatic Vegetation

For the purpose of this document, "submerged aquatic vegetation" is defined as a benthic community comprised of any species of seagrass and/or rhizophytic macroalgae, including both calcareous and non-calcareous taxa. An analogous definition is used by the National Marine Fisheries Service to describe SAV, which is designated as an Essential Fish Habitat (NMFS 1998). Drifting macroalgal mats (drift algae) comprised of filamentous taxa that are ephemeral depositions on the benthos provide ecological

functions (Arroyo and Bonsdorff 2016); however, areas without any seagrass or rhizophytic macroalgae that contain only drift algae are not considered SAV for the purpose of this document.

The distribution of SAV is not static. Seagrass patches migrate and unvegetated areas between patches are important to the management and conservation of these resources (Fonseca et al. 1998). Accordingly, this document defines "SAV habitat" as areas that are currently vegetated by SAV as well as currently unvegetated areas adjacent to SAV that have historically supported SAV and are capable of supporting SAV based on current conditions such as the water environment, sediment characteristics and light availability.

Please be advised, while this document is primarily intended to provide guidance for projects with marine and estuarine SAV, at the department's discretion, this guidance may also be applied to/adapted for use on projects with freshwater SAV resources (e.g., *Vallisneria american*).

2.0 Survey Protocols

2.1 Timing of Surveys

Surveys should be completed during the peak growing season to capture the maximum spatial extent and cover of SAV. This is particularly important in portions of the state where seagrasses senesce over the winter. To be consistent with federal requirements, the department recommends surveys be completed between June 1 and Sept. 30. However, in some circumstances the department may allow surveys to be completed at other times during the growing season. For example, under some circumstances, the department may accept SAV surveys from April to October in most of the state and year-round surveys may be acceptable in Monroe County and southern Dade County. Applicants are strongly encouraged to coordinate with the department prior to initiating field work to schedule joint site inspections; early coordination is especially important if an application will be submitted outside of the growing season; it is imperative department staff have an opportunity to verify site conditions during the growing season.

2.2 Surveys for Planning and Permitting

All SAV resources within the influence of the project should be investigated (identified, mapped and characterized as prescribed in Sections 2.2.1 – 2.2.3) during the project planning and permitting process. A detailed description of the methods used to investigate SAV resources in the project area should be provided along with the information obtained through these efforts in the permit application. The results

of this SAV investigation will be used to evaluate unavoidable impacts, to identify practicable strategies to minimize impacts and to develop appropriate monitoring protocols for documenting potential unauthorized impacts. All SAV resources that may be directly or indirectly impacted by construction activities, including (but not limited to) placement of fill or subsequent equilibration of fill materials, dredging or dredging-related sloughing, shading by permanent or temporary structures, changes in hydrology, project-generated sedimentation, turbidity or other construction-related discharges should be surveyed. The survey should include all SAV resources within or adjacent to the dredge template, fill placement areas, mixing zones, submerged pipeline corridors, dredged material disposal area return water/discharge locations, ingress/egress or staging areas and any other area where project-related impacts are possible. Potential reference sites for comparison with the project area should also be investigated (identified, mapped and characterized as prescribed in Sections 2.2.1 – 2.2.3) during planning, if such sites will be used to evaluate background variability (Section 2.3.4).

2.2.1 Desktop Assessment of Available Information

A desktop assessment (DA) should be completed, during which all relevant information on SAV resources in the project area is compiled and reviewed. For example, historical aerial photography, imagery from unmanned aerial vehicles, side-scan sonar survey data and data from previous field surveys are potential sources of information. However, the apparent absence of SAV in aerial photographs or side-scan sonar should not be used as conclusive evidence that the project area does not contain SAV because some SAV taxa (notably *Halophila spp.*) cannot be detected using such methods. A summary of existing information on SAV in the project area shall be developed based on the results of this investigation and shall be submitted to the department with the permit application. Information obtained from this desktop assessment will be used to identify all potential SAV habitats (Section 1.3) within the project area and will be used to determine the spatial extent of the reconnaissance survey (Section 2.2.2). If information on SAV in the project area is not available or not adequate to identify potential SAV habitats, then the entire area under the influence of the project shall be assessed during the reconnaissance survey.

Any relevant information that is available on physical attributes of the project area should also be compiled and reviewed. Understanding environmental conditions, such as water depth, tidal height, current speed, wave exposure, fetch and flushing, can be useful for assessing the suitability of the project area for SAV as well as evaluating potential impacts of the proposed project on SAV resources; therefore, information on these parameters should be evaluated if available. Existing sources of data

such as bathymetric surveys, geotechnical investigations and water quality monitoring stations should also be reviewed as part of the desktop assessment.

2.2.2 Reconnaissance Survey

A reconnaissance survey (RECON) shall be conducted throughout all potential SAV habitats (Section 1.3) within the influence of the project to identify currently vegetated areas. The results of the desktop assessment should be used to inform this field effort, but the reconnaissance survey will not be limited to only those areas were SAV resources were previously reported. A grid of transects running perpendicular to and parallel with the proposed project boundaries is recommended for this purpose. Reconnaissance surveys may be completed using towed video, only if video is watched in real-time by observers on the vessel to ensure the camera is positioned at the appropriate angle and video is of sufficient quality to identify resources. Alternatively, video surveys may be completed by towed divers. In-water surveys by divers are preferred to video surveys in areas where water clarity is low, if resources are sparse or small in stature (and therefore unlikely to be detected on video); in this case, divers can traverse the area, visually assess resource boundaries and collect representative photos. If the project area is less than 0.25 acres in size, the distance between survey track lines shall be no greater than the visibility at the site at the time of the survey, such that the entire benthos is visually assessed for the presence of SAV. For larger projects, spacing between survey tracks should be minimized to the maximum extent practicable to thoroughly survey the benthos (e.g., transects spaced at 10-meter intervals). The coordinates of the survey track lines shall be reported along with the visibility of the site on the date of the survey. If SAV resources are identified during reconnaissance surveys, these resources shall be mapped and characterized (per Section 2.2.3).

2.2.3 Mapping and Characterization Survey

A mapping and characterization survey (MC) shall be completed, as described below (Sections 2.2.3.1 and 2.2.3.2) to investigate all areas with SAV that were identified during the reconnaissance survey (Section 2.2.2). The purpose of this survey is to provide information on site conditions for planning and permitting. The mapping and characterization survey may be completed by the monitoring firm immediately following the reconnaissance survey, so a separate field effort/remobilization is not required.

2.2.3.1 Mapping

The spatial distribution of SAV within the survey area(s) shall be mapped. The edge of each SAV patch shall be visually assessed by divers *in situ* and divers shall record the position of the edge as accurately as possible. The positioning data shall be recorded and the total acreage of SAV within each patch/bed shall be reported. For projects where SAV is extensive and continuous, it may be sufficient to delineate only the SAV edge that is proximate to the construction template (e.g., fill placement or dredged area). For example, if a continuous SAV bed is located in the nearshore adjacent to a beach nourishment project, then it may only be necessary to delineate the landward edge of the bed. The information obtained from this mapping effort shall be used to produce a georeferenced map showing the distribution of SAV taxa in the project area, which should be included in the permit application.

To ensure map products will be useful for planning and permitting, it is recommended the following mapping criteria be used for creating and submitting SAV map-related deliverables:

- All spatial information should be collected using a sub-meter accurate Differential Global Positioning System (DGPS) unit.
- Geographical information should be provided in the State Plane Coordinate System (SPCS) for Florida (NAD83) and coordinates (latitude and longitude) should be provided in decimal degrees to the fifth decimal place (hundred-thousandths).
- An ArcGIS Map Package (".mpk" file format) or similarly detailed and complete data package (e.g., CAD ".dwg" file format) should be provided with spatial data and metadata.
- SAV areas with different species compositions and/or densities should be distinguished via symbology (e.g., coloration and fill patterns).
- Map figures should include a legend, metric scale bar and north arrow for reference.
- Map figures should be shown at an appropriate scale that allow features to be readily discerned on a standard-size printed page.
- Map figures should be overlaid on recent aerial imagery and should include polygons or lines depicting project boundaries and significant features (e.g., dredge or fill template, footprint of structures).

2.2.3.2 Characterization

An *in-situ* visual assessment shall be completed concurrently with the mapping effort to document the condition of each mapped SAV area. This visual assessment should document the following indicators of function: location and landscape support, water environment and community structure (as defined in

62-345.500 F.A.C.). Site conditions such as sediment type, sediment depth, salinity, water temperature, current speed and flushing should be noted. Water depth shall be measured, corrected for tidal height and reported in metric units. Apparent water quality issues such as harmful algal blooms and signs of eutrophic conditions, such as mats of cyanobacteria, should also be reported. Landscape features, such as other natural communities, shoals and man-made structures, within and adjacent to sites should be described. The proximity of the site to any channels should be noted as well as boat traffic and recreational use in and around the site. Anthropogenic impacts such as the presence of debris, propeller scars or vessel blowouts within and adjacent to sites should be described. Wildlife observed at the site and signs of wildlife, including evidence of bioturbation, should also be reported. A description of site conditions observed during this visual assessment should be provided in the permit application.

Community structure should be qualitatively assessed. The general condition of vegetation such as canopy height, flowering, epiphyte coverage and disease shall be described. SAV communities shall also be quantitatively evaluated within quadrats placed within SAV patches. Randomized placement of quadrats is preferred, but quadrats can be placed haphazardly, if randomization is not practicable. Quadrat placement shall not be biased. However, only vegetated areas shall be surveyed. Quadrats placed within bare areas within the SAV habitat should be noted and repositioned into areas containing SAV. Within each quadrat the cover-abundance (CA) of SAV shall be assessed as prescribed in Section 2.3.6.3. Replicate quadrat samples are necessary to adequately characterize the SAV community. It is recommended that a 1 m^2 (1 m x 1 m) quadrat be used for this survey; if a smaller quadrat is used, then additional quadrats should be sampled. At least 5 m^2 should be sampled in small areas (those less than 0.1 acres). For larger sites, it is generally recommended that at least 1 m^2 be sampled per 80 m^2 of the area to be surveyed, which is a density of approximately 50 (1 m x 1 m) quadrats per acre. A description of the community structure, including the species composition and percent cover of SAV based on quadrat data, shall be provided with the application.

Once SAV resources in the project area have been mapped and characterized, if any unavoidable impacts are expected to occur as a result of the proposed project, the applicant should coordinate with department staff on mitigation requirements. If compensatory mitigation is required, the applicant will need to develop a comprehensive mitigation plan. To facilitate this process, a separate guidance document has been developed for surveys associated with planning and implementing compensatory mitigation projects for SAV (DEP 2020).

2.3 Permit-Required Surveys for Documenting Potential Unauthorized Impacts

The purpose of this section is to provide guidance on monitoring to document potential unauthorized impacts that may occur as a result of permitted construction activities to provide reasonable assurance the project will not adversely affect SAV habitats, pursuant to Section 373.414(1)(a)2, F.S. As previously stated (Section 1.1), the requirements (e.g., protocols, timelines and deliverables) described herein are only binding on permittees who accept them as a means of fulfilling regulatory requirements, as monitoring requirements in a permit.

Generally, minimization measures and monitoring requirements are discussed during the planning phase of project development (pre-application phase) and are finalized in consultation with the department during the permitting process. The monitoring approach (i.e., scope and scale of surveys; Section 2.3.1 and 2.3.2) will depend upon the risk of impacts, which is based on the proximity of resources to construction activities, the type of construction activities, the duration of construction, site-specific conditions such as sediment grain size and local hydrology, as well as the minimization measures that will be employed to reduce potential impacts to SAV resources. For example, in some projects, turbidity curtains are used to contain sediments suspended by the project (or the mixing zone is truncated to exclude resources), a buffer is established around SAV within which no work is allowed and information (e.g., anchoring and spudding positions) is submitted to provide reasonable assurance that minimization measures are properly implemented.

2.3.1 Minimal Monitoring for Projects with Low-Risk of Impacts

Some projects have a relatively low risk of impacting SAV, either due to the nature of the project or because stringent minimization measures will be implemented to provide reasonable assurance that unauthorized impacts to SAV resources will be minimized or avoided. For low-risk projects, survey requirements can be minimized. In such cases, a pre-construction survey (including both a reconnaissance survey along with a mapping and characterization survey, as prescribed in Sections 2.2.2 and 2.2.3, respectively) should be completed. For such projects, an impact assessment (Sections 2.3.3 and 2.3.6.5) would also be required to document the severity and spatial extent of impacts to SAV, if construction-related impacts occur or are suspected to have occurred, so these impacts can be remediated and/or mitigated. If an impact assessment is not needed (Section 2.3.3), then no post-construction survey would be required.

2.3.2 Comprehensive Monitoring to Document Potential Unauthorized Impacts

If project-related impacts to SAV resources are reasonably likely to occur due to the nature of the project or because stringent minimization measures are not practicable, then the department will require comprehensive pre- and post-construction monitoring to document potential unauthorized impacts to SAV resources. The purpose of monitoring is to provide reasonable assurance that the spatial extent and severity of any unauthorized project-related impacts will be documented if they occur, so these impacts can be remediated and/or mitigated. Specifically, monitoring is intended to 1) identify all SAV resources in the project area, 2) map resources to document any changes in their spatial distribution/acreage and 3) quantitatively assess the condition of resources pre- and post-construction to document changes in community structure.

This monitoring approach requires a detailed SAV monitoring plan, which should be developed in coordination with (and approved by) the department before the permit application is determined to be complete. The information provided in this guidance document is intended to form the basis for such monitoring plans; the protocols and requirements described herein can be adapted on a project-specific basis depending upon site conditions and the type of construction activities that are proposed. Early coordination (during the planning/pre-application phase) between the applicant and the department on the monitoring plan is strongly recommended.

2.3.3 Monitoring Events – Survey Schedule

The number and timing of surveys required will depend upon the monitoring approach (Sections 2.3.1 and 2.3.2), the nature of the project and the construction schedule. Each project is unique; therefore, the survey schedule will be determined in coordination with the department during the planning/permitting process. However, all surveys should be completed during the growing season (per Section 2.1), unless otherwise approved in writing by the department prior to the initiation of survey work.

For low-risk projects, a pre-construction survey (i.e., reconnaissance, mapping and characterization; Sections 2.2.2 and 2.2.3) should be completed during the growing season immediately prior to construction. In some cases, the initial reconnaissance, mapping and characterization survey for planning/permitting purposes may be used to fulfil this pre-construction survey requirement. However, if site conditions are likely to have changed since the initial mapping and characterization survey (e.g., due to a major storm event or because the initial survey was completed more than one year prior to construction), then another survey event should be completed prior to construction. Additionally, an

impact assessment survey would be required if construction-related impacts occur or are suspected to have occurred, but if no impacts are suspected to have occurred, then no post-construction monitoring is required. The permittee should coordinate with the department to determine what surveys are needed for low-risk projects.

Projects requiring comprehensive monitoring shall be surveyed at least once before and after construction and an impact assessment would also be required if construction-related impacts occur or are suspected to have occurred. If comprehensive monitoring is required for dredging activities or any other construction activities authorized by ERP or JCP permits, then a pre-construction baseline survey shall be completed prior to construction. If construction occurs during the growing season, then SAV surveys shall be conducted immediately prior to construction and immediately after construction has been completed, within the same growing season. However, if construction occurs outside of the growing season, then monitoring shall be done during the growing season immediately prior to construction and the growing season immediately following construction; in this scenario, the post-construction survey(s) shall be done as close as possible to the same time of year as the pre-construction survey to avoid seasonal differences. In some cases, during construction surveys may be required. If construction continues for more than a year (extends over more than one growing season), then a survey shall be completed each growing season until construction has been completed.

Under some circumstances more than one post-construction survey may be required. An immediate post-construction survey may be required for some projects; for example, a survey must be completed within –one to three months post-construction for projects with *H. johnsonii* to be consistent with SARBO (NMFS 2020). Additionally, if a project is expected to have long-term effects on SAV resources, then additional annual surveys will be required. For example, post-construction monitoring annually for five years is typically required to document potential impacts for projects that are expected to alter the hydrology such that SAV may be adversely affected. For beach nourishment projects, annual surveys are typically completed for two years following the immediate post-construction survey to document potential impacts due to equilibration of fill materials over time; the duration of monitoring will depend upon the details of construction (e.g., density of fill), additional annual monitoring events may be required.

For all projects with SAV, an in-water visual assessment will be required if unauthorized impacts are observed or are likely to have occurred during construction. Events, activities or uses that will require an

impact assessment, including any unauthorized anchoring, storage, staging, discharge, or stockpiling of vessels or equipment within mapped SAV areas; a pipeline leak/rupture within 150 meters of SAV, or any other unauthorized or unanticipated construction-related events, activities, or uses that are suspected to have impacted SAV. The permittee shall complete an assessment of potential impacts to SAV (as prescribed in Section 2.3.6.5) as soon as practicable but no more than 15 days after identifying (or being notified of) the need for an impact assessment, unless a time extension is granted in writing by the department.

2.3.4 Monitoring Area(s)

If comprehensive monitoring is required to document potential unauthorized impacts (Section 2.3.2), then all SAV resources within the influence of the project for which mitigation has not been provided shall be monitored. Monitoring shall include all resources within areas that may be impacted by construction activities, including impacts due to placement of fill (or subsequent equilibration of fill materials), dredging (or dredging-related sloughing), project-generated sedimentation and turbidity and changes in hydrological conditions or water quality. The monitoring area shall include resources within or adjacent to construction areas, including the dredge template, fill placement area(s), mixing zone, submerged pipeline corridor(s), ingress/egress or staging areas and any other portions of the project area where project-related impacts are possible.

Surveys associated with dredge and fill projects are generally restricted to SAV resources within 150 meters of (or within the mixing zone for) the actual portions of the project area that will be affected by the construction event. However, under some circumstances (based on available information, analyses of potential impacts and best-professional judgment), the department may require monitoring to a distance less than or greater than 150 meters from construction activities. At the time of the pre-construction survey, if it is unknown which portions of the project will be constructed, then the entire project area should be monitored prior to construction; however, only those areas potentially influenced by construction activities would need to be surveyed post-construction.

If comprehensive monitoring is required, then a reference site (or sites) should also be surveyed so natural variability in SAV can be compared to potential changes in SAV within the project area. The use of a reference site is particularly important in areas where environmental factors beyond the control of the permittee are likely to influence the condition of resources during the monitoring period. For example, if the area is subject to periodic discharge of storm water, then reference sites are necessary to

distinguish changes in SAV due to project-related impacts from those associated with these discharge events. In such cases, at least one reference site shall be identified for comparison with the project area; however, the use of more than one reference site is recommended, if such sites are available. The reference site(s) should be located as close as possible to the project area without being within the potential influence of construction activities; best professional judgment shall be used to identify reference site(s) similar to the project area with respect to water environment and community structure. The reference site(s), if required, will be surveyed concurrently with surveys in the project area, using the same sampling design and methods used for the project area (Sections 2.3.5 and 2.3.6).

2.3.5 Sampling Design

If comprehensive monitoring is required (Section 2.3.2), then the sampling design for the project should be developed in consultation with the department during the planning and permitting process. The sampling design will be based on the nature of the project and site conditions that were documented during the mapping and characterization survey (Section 2.2.3). The sampling design will typically include the use of quadrat and/or transect-based survey methods. For small projects (e.g., dock or seawall installation or repair projects), it may be practicable to survey the entire area using a grid of quadrats or series of belt transects. In some project areas, quantitative assessments of SAV (Section 2.3.6.3) shall be completed using quadrats that are distributed in a random or stratified-random manner within the survey area(s). For example, the use of randomly placed quadrats is generally considered to be appropriate for large projects where discontinuous and distinct SAV patches are present and when SAV patches are expected to migrate under natural conditions within the landscape over the duration of the monitoring period. This design also may be applied when site conditions, such as very strong currents or very high boat traffic, prohibit the use of transects or in areas with very small SAV patches, where transect-based methods are not necessary to cover a representative proportion of the survey area.

The monitoring for some project areas may include the use of transect-based sampling methods. For example, transect-based methods are appropriate for areas where SAV forms continuous persistent beds and the distribution of SAV is not expected to shift during the monitoring period. Transects are generally established perpendicular to construction activities (e.g., dredge or fill area) to detect a potential gradient of impacts away from construction activities. For example, the use of shore-perpendicular transects is recommended for nourishment projects to detect potential cross-shore movement of materials as they equilibrate following placement in the beach fill template.

If the project is intended to be compliant with SARBO (NMFS 2020), then the sampling design shall be consistent with the "Recommendations for Sampling *Halophila johnsonii* at a Project Site" as provided in Appendix III of the Final Recovery Plan for Johnson's Seagrass (NMFS 2002). For example, if *H. johnsonii* may be present in the project area, then a more intensive sampling design than that specified below will likely be required (e.g., sampling 10%-30% of the project area).

2.3.5.1 Data Collection in Randomly Placed Quadrats

The number of quadrats per SAV patch will depend upon the size and uniformity of the survey area. For this purpose, the applicant should use cover data collected during the characterization surveys (Section 2.2.3.2) to evaluate natural spatial variability in SAV cover at the site(s) and use this information to determine the minimum number of quadrats necessary to detect significant changes in SAV cover (e.g., conduct a power analysis; determine sample size based on the minimal detectable difference). For large projects, it is recommended at least 5% of the area be surveyed (Table 1), if practicable. The corresponding pre- and post-construction surveys shall sample the same number and sizes of quadrats for each patch, even if patch size has declined.

Table 1: Guidance on approximate number of quadrats to be sampled within SAV patches.

Patch size (acres)	Patch size (square meters)	Number of quadrats (1 m x 1 m)
<0.01	< 40	3
0.01 to 0.025	40 - 101	5
0.025 to 0.05	101 - 202	10
0.05 - 0.1	202 - 405	20
0.1 to 0.25	405 - 1012	50
0.25 to 0.5	1012 - 2024	100
0.5 to 1	2024 - 4047	200
> 1 acre	> 4047	300 or 5% of the area, whichever is less.

2.3.5.2 Data Collection Along Transects

The number, spacing and length of transects shall be determined in coordination with the department during permitting, based on the size of the project and distribution of SAV within the influence of authorized construction activities. All transects shall be established perpendicular to construction activities (e.g., dredge or fill area). Generally, it is recommended transects be spaced no more than 50 meters apart near dredging templates, including navigation channels and borrow areas. Cross-shore transects should be placed no more than 75 meters apart for monitoring beach restoration or nourishment projects. Once the positions of transects have been determined, transects shall be marked via the

installation of PVC pipe, sub-surface buoy, or other means, and the starting and ending positions of each transect shall be recorded as accurately as possible using a sub-meter DGPS. Once established, the position of transects shall remain consistent for all subsequent surveys. Markers used to identify transects shall be removed following the completion of the last monitoring event.

For all transects containing SAV, cover-abundance of SAV shall be documented within quadrats at regular intervals along the entire length of each transect. For example, for relatively small beds, quadrats could be positioned every 5 meters along the transects. When sampling larger SAV patches, such as those that extend the entire length of the standard 150-m mixing zone, quadrats shall be placed such that they extend over the entire area of potential impact. In this scenario, it is recommended quadrats be placed at 15 positions: 0, 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100, 125, 150 meters along a 150-meter-long transect. Additional quadrats may be required if the mixing zone or area of potential influence extends beyond 150 m. During the pre-construction survey quadrat placement should be adjusted as necessary to maximize the number of quadrats containing SAV while maintaining space between quadrats. Once established, the positions of quadrats along transects should be consistent across surveys.

2.3.6 Monitoring Methods

2.3.6.1 In-situ Delineation of SAV

During the growing season prior to each construction event, a reconnaissance survey (Section 2.2.2) shall be conducted throughout all potential SAV habitats to identify currently vegetated areas that shall be delineated (DE) and surveyed pre- and post-construction to document any potential project-related impacts. During each monitoring event (pre- and post-construction), the edge of each SAV patch shall be delineated *in situ* by divers; divers shall visually assess and record the position of the edge as accurately as possible using a sub-meter accurate DGPS unit. A continuous track-line is preferred, but if this is not possible, then individual data points (waypoints) may be collected (e.g., at 5-meter intervals or major inflection points) to document the position of the edge. For projects where SAV is extensive and continuous, it may be sufficient to delineate only the SAV edge that is proximate to construction activities. Mapping methods should be coordinated with the department during permitting and finalized prior to completion of the monitoring plan and permit application.

2.3.6.2 Visual Assessment of Site Conditions

Site conditions should be visually assessed (VA) and indicators of function such as canopy height, epiphyte coverage, flowering, disease, drift algae, bioturbation, propeller scars, shoaling, water quality, clarity and visibility shall be observed and noted. Density of SAV shall be observed and reported as either sparse (<5% cover), moderate (25-50% cover), or dense (50-100% cover); if density varies within the site(s), this should be described in the reports. Any signs or indicators of potential impacts, such as sloughing, scouring, exposed rhizomes, burial or sediment accumulation shall be reported. A detailed description of the current conditions shall be provided, including a description of any visually conspicuous changes in the condition of resources compared to previous surveys. Representative photographs of each patch (or discrete area) shall be taken to document site conditions. Additionally, water depth shall be measured, corrected for tidal height and reported in metric units.

2.3.6.3 Quantitative Assessment of Cover-Abundance

The cover-abundance of SAV shall be visually assessed within 1 m^2 (1 m x 1 m) quadrats. The department shall be consulted regarding the possible use of smaller sized quadrats (0.25 m^2 or 0.5 m^2); the use of smaller quadrats will typically require additional quadrats to be sampled. Generally, it is recommended that quantitative data be collected within a quadrat that is divided into 100 sub-units or "cells." Cover-abundance (percent cover) of SAV is determined by counting the number of cells with SAV and calculating the percentage of cells within the quadrat with SAV. This method is preferred because it is highly repeatable and interobserver error is typically low. However, the use of subdivided quadrats (cell count method) may not be practicable at sites where long-bladed seagrass taxa are dense. Under certain circumstances, depending upon project-specific logistical constraints and site conditions, the department may accept rapid estimates of SAV cover. For example, the percent cover of SAV may be visually assessed and reported to the nearest 5% or reported using the Braun-Blanquet cover-abundance scores (Table 2). If Braun-Blanquet cover-abundance scores are recorded in the field, then data shall be converted to percent cover using a standard conversion table (Table 2) prior to performing data analysis. Cover-abundance methods shall be discussed during the planning and permitting process. Once cover-abundance methods have been approved by the department, these methods should remain consistent across all surveys and sites.

Drift algae can obscure SAV and dense accumulations of drift algae may smother SAV; therefore, reporting dense accumulations of drift algae is necessary to understand potential factors affecting SAV

resources in the project area. Drift algae within the quadrat shall be recorded in the field notes as sparse, moderate or abundant and then carefully removed prior to visually assessing rooted or anchored SAV taxa (seagrass and rhizophytic macroalgae, respectively). Once drift algae have been removed from the quadrat, the biologist shall assess the total cover-abundance of SAV, which is the total cover of all seagrass and rhizophytic macroalgae taxa. The total cover-abundance of all seagrass species and the total cover-abundance of all rhizophytic macroalgae genera shall also be reported. The biologist shall also report the cover-abundance of each seagrass species and each rhizophytic macroalgae genera present within the quadrat. The results of this assessment should be used to calculate the frequency of occurrence (percentage of all quadrats that contained SAV), the density (average cover-abundance for all quadrats sampled) and the abundance (average cover-abundance for only those quadrats containing SAV). These metrics shall be calculated for 1) all SAV, 2) all seagrass, 3) all rhizophytic macroalgae, 4) each seagrass species and 5) each rhizophytic macroalgae genera.

Table 2. Braun-Blanquet Cover-Abundance Scores and Conversions to Percent Cover.

Score	Description of Cover	Approximation of Percent Cover
0	Absent from quadrat	0
0.1	A solitary shoot, <5% cover	0.02
0.5	Few (<5) shoots, <5% cover	0.1
1	Many (>5) shoots, <5% cover	2.5
2	5 - 25% cover	15
3	25 - 50% cover	37.5
4	50 - 75% cover	62.5
5	75 - 100% cover	87.5

For some projects, the density of seagrass shoots shall be also be recorded and reported as another metric of SAV abundance. For example, if *H. johnsonii* is present (in accordance with SARBO; NMFS 2020) or if the project must be clearly in the public interest because the project is located within an Outstanding Florida Water. Seagrass shoots shall be counted within multiple 0.01 m^2 (10 cm x 10 cm) quadrats and the density of seagrass shoots shall be reported separately for all species present within quadrats.

2.3.6.4 Line Intercept Survey

For projects with a transect-based survey design (Section 2.3.5.2), a line intercept survey (LI) shall be conducted along each transect during each survey event. All transects shall be surveyed to document the linear extent (recorded to the nearest 0.1 m) of SAV present along (directly below) each transect line.

During each line intercept survey, a biologist shall swim the length of each transect and note the location and linear extent along the transect tape of bare substrate, rhizophytic macroalgae and seagrass (reported by species). During this survey, drift algae should be noted in the field observations as sparse, moderate or dense and then carefully removed to ensure no SAV is present underneath. Areas containing only drift algae shall be considered as bare substrate for the purposes of assessing net-cover of SAV. For segments along the transect where SAV taxa overlap, each shall be reported.

Total length of each transect shall be reported along with the percentage of that transect covered by each category of cover, which are defined as follows: 1) seagrass, 2) rhizophytic macroalgae and 3) areas with no SAV (bare substrate and areas containing only drift algae). The line intercept data shall also be used in conjunction with the delineation data (Section 2.3.6.1) to calculate the net-acreage of SAV coverage at each of the sites; net-acreage of SAV = (total acres of site) X (percentage of site covered by SAV). Reports shall include calculations for: 1) net-acreage of seagrass 2) net-acreage of macroalgae and 3) net-acreage of any SAV.

2.3.6.5 Impact Assessment Survey

The purpose of the impact assessment (IA) is to provide the information needed for the department to determine if corrective actions are necessary (such as the remediation of physical impacts or transplanting) and to calculate the amount of compensatory mitigation that may be required to offset unauthorized impacts using UMAM. The impact assessment is a targeted investigation of areas that are known or suspected to have been impacted by construction activities or secondary impacts associated with the project. For example, if the impact assessment is required because of unauthorized anchoring, then all anchoring locations located within mapped SAV areas should be investigated. If an impact assessment is required because a pipeline ruptures during construction, then all SAV areas that may have been affected by the rupture should be investigated. If an impact assessment is required because a construction vessel grounded or caused propeller scaring, then it may be helpful to use the contractor's vessel track-history as a starting point for investigating potential impacts.

The primary objective of the impact assessment is to document any visually conspicuous signs of impacts, such as physical damage to SAV caused by dredging equipment, boat groundings, propeller scars, anchors, scouring, sloughing, sediment accumulation and any other signs of impact. The magnitude of functional loss associated with impacts shall be observed and described. For example, information such as notable reductions in SAV biomass or the thickness of materials that were

accidentally deposited on the benthos should be reported. Representative photographs shall be collected to document the condition of SAV and signs of impacts in each investigated area.

The GPS coordinates for any locations with impacted SAV shall be recorded and reported. The spatial extent of impacts to SAV shall be documented and the acreage of impacts to SAV resources shall be reported. Survey data shall be used to produce a geo-referenced map of all impacted SAV areas, including vegetated areas and unvegetated SAV habitats (Section 1.3); map products should be compliant with the mapping criteria described in Section 2.2.3.1.

3.0 Quality Control/Quality Assurance

Measures shall be taken to ensure the production of high-quality data, which are accurate, complete and consistent. Data should only be collected by qualified biologists, who have cross-trained and completed *in-situ* calibration exercises to reduce interobserver error. The data management process should be well documented and transparent. Consistent methods should be used for all monitoring events to allow temporal comparisons to be made between datasets.

3.1 Qualifications for Biologists

To provide reasonable assurance surveys will accurately document the condition of SAV resources, all surveys should be conducted by qualified biologists with experience performing *in-situ* SAV surveys. The department recommends biologists have at least a Bachelor of Science (a graduate degree is preferable, but not required) from an accredited institution in either marine biology, biology with a concentration in marine sciences, environmental science with a minor in biology or a similar degree. Biologists should also have professional experience and expertise in surveying SAV (preferably for similar construction projects) and a scientific knowledge of SAV. Biologists should have experience collecting data while snorkeling and certification for self-contained underwater breathing apparatus (SCUBA) may be required if site conditions necessitate such equipment. The resumes for all biologists shall be submitted to the department at least 15 days before the initiation of surveys. The department will review this information, verify whether biologists meet the minimum qualifications and will provide written comments regarding any perceived deficits in qualifications or experience.

3.2 *In-situ* Calibration

If more than one biologist is responsible for *in-situ* data collection, then all biologists shall participate in cross-training and calibration activities to verify correct species identification and survey practices.

These Quality Assurance/Quality Control (QA/QC) activities should be completed at the beginning of each monitoring event. The results of these QA/QC activities shall reflect consistency of at least 90% for each SAV cover metric that will be used for the project (e.g., cell-counts, Braun-Blanquet scores and shoot counts); biologists should be able to positively identify all SAV taxa (i.e., 100% agreement on seagrass species and macroalgae genera). Copies of the field sheets used for these QA/QC activities should be submitted with the data deliverables (Section 4.2). If only one biologist will be collecting data for a project, then regular cross-training and calibration with other biologists is recommended but is not required.

3.3 Data Management

During data collection, biologists shall check their field datasheets to ensure completeness, legibility and accuracy. Biologists should initial each sheet after it has been checked in this manner. Once field datasheets are cleaned and dried at the office, data shall be entered into a project-specific Excel spreadsheet. The spreadsheet data shall be checked against the original datasheet (or a photocopy) to ensure data were transferred correctly. Any changes to datasheets shall be made in coordination with the biologist who collected the data; any changes to field sheets shall be done using a colored marker. Datasheets shall be electronically scanned, saved as PDF files and submitted to the department with the data deliverables (Section 4.2).

3.4 Amendment of Survey Protocols

Consistent data collection methods are necessary to evaluate changes in the condition of SAV resources over time. If any amendments to the sampling design or methods are necessary due to field conditions or any other reason, then the permittee and the monitoring firm shall contact resource staff in the permitting office that issued their permit (BIPP, District Office or other delegated permitting authority). Any changes to permitted monitoring requirements shall be coordinated with department staff and the permittee or their monitoring firm must receive written approval from the department prior to the implementation of revised protocols. Such coordination is necessary to ensure revised protocols fulfill the monitoring objectives and provide reasonable assurance to the department. Note: a permit modification may be required to authorize changes to survey protocols.

3.5 Addressing Potential Conflicts of Interest

Permittees who want to remain eligible for potential cost-sharing of monitoring costs for JCP projects must demonstrate there are no potential conflicts of interest or perceptions of such conflicting interests.

Therefore, monitoring data and statistical analysis must be provided directly and concurrently from the monitoring firm to the department, permittee, consultant(s) and local sponsor(s) to comply with the Florida Auditor General report 2014-064 and to be consistent with Section 287.057(17)(a)(1), F.S.

4.0 Notification and Reporting for Permit-Required Surveys

All correspondence related to the submittal of information, data deliverables, or reports for the project should be provided to the department's point-of-contact (POC) specified by the permit. For projects permitted by BIPP, the POC for such correspondence is the JCP Compliance Officer (JCPCompliance@floridadep.gov). All correspondence shall reference the permit number and project name. Additionally, correspondence should reference the number of the specific condition(s) of the permit and/or section(s) of the monitoring plan that requires the submittal of the information provided in each deliverable. Email correspondence is preferable when possible, but some deliverables may need to be submitted using other electronic delivery methods such as a file transfer protocol (FTP) website or delivery of an external hard drive. Regardless of the delivery mechanism, the permittee is responsible for ensuring the department receives all deliverables prior to permit-required deadlines.

4.1 Notification of Survey Initiation/Completion

The department's point of contact (POC) shall be notified via email before the initiation of each survey and provided with an approximate date that survey work will begin. The department's POC shall also be notified (via email within 48 hours) when survey work has been initiated and when each survey has been completed.

4.2 Submittal of Data

Data (field sheets and Excel spreadsheets), ArcView GIS files (including SAV delineations) and representative photographs shall be submitted no later than 45 days after each survey is complete. All data shall be carefully checked (as described in Section 3.0) before submittal. Digital photographs submitted to the department shall be organized (sorted within file folders) by location (e.g., project or reference site; patch, transect and/or quadrat position). Monitoring data and statistical analysis must be provided directly and concurrently from the monitoring firm to the department, permittee, consultants and local sponsors (Section 3.5).

4.3 Map Deliverables

Mapping data collected in the field (track-lines or waypoints) shall be reported along with the total acreage of SAV within each patch/bed during each survey. Pre- and post-construction delineation data shall be used to evaluate changes in the distribution and acreage of SAV over time. The post-construction SAV acreage shall be compared to the pre-construction SAV acreage. The information obtained from mapping efforts shall be used to produce a georeferenced map showing the distribution of SAV taxa in the project area. Map products should be compliant with the mapping criteria described in Section 2.2.3.1.

4.4 Submittal of Reports

4.4.1 Reporting for Projects with Low-Risk of Impacts

For low-risk projects with minimal monitoring, a report describing the results of the pre-construction SAV survey will typically be provided at least 30 days prior to construction or 15 days prior to the pre-construction conference, if one is required by the permit (Table 3). This pre-construction report shall include a georeferenced map of SAV boundaries based on the reconnaissance and mapping survey tasks, representative photographs and a description of the current condition of SAV based on the characterization survey. The information in this report shall be used by the permittee and their contractor to implement permit-required minimization measures. Moreover, this report shall also contain information on the pre-construction condition of SAV resources that could be used for UMAM if there are any unauthorized impacts. If an impact assessment is required, then an impact assessment report shall also be submitted (Section 4.7).

4.4.2 Reporting for Comprehensive Monitoring

For projects requiring comprehensive monitoring, the results of the pre-construction survey shall be provided at least 30 days prior to construction or 15 days prior to the pre-construction conference, if one is required by the permit (Table 3). A formal pre-construction report is not required, but the pre-construction deliverables shall include a georeferenced map of SAV boundaries based on the reconnaissance and mapping survey tasks, representative photographs, a description of site conditions based on the qualitative assessment and the data for the quantitative assessment of cover-abundance (and line intercept surveys, if required). A post-construction report shall be prepared and submitted to the department within 90 days of the completion of each post-construction survey (Table 3). This report shall include the results for each monitored metric; all data collected shall be reported. The report shall

describe the results of statistical analyses used to evaluate whether the spatial extent (acreage) and/or cover of SAV (as determined by quantitative assessments Section 2.3.6.3 and/or line intercept surveys Section 2.3.6.4) changed significantly between the pre- and post-construction surveys. Summary statistics, including the average and standard deviation, shall be presented. The report shall provide a comparison of pre- and post-construction data for each area (patch and/or transect) and for the entire project area. If monitoring is conducted at a reference site or sites, then the results of reference site surveys shall also be reported and compared with monitoring results for the project area. If an impact assessment is required, then an impact assessment report shall also be submitted (Section 4.7).

4.5 Evaluation of As-built Survey Results and Physical Monitoring Data

To determine if any unauthorized impacts to SAV resources have occurred as a result of construction activities, the permittee shall review the contractor's as-built (AB) survey results to ensure construction was completed in compliance with the specific conditions of the permit and authorized project drawings. If any substantial deviations from the authorized construction activities are identified during review the as-built results, then a detailed description of these deviations shall be provided. For some projects (e.g., channel dredging), the permittee will also need to provide an evaluation of physical monitoring (PM) data to determine if SAV resources were impacted. For example, the locations of any dredged areas that are not compliant with the authorized template shall be reported, including areas where there is evidence of dredging beyond the authorized template or sloughing beyond the authorized side-slopes. For nourishment projects, all beach profile data available at the time the post-construction report (Section 4.4.2) is being prepared should be evaluated to see if patterns in these data correspond to areas where SAV has changed; for example, evidence that the SAV edge shifted or that cover decreased near portions of the project where fill materials were lost or moved offshore.

The results of this evaluation of the as-built survey and physical monitoring data (AB/PM) will be used to determine whether an impact assessment is required for low-risk projects and to aid in the interpretation of post-construction survey results for projects with comprehensive monitoring. Therefore, timely submittal is important. The permit and/or monitoring plan will specify the timeline for providing this deliverable, which will depend upon the physical monitoring schedule. For example, the AB/PM evaluation may be required to be submitted with the post-construction report or 90 days after the completion of the post-construction physical monitoring event, whichever is later.

4.6 Notification of Impacts

If any unauthorized impacts to SAV occur (or are suspected to have occurred) as a result of construction activities authorized by this permit, then the permittee shall notify the department's POC via email as soon as practicable but no later than 24 hours from the time of discovery. This correspondence should include all available information on impacts and/or incident(s) that (may) have caused impacts.

4.7 Submittal of Impact Assessment Report

If an impact assessment is required (Section 2.3.3), the permittee shall submit an impact assessment report within 15 days of the completion of the impact assessment (Table 3), unless a time extension is granted in writing by the department. The impact assessment report shall provide all information necessary for the department to evaluate whether corrective actions are necessary and to calculate the amount of compensatory mitigation that may be required to offset unauthorized impacts using UMAM. The impact assessment report shall include a description and representative photographs of site conditions and SAV in the project area. Any visually conspicuous signs of impacts shall be documented in the report. The GPS coordinates for any locations with impacted SAV shall be reported. A geo-referenced map of impacted SAV areas shall also be provided to illustrate the spatial extent of impacts; map products should be compliant with the mapping criteria described in Section 2.2.3.1. The impact assessment report shall describe the severity of functional losses that were observed (e.g., degradation of community structure) and the acreage of impacts to SAV and SAV habitat (Section 1.3).

4.8 Submittal of Corrective Action Plan

If the permittee notifies the department (or the department notifies the permittee) that unauthorized impacts to SAV have occurred as a result of construction activities, then within 14 days of notification – unless an extension is granted in writing by the department – the permittee shall submit a draft corrective action plan describing actions that will be taken by the permittee to monitor, remediate and/or mitigate the unauthorized impacts. The corrective action plan shall be implemented by the permittee within 30 days of receiving notification the corrective action plan has been approved by the department, unless an extension is granted in writing by the department.

Table 3: Summary of monitoring events, survey tasks (DA: desktop assessment, RECON: reconnaissance, MC: mapping and characterization, DE: delineation, VA: visual assessment of site conditions; LI: line intercept and CA: cover-abundance; AB/PM: evaluation of as-built survey and physical monitoring data, IA: impact assessment) and deliverables that may be required for projects depending upon the monitoring approach.

Monitoring Approach	Monitoring Event	Surveys / Tasks	Deliverables	Timeline
Minimal monitoring for low-risk projects (2.3.1)	Planning (2.2)	DA (2.2.1); RECON (2.2.2); MC (2.2.3)	Permit Application (2.2)	Prior to completing the application
	Pre-construction (2.3.3)	RECON (2.2.2); MC (2.2.3)	Pre-Construction Report (4.4.1)	At least 30 days prior to construction or 15 days prior to the pre-construction conference, if one is required
	Evaluation of potential impacts during or post-construction	IA (2.3.3; 2.3.6.5); AB/PM (4.5)	Impact Assessment Report (4.7); AM/PM (4.5)	IA: Within 30 days of completing the Impact Assessment; AB/PM: as required by the permit
Comprehensive monitoring to document potential impacts (2.3.2)	Planning (2.2)	DA (2.2.1); RECON (2.2.2); MC (2.2.3)	Permit Application (2.2) and Monitoring Plan (2.3.2)	Prior to completing the application
	Pre-construction (2.3.3)	DE (2.3.6.1); VA (2.3.6.2); CA (2.3.6.3); LI (2.3.6.4)[1]	Pre-Construction Deliverables (4.4.2)	At least 30 days prior to construction or 15 days prior to the pre-construction conference, if one is required
	Post-construction[2] (2.3.3)	DE (2.3.6.1); VA (2.3.6.2); CA (2.3.6.3); LI (2.3.6.4)[1]; AB/PM (4.5)	Post-Construction Report/Annual Report (4.4.2) AB/PM (4.5)	Post-Construction Report: within 90 days of completing the post-construction survey; AB/PM as required by the permit
	Impact Assessment (2.3.3)	IA (2.3.6.5)	Impact Assessment Report (4.7)	Within 30 days of completing the Impact Assessment

1: Line intercept surveys will be required for projects with a transect-based survey design (Section 2.3.5).

2: Additional surveys shall be required for dredging projects that extend over more than one growing season, substantially alter hydrological conditions and for beach nourishment projects; annual reports shall be submitted if additional surveys are conducted (Section 2.3.3).

5.0 LITERATURE CITED

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Florida Fish and Wildlife Conservation Commission (FWC)
Coral and Octocoral Mitigation Relocation Recommendations

This document "FWC Coral and Octocoral Mitigation Relocation Recommendations" (FWC Recommendations) is specific to coral and octocoral relocation activities that are being conducted statewide for mitigation[1] purposes. This document and referenced documents are living documents and are updated as new information becomes available, or issues that need to be addressed are identified. For this reason, document dates are provided in the lower right-hand corner for reference purposes.

> ***Attention Permit Processors***
> There are 12 (twelve) items identified in text boxes throughout the document for ease of reference that specifically identify issues to be considered for permit issuance, and FWC-recommended permit conditions.

I. Definitions

For purposes of these FWC Recommendations including Attachment 1 "FWC Special Activity License Coral Visual Health Assessment Protocols for Release Activities" (VHA Protocols) and Attachment 2 "FWC Special Activity License Octocoral Visual Health Assessment Protocols for Release Activities" (VHA Protocols), a complete list of coral and octocoral terminology definitions is provided in Attachment 3 "Definitions of Coral and Octocoral Terminology".

II. FWC Authorization Required

An FWC Relocation Special Activity License (SAL) is required for all marine species relocation activities statewide, including but not limited to coral and octocoral mitigation relocation activities. Information on the FWC SAL Program and applications are available here: https://myfwc.com/license/saltwater/special-activity-licenses/

An FWC Relocation SAL will not be issued for any project that is not otherwise fully permitted, unless agreed upon by the permitting agencies.

> ***Attention Permit Processors***
> **1. Recommended Permit Condition**:
> A Special Activity License (SAL) must be obtained from the Florida Fish and Wildlife Conservation Commission (FWC) by the entity that is conducting marine organism relocation activities required by this permit.

III. The Importance of "Urban" Corals

A large majority of coastal construction projects along Florida's Coral Reef occur within interior waterways, which are characterized by urbanized coral environments. Urbanized coral environments are becoming more common due to an increasing concentration of coastal human population, economic activity, and associated changes in land-use, coastal modifications, and dredging (Burt 2014; Guest et al. 2016a; Browne et al. 2019; Burt et al. 2019). Corals present in urbanized areas face challenging environmental conditions such as high turbidity and sedimentation, eutrophication, and pollution (Heery et al. 2018; Burt and Bartholomew 2019; Todd et al. 2019; Figueroa-Pico et al. 2020). Even though inhabiting areas with these challenging conditions can be energetically expensive to corals and result in reduced growth rates and survival, urbanized areas are still typically dominated by robust, stress-tolerant corals that are relatively resistant to bleaching and/or are able to recover from stressors (Guest et al. 2016b; Brown et al. 2020).

[1] For purposes of this document, the term "mitigation" is all-encompassing and includes avoidance, minimization, and compensatory mitigation actions. The term "compensatory mitigation" is specific to actions that are intended to offset impacts that are not avoided or minimized.

Furthermore, corals growing on artificial substrates in interior waterways in Miami, FL have been examined by NOAA's Atlantic Oceanographic and Meteorological Laboratory (AOML) and were found to have less bleaching, less disease, more resistance to pollutants, and other molecular markers of coral resilience compared to their offshore counterparts, suggesting these corals could be important for coral conservation and restoration because of their ability to survive longer under predicted end-of-century climate change conditions (Rubin et al. 2021).

For all of these reasons, "urban" corals are considered valuable resources as they appear to contribute robust genetic and adaptable populations to Florida's Coral Reef environment.

IV. Mitigation Approach for Relocation

Relocation of corals and octocorals to suitable sites should occur for all coastal construction projects where complete avoidance is not possible. Coral and octocoral relocation activities should be considered as minimization of project impacts and not as compensatory mitigation. Coral and octocoral relocation activities conducted to minimize project impacts can be accommodated in Florida Uniform Mitigation Assessment Method (UMAM), Habitat Equivalency Analysis (HEA), and Resource Equivalency Analysis (REA) mitigation assessment methodologies, and would result in lower amounts of compensatory mitigation required for a project relative to the amount of mitigation that would be required if coral and octocoral relocation was not performed. Compensatory mitigation should be required for all corals and octocorals that may be impacted by project activities and will not be relocated, and for relocated corals that do not meet permit-established relocation performance standards.

Coral and octocoral relocation activities should not occur during times of severe stress (e.g., localized disease outbreak, coral bleaching, extreme water temperatures (cold or hot), significant algal blooms), or from locations being impacted by significant stress events (e.g., dredging activities, storm water run-off), unless there are extreme circumstances that warrant an exception. FWC will support coral and octocoral relocation activities during times of severe stress or from locations being impacted by significant stress events on a case-by-case basis when resource or project impacts are imminent and cumulatively harmful, and when potential benefits outweigh potential risks.

Compensatory Mitigation Considerations

On a case-by-case basis, the FWC will consider and evaluate any request for the relocation of corals from unstable habitats (e.g., rubble) to be used as a compensatory mitigation measure to offset direct effects from a proposed project. Additionally on a case-by-case basis, FWC will consider and evaluate any request for the relocation of corals that are not otherwise required to be relocated by project permits, to be used as a compensatory mitigation measure to offset the loss of indirect effects that are temporary (e.g., temporary reduction in larval output, temporary reduction in settlement). Evaluation of such requests will be based on the amount of credit that is proposed to be provided for such activities and results from other appropriately monitored and documented relocation activities (e.g., literature, monitoring reports).

Technical Assistance

The FWC is available to provide technical expertise to assist with mitigation assessment (e.g., UMAM, HEA, REA), or the development or review of mitigation plans. The FWC would appreciate the ability to provide additional comments on mitigation assessment, mitigation plans or mitigation plan revisions if such information is not currently available and becomes available in the future.

> ***Attention Permit Processors***
> **2.** The FWC recommends that any references in permit language to relocation activities should be identified for purposes of minimization (i.e., to minimize resource impacts due to project activities), and not be identified for compensatory mitigation purposes (i.e., to offset impacts due to project activities), unless specific case-by case considerations have been provided for (see above ***Compensatory Mitigation Considerations***).

V. Coral and Octocoral Resource Surveys

Surveys to identify coral and octocoral resources should be conducted prior to permit application, and resource survey summary reports should be submitted with a permit application. If this does not occur, a resource survey for coral and octocoral resources and summary report will need to be requested from the applicant during the application review process as part of a Request for Additional Information (RAI). Resource surveys should be conducted by biologists skilled in marine invertebrate identification, specifically coral assessment and identification to the species level. At a minimum, resource survey reports should include the following information:

1) Amount of project area surveyed. Resource survey reports should specifically identify the percent of the total project area that was surveyed, and why this area was selected for surveying.

2) Methodology used for the survey. It is important to note that methodologies used to survey for seagrass resources are not appropriate to use for surveying for coral and octocoral resources. Survey methodology used to identify coral and octocoral resources should be specifically identified and appropriate for such resources.

   Surveys for ESA-listed coral species and associated Critical Habitat must utilize NOAA Fisheries *ESA-Listed Coral Colony and Acropora Critical Habitat Survey Protocol* located here: https://www.fisheries.noaa.gov/southeast/consultations/regulations-policies-and-guidance

   Surveys conducted for nearshore projects within the boundaries of the Florida Keys National Marine Sanctuary (FKNMS) generally must be permitted and as such, must utilize *Florida Keys National Marine Sanctuary Resource Assessment Survey Protocols for Nearshore Construction Projects*.

   At this time, there are no specific survey methodologies that are recommended for conducting surveys for coral and octocoral resources, but methodologies must be appropriate for the resources (coral, octocoral) and species (ESA-listed) being surveyed, and must adhere to survey protocols for project location (FKNMS), if applicable.

3) A summary of resource survey results. If complete information for all corals and octocorals that are located within the project area is not provided in the survey report by individual species type, numbers, sizes and location (including extrapolations if needed), it may necessitate surveys to be repeated and/or survey reports to be amended.

4) Location information. For ESA-listed species, GPS coordinates of each individual colony should be documented. For species that are not ESA-listed, sufficient location information should be provided so that corals can potentially be located at a later time to facilitate relocation activities. Recommended location information includes GPS location of each survey site (unit = decimal degrees and state datum), along with a description of where each colony occurs (measurement along a transect or location within a quadrant), and a site map with locations of each colony.

   It should be noted that specific coordinates for individual corals are extremely beneficial to facilitate salvage for research or restoration donation activities that may occur prior to, or during, relocation activities.

Resource Survey Purpose

In general, coral and octocoral resource surveys serve several important project-permitting purposes:

- Identification of presence/absence of listed species and associated critical habitat
- Provide resource estimates to evaluate potential project impacts, and to determine appropriate and necessary minimization and compensatory mitigation actions

While coral and octocoral resource survey information serve the above important purposes for the permit application review process, resource survey information should not be used for permit conditions to specifically identify numbers of corals and octocorals by individual species type and sizes that need to be relocated for the following reasons:

- Coral and octocoral resource survey information becomes quickly out-of-date due to factors that generally affect species diversity (i.e., individual species type), abundance (i.e., numbers), and size. These factors include, but are not limited to mortality events (e.g., disease), environmental conditions (e.g., water temperatures, water quality), extreme weather events (e.g., named storms, hurricanes), new recruitment, and growth. The amount of time that passes between completion of a resource survey and when coral and octocoral relocation actually occurs after permit issuance, allows for substantial shifts of individual species type, numbers and sizes of coral and octocoral resources present within a project area to occur. This renders resource survey information inadequate to use for permits conditions to specifically identify coral and octocoral individual species type, numbers and sizes that need to be relocated.

- Many coral and octocoral resource surveys are only conducted for a portion of a project area, which means the data from the surveyed portion of the project must be extrapolated and applied to un-surveyed portions of the project to develop estimates of the individual species type, numbers and sizes of corals and octocorals potentially present within the total project area. These extrapolations are only rough estimates of coral and octocoral numbers and should not be used for permit conditions to identify specific individual species type, numbers and sizes required to be relocated.

- Both misidentification of species and lack of sufficient location information (e.g., coordinates, mapping) often occur with resource surveys, which significantly impacts the ability for a relocation contractor to find specific corals and octocorals that were identified in resource surveys in order for them to be relocated. A resource survey contractor is rarely the same contractor that conducts the actual coral relocation activities, so individual species type, numbers and sizes of corals and octocorals identified by a resource survey contractor many times do not match what the relocation contractor actually sees when they get in the water to conduct the relocation activities after a permit has already been issued. This may necessitate permit amendments or lead to violations of permit conditions if such conditions are dependent on specific individual species type, numbers and sizes of corals and octocorals that need to be relocated based on resource survey information.

- Corals and octocorals may not meet the basic health criteria required in the VHA Protocols and as such, would not qualify for relocation. Again, this may necessitate permit amendments or lead to violations of permit conditions if such conditions are dependent on specific individual species type, numbers and sizes of corals and octocorals that need to be relocated based on resource survey information.

- For a number of other reasons (health-related, predation, anthropogenic impacts, etc.), the corals might be dead or just not there anymore when relocation activities occur. Again, this may necessitate permit amendments or lead to violations of permit conditions if such conditions are dependent on specific individual species type, numbers and sizes of corals and octocorals that need to be relocated based on resource survey information.

Attention Permit Processors
3. For all of the reasons identified in the above section and to facilitate permit compliance enforcement, FWC recommends that permitting agencies do not identify specific numbers of corals and octocorals by individual species type and size that need to be relocated, based on resource survey information submitted for permit application purposes. Permits can generally be conditioned to eliminate the need to identify specific numbers by species types and sizes to achieve the purposes of relocation by utilizing the permit conditions identified in **X. Coral Relocation by Species and Size** and **XI. Octocoral Relocation by Species and Size**.

VI. Relocation Plans

Coral and octocoral relocation plans should be submitted with a permit application. If this does not occur, a relocation plan will need to be requested from the applicant during the application review process as part of a Request for Additional Information (RAI). At a minimum, relocation plans should include the following information:

1) General criteria for the selection of corals and octocorals that are proposed to be relocated (e.g., species type, sizes, numbers, susceptibility to SCTLD, potential reef-building contributions). Any corals and octocorals that are intended to be salvaged and donated to qualified entities conducting permitted research or restoration activities should be identified, along with the qualified entity that has committed to taking them. Reminder – for ESA-listed coral species, any salvage and donations must be approved by NOAA Fisheries, Protected Resources Division. Also see **IX. Salvage and Donations**.

2) Relocation methodologies – identify the methodologies that will be used to remove, transport, temporarily hold (if applicable), and reattach corals/octocorals.

   There are a number of current relocation methodologies to successfully remove, relocate and reattach corals and octocorals, and there may be additional successful methodologies developed in the future. As such, the FWC does

   not prefer to specify methodologies for these activities and would instead prefer to review proposed methodologies or assist with development of methodologies.

   It should be noted that many coral relocation contractors have proposed to utilize relocation methodology documents developed by the Florida Keys National Marine Sanctuary (FKNMS)[2] as their complete relocation plan. These documents were developed by FKNMS staff for specific activities and projects within the FKNMS and were not intended to be used for any other purpose. Additionally, these FKNMS documents that specify methodologies do not constitute a complete relocation plan and are not appropriate to be represented as a complete relocation plan for coral and octocoral mitigation relocation activities.

3) Reattachment spacing estimates for the relocation site that minimizes competition and provides for colony growth and tissue re-colonization based on species selected for relocation and their morphology, growth rates, and maximum size.

4) Removal site(s) – provide the following information for the removal site(s):
   a. Site coordinates.
   b. Substrate size and substrate type that corals/octocorals are located on (e.g., walls, boulders, rip rap, natural, artificial, metal, concrete).
   c. Identify presence/absence of Stony Coral Tissue Loss Disease (SCTLD) or other suspect or active disease indicators (review attached VHA Protocols for suspect or active disease indicators).
   d. Identify presence/absence of predators/competitors/overgrowth (by species if possible, by genus otherwise) on corals and/or substrate corals are attached to.
   e. Water depth.
   f. Water quality.
   g. Water circulation.
   h. Light availability (PAR level).
   i. Orientation of attachment.
   j. Presence/absence of loose rubble.
   k. Identify if it is a low or high energy environment.

[2] "Final Programmatic Environmental Impact Statement for Coral Restoration in the Florida Keys and Flower Garden Banks National Marine Sanctuaries" - dated July 2010; "FKNMS Coral Rescue and Transplant Protocols" - dated November 2011 or May 2013; "FKNMS Coral Rescue & Relocation Protocols" - dated January 2014.

5) Temporary holding site(s) (also see **VII. Temporary Holding Site Selection**) – if a temporary holding site will be used to cache, stage, or acclimate corals/octocorals prior to reattachment, provide the following information for the temporary holding site(s):
    a. Site coordinates.
    b. Proximity to both the removal and reattachment sites.
    c. Estimated length of time corals/octocorals will be maintained in the temporary holding site.
    d. Water depth.
    e. Identify if it is a low or high energy environment.
    f. Level of sedimentation.
    g. Presence/absence of freshwater input.
    h. Verify that the temporary holding site is conservatively further from expected project-associated direct and indirect impact areas.
    i. Identify how corals/octocorals will be maintained in the temporary holding site (e.g., in containers).
    j. Identify if any structures or systems will be installed to facilitate temporary holding of corals/octocorals, and if use of these structures or systems has been requested for authorization in the appropriate permit applications for this project.

> ***Attention Permit Processors***
> **4.** The installation of any structures or materials to facilitate the temporary holding of corals and octocorals prior to reattachment at the relocation site must be authorized by project permits.

6) Relocation site(s) (also see **VIII. Relocation Site Selection**) – provide the following information for the relocation site(s):
    a. Site coordinates.
    b. Proximity to the removal site.
    c. Identify if there has been historic presence of the species to be relocated at the relocation site within recent decades.
    d. Substrate size and substrate type (e.g., natural substrate, boulder artificial reef) that corals/octocorals will be relocated to.
    e. Identify presence/absence of Stony Coral Tissue Loss Disease (SCTLD) or other suspect or active disease indicators (review attached VHA Protocols for suspect or active disease indicators).
    f. Identify presence/absence of predators/competitors/overgrowth (by species if possible, by genus otherwise) on corals and/or substrate corals are proposed to be attached to.
    g. Water depth in relation to the removal site.
    h. Water quality in relation to the removal site.
    i. Water circulation in relation to the removal site.
    j. Light availability (PAR level) in relation to the removal site.
    k. Orientation of reattachment.
    l. Presence/absence of loose rubble.
    m. Identify if it is a low or high energy environment.
    n. Verify that the relocation site is not located within a direct or indirect impact area for any permitted, authorized or reasonably foreseeable marine coastal construction activity (e.g., dock/marina/seawall/rip rap work, dredging, beach nourishment, pipeline or communication cable installations), or within exclusion or buffer areas/zones (e.g., military, aquaculture, resource protection).
    o. Provide information on spatial requirements for the species to be relocated which addresses how the relocation site will provide adequate and appropriate space to allow for: colony growth, tissue re-colonization and plating based on colony size, species growth rates, and maximum size capacity

Technical Assistance
The FWC is available to provide technical expertise to assist with the development or review of relocation plans, including relocation methodologies. The FWC would appreciate the ability to provide additional comments on relocation plans or relocation plan revisions if such information is not available at this time and becomes available in the future.

Staff of the Florida Department of Environmental Protection – Coral Reef Conservation Program, NOAA National Marine Fisheries Service, and NOAA Florida Keys National Marine Sanctuary (for projects located within Monroe County) are also available to provide technical expertise to assist with the review or development of relocation plans based on lessons learned on the Florida Reef Tract (FRT). Appropriate contacts for each of these agencies respective programs can be provided upon request.

Attention Permit Processors
5. The FWC does not recommended referencing and attaching relocations plans submitted by an applicant. If relocation plans absolutely must be referenced by and attached to a permit, please include the following Recommended Permit Condition:

Recommended Permit Condition: If there are any conflicts between the Relocation Plan referenced by and attached to this permit, and the terms and conditions of this permit, the terms and conditions of this permit shall be controlling.

Instead of referencing and attaching relocation plans, the following information is what is needed from a relocation plan to include in permit conditions:

a. Identification of what corals need to be relocated. Permits can generally be conditioned by utilizing the FWC recommended permit conditions identified in **X. Coral Relocation by Species and Size** (2 permit conditions – species categories by size and fragmented coral reconstruction) and **XI. Octocoral Relocation by Species and Size**.
b. Removal site coordinates (i.e., project site coordinates).
c. Temporary holding site coordinates if a temporary holding site has been identified, and if requested, authorization for the installation of any structures/materials to facilitate the temporary holding of corals and octocorals prior to reattachment.
d. Relocation (reattachment) site coordinates
e. Relocation methodology

V1I. Temporary Holding Site Selection
If corals and octocorals will be placed within a temporary holding site after removal and prior to reattachment at the relocation site (for caching, staging, acclimation), the FWC recommends the following criteria be adhered to:

1) The temporary holding site for corals and octocorals must be located in a stable area (e.g., low energy, low sedimentation, minimal freshwater input), and err conservatively on the side of being slightly farther from expected project-associated direct and indirect impact areas.
2) Corals must be maintained in a temporary holding site either by affixing them to an elevated structure or placing them in a suspended container in a manner wherein they are above the sea floor and do not touch each other. If corals are to remain in the temporary holding site for longer than two weeks, they must be cemented or epoxied to an elevated structure or to substrate elevated above the sea floor.
3) Octocorals must be maintained in a temporary holding site either by affixing them to an elevated structure or placing them in a suspended bag in a manner wherein they are above the sea floor and have adequate water flow (i.e., bags should not be crowded). If octocorals are to remain in the temporary holding site for longer than two

weeks, they must be attached with zip ties by their holdfast or base to an elevated array or line system previously installed on the sea floor. Orientation is less important, but octocorals must not touch each other while in holding.

4) The installation of any structure or system to facilitate the temporary holding of corals and octocorals prior to reattachment must be authorized by project permits.

VIII. Relocation Site Selection

The FWC recommends that the selection of an appropriate relocation site(s) for both corals and octocorals meet the following general criteria:

1) The relocation site must be as close in proximity to the removal site as possible to preserve the functional ecosystem value of the surrounding areas provided by the resources to be relocated, but err conservatively on the side of being slightly farther from expected project-associated direct and indirect impact areas.
2) Relocation site must be of suitable reef habitat, be within the known range of the species or genera, and have historic presence of the species to be relocated (in recent decades).
3) Optimally, the relocation site should be located in similar water depths and have similar physical conditions (e.g., light availability, water flow) to those at the removal site.
4) Optimally, the relocation site should have similar substrate orientation to removal site; i.e., if corals or octocorals are being removed from a vertical or sloped elevated surface, then the relocation site should have similar vertical or sloped areas for relocation. It is recognized that this will not always be possible like in situations where corals and octocorals are relocated from vertical surfaces, and in these cases selecting a relocation site that meets all other relocation site criteria is acceptable.
5) Relocation site must not contain large amounts of loose rubble and should not be located in a high energy environment (Edwards and Clark 1998).
6) Relocation site must not be located within a direct or indirect impact area for any permitted, authorized or reasonably foreseeable marine coastal construction activity (e.g., dock/marina/seawall/rip rap work, dredging, beach nourishment, pipeline or communication cable installations), or within exclusion or buffer areas/zones (e.g., military, aquaculture, resource protection).
7) Relocation site must have adequate and appropriate space to minimize competition and allow for colony growth and tissue re-colonization based on species morphology, growth rates, and maximum size.

IX. Salvage and Donations

The FWC supports salvage and donations of corals and octocorals to qualified entities conducting authorized research and restoration activities. The FWC SAL program can facilitate identification of entities that are qualified to receive salvaged corals and octocorals, and inquiries can be made by sending a request for assistance to SAL@MyFWC.com.

The FWC encourages permit applicants to coordinate salvage and donation activities with qualified entities and incorporate activities associated with coral salvage and donations to qualified entities into both their relocation plan and

(sub)contracts with coral relocation contractors. It is the permit applicant's responsibility to ensure that qualified entities have sufficient time to consider everything they need to consider before making a decision as to whether or not they can accept any corals, and should be provided with as much advance notification of coral and octocoral availability to be able to do the following:

1) Consider their projects and whether or not they need any of the species/sizes/condition of the corals/octocorals that are available. If the project does not have corals/octocorals available that an entity needs, they will not commit to taking them. Qualified entities are under no obligation to take any corals or octocorals from any project.
2) Consider if they have space to hold the corals/octocorals once collected, and the resources to support their care for as long as they need to hold them before they are utilized for the activities they are intended to be used for. This might require moving animals around from tank to tank or nursery practitioner to nursery practitioner to make space, along with staffing and budgets to support these activities.

3) If the qualified entities have to collect the corals/octocorals themselves, they will need to consider if they have the staff, equipment and budget to do these activities and are able to mobilize everything within the time frame that is provided to them.
4) If the qualified entities are just accepting the corals/octocorals, they have to consider if they have the space, time, staffing, etc. to be able to accept the corals within the time frame that is provided to them.

> ***Attention Permit Processors***
> **6.** The FWC encourages permit processors to automatically provide for coral and octocoral salvage and donation activities within permit conditions to facilitate research and restoration activities, and to avoid the need for future permit amendments. Any salvage and donations of ESA-listed species must be approved by NOAA Fisheries, Protected Resources Division. The FWC recommended permit conditions identified in **X. Coral Relocation by Species and Size** and **XI. Octocoral Relocation by Species and Size** do provide for salvage and donation activities.

X. Coral Relocation by Species and Size

Relocation is a necessary action for the diversity of coral species impacted by a project, not just the collective number of corals impacted by a project considered as a single group of "corals". Selecting coral species for relocation solely based on ESA-listing and/or an arbitrary minimum size (e.g., 10 cm) eliminates consideration of species diversity and population contribution potential for impact minimization or compensatory mitigation actions.

Coral Species

The FWC has categorized all coral species found on the Florida Reef Tract into three different size classes for relocation activities (i.e., relocate at any size, relocate at ≥ 5 cm, relocate at ≥ 10 cm). The species included within each of these groups were not prioritized, but were categorized based on individual species susceptibility to Stony Coral Tissue Loss Disease (SCTLD) and conservation value (e.g., ESA-listing status, abundance, growth rate and maximum size, contributions to reef-building, genetic diversity, recruitment rate, post-settlement mortality). These size groupings alone cannot be used as a de facto priority list, but the species notes provided can be used to inform prioritization of species in consideration of diversity needs for projects with large number of corals that need to be prioritized for relocation.

Coral Size

FWC focuses on the potential population contributions of a coral based on its reproductive capability, which is dependent on the amount of live tissue – not the overall size of a coral which would also include dead tissue. An arbitrary minimum size (e.g., 10 cm) does not consider live tissue vs. dead tissue, and does not prioritize reproductively capable corals over corals that do not have enough live tissue to reproduce. A 10 cm coral with 2 cm of live tissue and 8 cm of dead tissue is not as valuable as an 8 cm coral with 5 cm of live tissue and 3 cm of dead tissue. As such, FWC recommends that coral "size" is measured as live tissue diameter and not any other method of measurement.

Coral Fragmentation Upon Removal

The potential exists for corals to fragment upon removal. The potential for coral fragmentation upon removal is absolutely not a reason to disqualify corals for relocation. It is feasible for all fragments of the same broken coral to be kept together and reconstructed by reattaching fragments as close together as possible (like puzzle pieces – reattached within 0 - 5 cm apart from one another), to promote successful fusing. Re-constructed corals should be considered as one single coral for monitoring purposes. Research has shown that fragments of the same genet are known to readily and successfully fuse (Raymundo and Maypa 2004). Intentionally fragmenting corals and outplanting the fragments close together to promote fusion is a common practice in coral restoration to increase coral size within a shorter time frame.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral and Octocoral Mitigation Relocation Recommendations

Coral Species Relocation Categories by Size

The FWC recommends relocation of all corals at the specified size or larger as identified in the following size categories (adjusted as necessary for project location based on direction in blue), unless donated to qualified entities conducting permitted coral research or restoration activities.

Relocate at any size:

1) *Acropora cervicornis* – ESA-listed; confirmed not susceptible to SCTLD; major reef-building species
2) *Acropora palmata* – ESA-listed; confirmed not susceptible to SCTLD; functionally extinct; major reef-building species
3) Order *Antipitharia* (black corals) – rare
4) *Cladocora arbuscula* (areas on the FRT) – confirmed not susceptible to SCTLD; rare and small; rarely reaches 5-10 cm
5) *Colpophyllia natans* – SCTLD-susceptible; significantly impacted by SCTLD; showing signs of recruitment within early SCTLD-endemic areas; major reef-building species
6) *Dendrogyra cylindrus* – ESA-listed; SCTLD-susceptible; functionally extinct
7) *Dichocoenia stokesii* – SCTLD-susceptible; significantly impacted by SCTLD; showing signs of recruitment within early SCTLD-endemic areas
8) *Diploria labyrinthiformis* – SCTLD-susceptible; significantly impacted by SCTLD; showing signs of recruitment within early SCTLD-endemic areas; reef-building species
9) *Eusmilia fastigiata* – SCTLD-susceptible; significantly impacted by SCTLD
10) **Favia fragum* – unknown SCTLD susceptibility; functionally extinct; small; rarely reaches 5-10 cm
11) *Meandrina meandrites* – SCTLD-susceptible; significantly impacted by SCTLD; showing signs of recruitment within early SCTLD-endemic areas
12) *Millepora complanata* – not susceptible to SCTLD; functionally extinct; reef-building fire coral
13) *Mycetophyllia ferox* – ESA-listed; SCTLD-susceptible; functionally extinct
14) *Orbicella annularis* – ESA-listed; SCTLD-susceptible; major reef-building species
15) *Orbicella faveolata* – ESA-listed; SCTLD-susceptible; major reef-building species
16) *Orbicella franksi* – ESA-listed; SCTLD-susceptible; major reef-building species
17) *Phyllangia* spp. – unknown SCTLD susceptibility; small; rarely reaches 5-10 cm
18) *Pseudodiploria strigosa* – SCTLD-susceptible; significantly impacted by SCTLD; showing signs of recruitment within early SCTLD-endemic areas; reef-building species
19) *Scolymia* spp. – unknown SCTLD susceptibility; cryptic; small; rarely reaches 5-10 cm

Relocate at ≥ 5 cm, measured as live tissue diameter - continuous live tissue patch with a diameter of 5 cm or greater:

1) *Agaricia agaricites* – unknown SCTLD susceptibility; sensitive to temperature/light stress, cryptic, rarely reaches 10 cm
2) *Agaricia fragilis* – unknown SCTLD susceptibility; sensitive to temperature/light stress, cryptic, rarely reaches 10 cm
3) *Agaricia lamarcki* – unknown SCTLD susceptibility; rare; low recruitment; often found > 60'; sensitive to temperature/light stress; relocation size may be increased to ≥ 10 cm for Tortugas and Pulley Ridge areas
4) *Helioseris cucullata* –assumed SCTLD-susceptible (based on susceptibility of family members); rare in FL; low recruitment; often found in deep water or shallower in cryptic locations
5) *Isophyllia sinuosa* – assumed SCTLD-susceptible (based on susceptibility of family members); rare in FL; low recruitment
6) *Isophyllia rigida* – assumed SCTLD-susceptible (based on susceptibility of family members); rare in FL; low recruitment
7) *Madracis auretenra* – assumed SCTLD susceptibility; uncommon to rare; declining trends in counts and live tissue area in long-term monitoring assessments; low recruitment; sensitive to temperature/light stress
8) *Madracis decactis* – assumed SCTLD-susceptible (based on susceptibility of congener); low recruitment
9) *Madracis formosa* – assumed SCTLD-susceptible (based on susceptibility of congener); low recruitment
10) *Manicina areolata* – assumed SCTLD-susceptible (based on susceptibility of family members)

11) *Montastraea cavernosa* – SCTLD-susceptible; significantly impacted by SCTLD; showing signs of recruitment within early SCTLD-endemic areas; major reef-building species
12) *Mussa angulosa* – SCTLD-susceptible; significantly impacted by SCTLD; rare; low recruitment
13) *Mycetophyllia aliciae* – SCTLD-susceptible; significantly impacted by SCTLD; rare; low recruitment
14) *Mycetophyllia lamarckiana* – SCTLD-susceptible; significantly impacted by SCTLD; uncommon to rare; declining trends in counts and live tissue area in long-term monitoring assessments; low recruitment
15) *Pseudodiploria clivosa* – SCTLD-susceptible; significantly impacted by SCTLD; reef-building species; declining trends in counts and live tissue area in long-term monitoring assessments; low recruitment
16) **Siderastrea radians* – often smaller than 10 cm; abundant recruiter
17) *Solenastrea bournoni* – SCTLD-susceptible; significantly impacted by SCTLD; declining trends in counts and live tissue area in long-term monitoring assessments
18) *Solenastrea hyades* – assumed SCTLD-susceptible (based on susceptibility of congener)
19) *Stephanocoenia intersepta* (Monroe County only) – SCTLD-susceptible; reef-building species; abundant recruiter

Relocate at ≥ 10 cm, measured as live tissue diameter - continuous live tissue patch with a diameter of 10 cm or greater:
1) *Cladocora arbuscula* (areas outside of the FRT) – confirmed not susceptible to SCTLD
2) *Oculina diffusa* – unknown SCTLD susceptibility
3) *Oculina robusta* – unknown SCTLD susceptibility
4) **Porites astreoides* – confirmed not susceptible to SCTLD
5) **Porites divaricata* – confirmed not susceptible to SCTLD
6) **Porites furcata* – confirmed not susceptible to SCTLD
7) **Porites porites* – confirmed not susceptible to SCTLD
8) **Siderastrea siderea* – SCTLD-susceptible; susceptible to many coral diseases; reef-building species; abundant recruiter
9) *Stephanocoenia intersepta* (FRT areas outside of Monroe County) – SCTLD-susceptible; reef-building species; abundant recruiter
10) *All species of corals that are not otherwise specifically identified

*If numbers of the species *in red font exceed 50 colonies at the recommended relocation size or larger, the numbers required for relocation are reduced to 50 colonies or 25% of the total number of colonies, whichever is greater (50 colonies minimum). Reduced numbers of colonies must be selected and prioritized for relocation according to the following criteria:

- Colonies of this species should be removed from locations as spread out as possible across the total project area to increase the probability of capturing greater genetic diversity.
- Prioritize corals of larger sizes over corals of smaller sizes.
- Prioritize colonies exhibiting fewer stress indicators.

Attention Permit Processors
7. Recommended Permit Condition (adjusted as necessary for project location based on direction in blue):
All corals located within the authorized project area that measure at or above the specified size category they are classified in below, must be relocated prior to the start of project construction, unless they are of a species for which an expressed exception has been made to decrease numbers that must be relocated or are being donated to a qualified entity conducting permitted coral research or restoration activities.

Coral Species that must be Relocated at Any Size:

1) *Acropora cervicornis*
2) *Acropora palmata*
3) Order *Antipitharia*
4) *Cladocora arbuscula* (areas on the FRT)
5) *Colpophyllia natans*
6) *Dendrogyra cylindrus*

7) *Dichocoenia stokesii*
8) *Diploria labyrinthiformis*
9) *Eusmilia fastigiata*
10) **Favia fragum*
11) *Meandrina meandrites*
12) *Millepora complanata*
13) *Mycetophyllia ferox*
14) *Orbicella annularis*
15) *Orbicella faveolata*
16) *Orbicella franksi*
17) *Phyllangia* spp
18) *Pseudodiploria strigosa*
19) *Scolymia* spp.

Coral Species that must be Relocated at ≥ 5 cm, measured as live tissue diameter - continuous live tissue patch with a diameter of 5 cm or greater:

1) *Agaricia agaricites*
2) *Agaricia fragilis*
3) *Agaricia lamarcki* – relocation size may be increased to ≥ 10 cm for Tortugas and Pulley Ridge areas
4) *Helioseris cucullata*
5) *Isophyllia sinuosa*
6) *Isophyllia rigida*
7) *Madracis auretenra*
8) *Madracis decactis*
9) *Madracis formosa*
10) *Manicina areolata*
11) *Montastraea cavernosa*
12) *Mussa angulosa*
13) *Mycetophyllia aliciae*
14) *Mycetophyllia lamarckiana*
15) *Pseudodiploria clivosa*
16) **Siderastrea radians*
17) *Solenastrea bournoni*
18) *Solenastrea hyades*
19) *Stephanocoenia intersepta* (Monroe County only)

Coral Species that must be Relocated at ≥ 10 cm, measured as live tissue diameter - continuous live tissue patch with a diameter of 10 cm or greater:

1) *Cladocora arbuscula* (areas outside of the FRT)
2) *Oculina diffusa*
3) *Oculina robusta*
4) **Porites astreoides*
5) **Porites divaricata*
6) **Porites furcata*
7) **Porites porites*
8) **Siderastrea siderea*
9) *Stephanocoenia intersepta* (FRT areas outside of Monroe County)
10) *All species of coral that are not otherwise specifically identified

*Exception: If numbers of the species identified *in red font in any of the above size categories exceed 50 colonies at the recommended relocation size or larger, the numbers required for relocation are reduced to 50 colonies or 25% of the total number of colonies located within the authorized project area, whichever is greater (50 colonies minimum). Reduced numbers of colonies must be selected and prioritized for relocation according to the following criteria:

- Colonies of this species should be removed from locations as spread out as possible across the total project area to increase the probability of capturing greater genetic diversity.
- Prioritize larger corals of this species over smaller corals.
- Prioritize colonies of this species exhibiting fewer stress indicators.

Should corals fragment upon removal, all fragments of the same broken coral must be kept together and reconstructed by reattaching fragments as close together as possible (like puzzle pieces – reattached within 0 - 5 cm apart from one another). The re-constructed corals should be considered as one single coral for monitoring purposes.

XI. Octocoral Relocation by Species and Size

The FWC supports octocoral salvage and donations to qualified entities conducting research and restoration activities. The FWC encourages permit applicants to incorporate activities associated with octocoral salvage and donations to qualified entities into both their relocation plan and (sub)contracts with octocoral relocation contractors. The FWC also encourages permit processors to provide for these activities in permit conditions. The FWC SAL program can facilitate identification of entities that are qualified to receive salvaged octocorals, and inquiries can be made by sending a request for assistance to SAL@MyFWC.com.

The FWC recommends relocation of all *Gorgonia* species and other octocoral species ≥ 10 cm in height, unless donated to a qualified entity conducting permitted research or restoration activities. In the event that all octocoral species ≥ 10 cm in height will not be relocated, the FWC has prioritized octocoral species for relocation. Octocoral species have also been prioritized based on a high conservation value (i.e., state prohibited species, conservation need, local abundance/density, growth rates, relocation success, and ability to recover naturally). In general, more robust rod species are slow growing and have low recruitment, but transplant well and seem to recover quickly from being transplanted (e.g., growing a new holdfast over attachment material) (Brinkhuis 2009). Plumes are low on the list because they recruit very quickly after a disturbance and have high growth rates so their potential for natural recovery is greater. Additionally, more delicate plume species have less tissue (e.g., thinner tissue = less potential/resources for healing after clipping) and are inferior transplantation candidates. However, plumes can be transplanted successfully (Brinkhuis 2009).

The prioritized list is as follows:

1) *Antillogorgia*
2) *Eunicea*
3) *Gorgonia* (state prohibited species)
4) *Leptogorgia*
5) *Muricea*
6) *Muriceopsis*
7) *Plexaura*
8) *Plexaurella*
9) *Pseudoplexaura*
10) *Pterogorgia*

In addition to the species previously listed, the following are priority genera if deeper relocation sites are targeted (>60 ft. or >18 m):

1) *Diodogorgia*
2) *Ellisella*
3) *Iciligorgia*
4) *Swiftia*
5) *Telesto*

> ***Attention Permit Processors***
> **8. Recommended Permit Condition** (not prioritized): All octocoral species (including prohibited *Gorgonia* spp.) measuring 10 cm or greater in height must be relocated, unless donated to a qualified entity conducting permitted research or restoration activities.

XII. Visual Health Assessment

To minimize the risk of disease/predators/competitors being spread from the removal site to a temporary holding or relocation site, the FWC recommends a visual health assessment of each coral or octocoral slated for relocation be conducted immediately prior to removal from the project site, and again prior to removal from a temporary holding site (if one is used), pursuant to the attached "FWC Special Activity License Coral (or Octocoral) Visual Health Assessment Protocols for Release Activities" (VHA Protocols). Corals and octocorals that do not meet the criteria in the VHA PRotocols should not be removed, held temporarily, or relocated.

Exceptions:

- As identified in **IV. Mitigation Approach for Relocation**, there may be circumstances in which the FWC will support coral and octocoral relocation during times of severe or significant stress events. For corals and octocorals that will be relocated during times of severe stress or from locations being impacted by significant stress events, FWC can provide an exception on a case-by-case basis from certain "stress indicators" criterion identified in the VHA Protocols. If such an exception is provided by the FWC, these corals and octocorals may be relocated provided that all other criterion in the VHA Protocols are met.
- "Urban" corals and octocorals surviving in interior waterways have demonstrated resilience in spite of the poor environmental conditions they are growing in and as such, have strong survival capabilities (potentially genetic) that are highly valued. Corals and octocorals that will be relocated from interior waterways are provided with an automatic exception from the "stress indicators" criterion in the VHA Protocols and may be relocated provided that all other criterion identified in the VHA Protocols are met.

Corals and octocorals held in a temporary holding site should again be visually assessed for health pursuant to the VHA Protocols immediately prior to removal from the temporary holding site and reattachment at the relocation site.

Exception **- The visual health assessment does not need to be conducted for corals and octocorals that have been maintained in a temporary holding site for 48 hours or less.** Any corals or octocorals displaying signs of disease in the temporary holding site should either be: a) removed and disposed of; or b) removed and donated for ex-situ research.

Any corals or octocorals that were selected for relocation but were not relocated because they failed to meet the criteria in the VHA Protocols should be documented in the applicable data sheets provided for reporting requirements (e.g., "3. Non-ESA Diseased Colony Info", "6. ESA Diseased Colony Info").

Attention Permit Processors
9. Recommended Permit Condition:
Corals or octocorals must be visually assessed for disease immediately prior to removal from the removal site (and again from a temporary holding site if one is used), pursuant to "FWC Special Activity License Coral (or Octocoral) Visual Health Assessment Protocols for Release Activities" (VHA Protocols). The permittee or the contractor conducting relocations on behalf of the permittee must follow the most updated version of the VHA Protocols when relocation activities occur, as required by an FWC Special Activity License. All corals (or octocorals) that meet the criteria established in the VHA Protocols must be relocated, and corals (or octocorals) that do not meet the criteria cannot be relocated. Field personnel conducting coral (or octocoral) visual health assessments must be proficient with species identification and trained in coral (or octocoral) disease, predator/competitor identification and removal, and survey techniques to assure accuracy of the assessment.

XIII. Relocation Monitoring and Reporting

The FWC recommends corals and octocorals that are relocated specifically for mitigation purposes are monitored for overall survival and attachment success. This includes baseline data collection conducted at the time of relocation, and subsequent monitoring events at one week (may be conducted at any time during the seven days beginning the day immediately after the day relocation has concluded), at one month, at three months, at six months, and at one-year post-relocation. A two-year monitoring event is recommended as optional. The FWC emphasizes the need for all recommended monitoring events during the first year post-relocation to be performed to support identification of potential causes for coral relocation mitigation failure and/or the potential need for adaptive management measures. The recommended activities to be conducted for each of the recommended monitoring events is provided in Attachment 4 "Coral (or Octocoral) Mitigation Relocation Monitoring Requirements." Data sheets and data sheet directions are also provided to facilitate capturing the data requested for monitoring and reporting purposes.

Monitoring Data to be Collected

The monitoring data requested to be collected for coral and octocoral mitigation relocation monitoring activities are specific to determining overall survival and attachment success, thus determining achievement of performance standards for mitigation actions (i.e., mitigation success). The data requested to be collected for monitoring activities will also assist with determining potential factors that may have contributed to the inability for mitigation actions to achieve performance standards (i.e., mitigation failure), such as localized disease or bleaching events, severe storm events, relocation contractor performance, etc. It is recommended that relocation contractors select an appropriate reference site(s) for comparison purposes to assist with determining potential factors that may have contributed to the inability for mitigation actions to achieve performance standards.

Numbers of Corals/Octocorals to be Monitored

If the total quantity of corals or octocorals (considered separately for monitoring purposes) to be relocated comprises less than 4,000 colonies – select a representative subset of relocated corals/octocorals to be used for monitoring events, comprising 25% (or 1,000 corals/octocorals maximum) of the total number of corals/octocorals relocated. This subset must be representative of the species composition and size classes of the total relocated corals/octocorals, with no less than 10 corals/octocorals of each species monitored. If less than 10 corals/octocorals are relocated from a species, all relocated corals/octocorals of that species must be included in the subset. It is possible that for smaller-scale relocation projects, one or both of these requirements will result in all of the relocated corals/octocorals (i.e., set) needing to be monitored.

If the total quantity of coral/octocorals to be relocated exceeds 4,000 colonies, the FWC will reach a consensus with the applicant and the permitting agency on the number of representative subset corals/octocorals that will be monitored (the minimum will be 1,000 corals/octocorals).

Reporting Schedule

Baseline data collected at relocation and data collected during each subsequent monitoring event should be submitted according to the following schedule:

- At relocation (baseline) + one-week monitoring event: Submit location map(s), representative photograph(s), and all applicable data sheets with applicable data recorded, prior to initiating the one-month monitoring event or within 21 days post one-week event, whichever occurs first.
- One-month monitoring event through one-year (or two-year if conducted) monitoring events: Submit representative photograph(s) and all applicable data sheets with applicable data recorded, within 30 days post-event.

Technical Assistance

The FWC is available to provide technical expertise to assist with the development or review of monitoring plans. The FWC would appreciate the ability to provide additional comments on monitoring plans or monitoring plan revisions if such information is not available at this time and becomes available in the future.

Attention Permit Processors

10. Recommended Permit Condition:

Baseline data collection and monitoring must be conducted pursuant to the attached "FWC Coral (or Octocoral) Mitigation Relocation Monitoring Requirements". Baseline data collection must occur at the time of relocation, and subsequent monitoring events must be conducted at one week (may be conducted at any time during the seven days beginning the day immediately after the day relocation has concluded), one month, three months, six months, and one year. Baseline data collected at the time of relocation and data collected during each subsequent monitoring event must be recorded in the Excel data sheets provided with no modifications made to the data sheets, and submitted in Excel format (not converted to pdf or any other format), according to the following schedule:

- At relocation (baseline) + one-week monitoring event: Submit location map(s), representative photograph(s), and all applicable data sheets with applicable data recorded, prior to initiating the one-month monitoring event or within 21 days post one-week event, whichever occurs first.
- One-month monitoring event through one-year (or two-year if conducted) monitoring events: Submit representative photograph(s) and all applicable data sheets with applicable data recorded, within 30 days post-event.

Monitoring of relocated corals or octocorals may be conducted with monitoring subsets. Monitoring subsets must be comprised of 25% (or 1,000 corals or octocorals maximum) of the total number of corals or octocorals relocated. These subsets must also be representative of the species composition and size classes of the total relocated corals or octocorals, with no less than 10 corals or octocorals of each individual species monitored. If less than 10 corals or octocorals are relocated from an individual species, all relocated corals or octocorals of that species must be included in the monitoring subsets. These same monitoring subsets must be used for all monitoring events.

XIV. Performance Standards

The performance standard to determine mitigation success for coral relocation activities should be between 65-85% overall survival, with secure substrate attachment, one year after relocation. Overall survival of corals shall be defined as no net loss in pooled (by species) Live Tissue Area Index or an increase in pooled (by species) Live Tissue Area Index.

Live Tissue Area Index is calculated by averaging the coral maximum diameter and coral maximum height, then squaring the average dimension to determine Skeletal Area, then multiplying by the percent live tissue; formula as follows: ((D+H)/2)^2*%L (Williams and Miller 2012). All of the metrics needed to determine Live Tissue Area Index are either requested for collection during monitoring activities (e.g., max diameter, max height, percent live tissue), or are auto populated in the "2. Non-ESA RelocatedColony Info" data sheet provided (e.g., coral skeletal area). The "Coral Live Tissue Area Index" column in the data sheet will also auto-populate once the needed metrics are recorded.

To calculate pooled Live Tissue Area Index by species for purposes of identifying the overall survival percentage, sum the Live Tissue Area Indices by species (not individual coral) that was auto populated for each coral colony that was monitored, and record in the "1. Non-ESA Relocations Summary" data sheet as instructed by the data sheet directions included in the attached "Coral Mitigation Relocation Monitoring Requirements".

Coral Species that are ESA-Listed

There may be additional or separate performance standards to determine mitigation success for coral relocation activities for ESA-listed species as prescribed by the federal Biological Opinion or federal permits for the project.

Octocorals

In order to establish mitigation performance standards for octocorals, FWC recommends evaluating overall survival of relocated octocorals via maximum height, and this metric is requested for collection in "XIII. Relocation Monitoring and Reporting" above. Overall survival shall be defined as no change in maximum height or an increase in maximum height.

The performance standard to determine mitigation success for octocoral relocation activities should be proposed by the applicant and supported by available and appropriate documentation of octocoral relocation activities (e.g., literature, monitoring reports.) FWC request to review these proposals as they are submitted to determine if the documentation submitted supports the performance standard as proposed. **Note** – there is not a data sheet to summarize monitoring information for octocorals as the performance standard has not yet been determined. An additional data sheet will need to be developed to accommodate for summarizing octocoral monitoring information to assist with determining mitigation success.

Technical Assistance

The FWC is available to provide technical expertise to assist with the development or review of performance standards if the recommended performance standards are not incorporated into permits. The FWC would appreciate the ability to provide additional comments on performance standards or performance standard revisions if such information is not available at this time and becomes available in the future.

XV. Adaptive Management

For purposes of these FWC Recommendations, Adaptive Management is defined as a flexible decision-making process employed to address unanticipated events that affect the ability to achieve specified objectives.

In keeping with this definition, Adaptive Management Measures for coral and octocoral mitigation relocation activities are actions that are employed to address unanticipated events (e.g., predation on relocated corals by parrotfish, vessel anchor damage on a relocation site), that may affect the ability to achieve established mitigation performance standards.

Attention Permit Processors

11. The FWC does not recommend specific permit condition language with regards to Adaptive Management, but recommends that a condition is included in the permit that would provide for Adaptive Management Measures to be developed and agreed upon in coordination with the Permittee and permitting/consulting agencies to address unanticipated events that may affect the ability for the Permittee to achieve established mitigation performance standards. This permit condition should also provide advanced authorization to quickly execute agreed upon Adaptive Management Measures without the need to amend permits.

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FWC Special Activity License
Coral Visual Health Assessment Protocols
for Release Activities

For purposes of these Florida Fish and Wildlife Conservation Commission (FWC), Special Activity License (SAL) Coral Visual Health Assessment Protocols for Release Activities (Protocols), the term "release" is defined as the introduction, outplanting, placement, reintroduction, relocation, stocking, transfer, translocation, or transplantation of any coral into or within any in-water location.

All coral release activities require a health assessment. When a coral visual health assessment (VHA) is required, authorized personnel must conduct coral visual health assessments (VHA) pursuant to the criteria established in these Protocols.

The VHA must be conducted for each coral pursuant to the criteria in these Protocols to ensure that all corals appear to be in good health, are free from suspected disease and conditions that may impact the health of other corals, and that the presence of predators/competitors/overgrowth has been minimized. The VHA must be conducted immediately prior to harvest from any location (including in-water and land-based nurseries), and will need to be conducted again before the release activity is completed if an in-water or land-based temporary holding location is utilized to facilitate release activities (i.e., immediately prior to harvest from the original location, and again immediately prior to harvest from a temporary holding location if one was utilized to facilitate release activities).

Corals that do not meet the VHA criteria cannot be harvested to conduct a release activity or released. If any part of a coral does not meet all the VHA criteria, no part of the coral may be harvested or released even if the affected areas of the coral are removed so that the remaining part of the coral does meet the VHA criteria.

Corals that are located in any temporary holding location and do not pass the VHA criteria must be removed and appropriately disposed of on land.

Field personnel conducting VHAs should be proficient with species identification, and trained in survey techniques, coral condition assessment, coral disease, and predator/competitor/overgrowth identification and removal, to assure accuracy of the assessment.

Detached Corals

Visually assessing coral health becomes increasingly subjective when a coral is detached from a source coral, substrate, or structure, and is found lying on the sea floor (e.g., coral of opportunity, coral nursery orphans). If there is any doubt that observed abnormalities or conditions may be attributed to active or suspect disease rather than from lying on the sea floor, do not harvest or release the detached coral to any other in-water location for any reason.

Visual Health Assessment (VHA) Criteria

Each coral must be evaluated and meet the following visual health assessment criteria prior to harvest or release:

(1) Each coral harvested or released may not show any visible signs of active or suspect disease based on the presence of:

(a) Stress indicators such as: bleaching, partial bleaching, paling, tissue sloughing (caused by sedimentation), swelling or thinning, and excessive mucous production – see following exceptions and notes.

FWC Special Activity License
Coral Visual Health Assessment Protocols
for Release Activities

1. **Exception**: Exception to these "stress indicators" criterion is automatically provided for the harvest and release of detached corals lying on the sea floor unless observed abnormalities or conditions may be attributed to active or suspect disease.

2. **Exception**: Exception to these "stress indicators" criterion is automatically provided for urban corals that are being harvested and released from interior waterways (typically for mitigation relocation activities), unless observed abnormalities or conditions may be attributed to active or suspect disease.

3. **Note**: Harvest and release of urban corals from interior waterways with tissue appearing pale to partially bleached (< 100% of coral tissue) is acceptable as color loss is recognized as a part of coral species' normal state when growing in interior waterways.

4. **Note**: Harvest and release of *Siderastrea* spp. from interior waterways with tissue appearing pink or purple is acceptable as such pigmentation is associated with non-pathogenic bacterial/microbial communities.

(b) Recent mortality greater than 5% tissue loss exposing underlying skeleton not due to predation/competition/overgrowth, and recent mortality greater than 10% tissue loss exposing underlying skeleton due to predation/competition/overgrowth.

1. **Exception**: Old mortality is acceptable for corals that will be harvested and released.

(c) Active disease such as: rapid tissue loss, tissue sloughing (not caused by sedimentation), stony coral tissue loss disease (SCTLD), white/black/yellow/red band diseases, white pox or plague diseases, white Beggiatoa mats, dark (purple) spot/blotch diseases, and growth anomalies.

(d) Suspect disease indicators such as bands, spots, lesions, and microbial mat colonization.

(2) Predators such as fireworms (*Hermodice carunculata*) or snails (e.g., *Coralliophila* spp.) must be removed (e.g., peeled off) prior to release.

(a) **Exception**: Corals with pale spots or lesions associated with farming damselfish may be harvested and released.

(3) Competitors and overgrowth (e.g., sponges, tunicates, ascidians, octocorals, zoanthids, corallimorphs, macroalgae, cyanobacteria) on any substrate around the base of the coral and on old mortality must be removed (e.g., peeled, scrubbed using wire or plastic brushes, tweezed) as much as possible prior to harvest and release. Corals that have non-native, encrusting and/or overgrowing species on them (e.g., Genus *Symplegma*, Genus *Botryllus*) that cannot be removed may not be harvested or released.

(a) **Exception**: Corals containing boring sponges of the Genus *Cliona* (e.g., *Cliona deletrix*) are generally discouraged for harvest and release.

(b) **Exception**: Corals with established algal lawns created by farming damselfishes may be harvested and released, provided algal lawns do not cover more than 10% of the surface of the colony.

(c) **Exception**: Corals containing stramenopile protists that are often confused with competition and overgrowth and appear as white aggregate coatings on the coral surface or embedded in the mucus layer, may be harvested and released.

FWC Special Activity License
Octocoral Visual Health Assessment Protocols
for Release Activities

For purposes of these Florida Fish and Wildlife Conservation Commission (FWC), Special Activity License (SAL) Octocoral Visual Health Assessment Protocols for Release Activities (Protocols), the term "release" is defined as the introduction, outplanting, placement, reintroduction, relocation, stocking, transfer, translocation, or transplantation of any octocoral into or within any in-water location.

All octocoral release activities require a health assessment. When an octocoral visual health assessment (VHA) is required, authorized personnel must conduct octocoral visual health assessments (VHA) pursuant to the criteria established in these Protocols.

The VHA must be conducted for each octocoral pursuant to the criteria in these Protocols to ensure that all octocorals appear to be in good health, are free from suspected disease and conditions that may impact the health of other octocorals, and that the presence of predators/competitors/overgrowth has been minimized. The VHA must be conducted immediately prior to harvest from any location (including nurseries), and may need to be conducted again before the release activity is completed (i.e., immediately prior to harvest from the original location, and again immediately prior to harvest from a temporary holding location if one was established to facilitate release activities).

Octocorals that do not meet the VHA criteria cannot be harvested to conduct a release activity or released. If any part of an octocoral does not meet all the VHA criteria, no part of the octocoral may be harvested or released even if the affected areas of the octocoral are removed so that the remaining part of the octocoral does meet the VHA criteria.

Octocorals that are located in any temporary holding location and do not pass the VHA criteria must be removed and appropriately disposed of on land.

Field personnel conducting VHAs should be proficient with species identification, and trained in survey techniques, octocoral condition assessment, octocoral disease, and predator/competitor/overgrowth identification and removal, to assure accuracy of the assessment.

Detached Octocorals

Visually assessing octocoral health becomes increasingly subjective when an octocoral is detached from a source octocoral, substrate, or structure, and is found lying on the sea floor (e.g., octocoral of opportunity, octocoral nursery orphans). If there is any doubt that observed abnormalities or conditions may be attributed to active or suspect disease rather than from lying on the sea floor, do not harvest/release the detached octocoral to any other in-water location for any reason.

Visual Health Assessment (VHA) Criteria

Each octocoral must be evaluated and meet the following visual health assessment criteria prior to harvest/release:

1) Rod, plume, and sea fan colonies must have at least 10 cm (approx. 4") of linear growth (height).

2) Each octocoral colony targeted for relocation may not show any visible signs of disease based on the presence of:

    a. Stress indicators such as: bleaching, partial bleaching, tissue sloughing or swelling, excessive mucous production.

FWC Special Activity License
Octocoral Visual Health Assessment Protocols
for Release Activities

- **Exception**: Exception to this criterion is automatically provided for octocorals that are being removed and relocated from interior waterways.

  ***Note**: Octocorals rarely bleach and generally tend to exhibit partial bleaching at their branch tips closest to the water's surface.

b. Recent mortality greater than 10% of tissue loss exposing axis.

   ***Note**: "Old mortality" is not readily determinable from "recent mortality" in octocorals.

c. Active disease such as: purple spot, aspergillosis, red band disease, black wasting disease, growth anomalies (severely altered morphology of tissues and skeleton).

d. Suspect disease indicators such as: bands, spots or rings (identified by severe dark purpling (25% or greater) or blackening of tissues), microbial mats, and cyanobacteria colonization.

3) Predators such as *Cyphoma gibbosum* or *Hermodice carunculata* in feeding position along tissue loss margin must be removed (e.g., peeled off) prior to relocation.

- **Exception**: Colonies of *Gorgonia ventalina* with active predation of the nudibranch *Tritonia hamnerorum* cannot be relocated.

FWC Special Activity License
Definitions of Coral and Octocoral Terminology

"Acclimation" is the process by which corals or octocorals are introduced to environmental conditions they will encounter at another location before they are released, with the intention of promoting physiological changes to minimize the effects of stressors and increase survival.

"Axis" is the central supporting skeletal structure of an octocoral made of proteinaceous gorgonin or calcium carbonate that is commonly dark brown to black in color.

"Bleaching" is the loss of color within coral or octocoral tissue due to the loss or reduction in number of endosymbiotic algae (i.e., zooxanthellae (Genus *Symbiodinium*)). During bleaching, tissue is present but is pale to clear in color, and the white skeleton is visible underneath. A coral or octocoral may be "bleached" (where 100% of tissue is affected by loss of zooxanthellae), "partially bleached" (where < 100% of tissue is affected by loss of zooxanthellae, and a portion of the tissue remains a healthy color), or "pale" (where tissues have not completely lost all zooxanthellae and appear lighter in color especially compared to other corals of the same species).

"Cache" is an in-water temporary holding location to facilitate outplanting, relocation and transfer activities.

"Coral" is an organism of any life stage or any part thereof, that meets a regulatory definition of "coral" for the Florida Fish and Wildlife Conservation Commission, the Florida Department of Environmental Protection, National Marine Fisheries Service (NOAA Fisheries) as it pertains to the Southeast Region, the Florida Keys National Marine Sanctuary, or the National Park Service as it pertains to National Park areas within Florida.

"Coral of Opportunity" or "COO" is a coral or octocoral that has been detached from a parent colony or substrate through natural processes or unknown events; or that is available for salvage from artificial structures (excluding artificial reefs), coastal construction project areas or damaged resource areas.

"Fragmentation" is the process of a coral or an octocoral being divided into parts, with or without human assistance (includes fragmenting, fragging and micro-fragging).

"Holdfast" is the base of an octocoral that attaches the colony to the substrate.

"Holding" is the authorized possession and maintenance of corals and octocorals in a captive situation for any period of time.

"Interior waterway" is an aquatic area that has experienced physical restructuring of the shoreline (e.g., inner port harbors, marinas, seawalls), or a naturally occurring area of low flushing (e.g., shallow bays).

"Introduction" is the intentional or unintentional release of a coral or an octocoral into an area and/or habitat in which it is not known to have naturally existed.

"Mitigation" is an action that is taken to avoid, minimize or offset potential negative effects from an activity.

"Nursery" is a land or water-based central location where authorized coral or octocoral holding, propagation, grow out (rearing), acclimation, staging, or restoration research activities occur.

FWC Special Activity License
Definitions of Coral and Octocoral Terminology

"Old mortality" is the non-living portion of exposed coral skeleton that has been overgrown by algae and other biofouling organisms, and where the corallite structure has eroded over time and may not be identifiable to the species level.

"Octocoral" are anthozoan cnidarians (any part of the species of the Subclass Octocorallia), with polyps bearing eight pinnate tentacles and eight complete septa, excluding encrusting octocorals (e.g., *Erythropodium caribaeorum*, *Briareum asbestinum*).

"Outplanting" is removing a coral or an octocoral from an authorized land-based temporary holding location or in-water or land-based coral nursery, and placing such coral or octocoral into any in-water location outside of an authorized land-based temporary holding location or in-water or land-based coral or octocoral nursery.

"Plume" is the thin pinnate (feather-like) branches and thin tissue branchlets that extend from all sides of the main branches of an octocoral.

"Recent mortality" is the non-living portion of recently exposed coral skeleton (i.e., skeleton is white and corallite structures are intact and identifiable), including the development of fine "fuzz" or limited turf algae on exposed skeleton (i.e., skeleton is yellowish in appearance and corallite structure may be slightly eroded but still identifiable to species level), indicating that the mortality occurred within a couple of days to weeks prior to observation.

"Reintroduction" is the intentional release of a coral or octocoral into an area in which it is currently extirpated.

"Release" is the introduction, outplanting, placement, reintroduction, relocation, stocking, transfer, translocation, or transplantation of any coral or octocoral into or within any in-water location.

"Relocation" is any movement of a coral or an octocoral during any life stage from any in-water location to another in-water location, without utilizing a land-based temporary holding location. Relocation includes translocation and transplantation, but excludes outplanting and transfer. Relocation occurs between a "removal site" (the in-water site where a coral or octocoral was harvested from), and a "relocation site" (the in-water location to which the coral or octocoral is physically moved to), and may potentially include an in-water cache site (an in-water location where corals or octocorals are temporarily held after removal to facilitate relocation-associated activities).

"Staging" is the holding of corals or octocorals to facilitate acclimation, donation, outplanting or transfer activities.

"Rod" is a thickly branched upright form of octocoral, typically with secondary branches and thick tissues.

"Temporary Holding Location" is a location where corals or octocorals are held for a specified period of time to facilitate authorized activities.

"Transfer" is the physical conveyance of coral or octocoral between an authorized land-based temporary holding location or nursery and an authorized coral nursery, or between eligible entities.

FWC Special Activity License
Definitions of Coral and Octocoral Terminology

“Seafan” is an octocoral that is flat and fan-shaped with interconnected net-like branching with thin tissues.

“Translocation” is the in-water movement of a coral or an octocoral from an area of suitable habitat to another area of suitable habitat, with or without consideration of historic distribution.

“Transplantation” is the in-water movement of coral or octocoral from one place to another.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

The following are coral mitigation relocation monitoring and reporting requirements and directions for filling out six (6) associated monitoring data sheets. Additional monitoring events and additional data collection may be conducted as needed by the license holder to address individual project documentation needs.

A representative subset of relocated corals must be identified and monitored for each relocation site, and this same subset must be used for all required monitoring events. The monitoring subset(s) must be comprised of 25% (or 1,000 corals maximum) of the total number of corals relocated for the project as a whole. This subset must also be representative of the species composition and size classes of the total relocated corals, with no less than 10 corals of each species monitored. If less than 10 corals are relocated from a species, all relocated corals of that species must be included in the monitoring subset.

Baseline data collection must occur prior to and at the time of coral removal and relocation, and subsequent monitoring events must be conducted at one week, one month, three months, six months, and one year post relocation for each site. Baseline data collected at the time of relocation and data collected during each subsequent monitoring event must be recorded in the six (6) Excel data sheets provided with no modifications made to the data sheets except data sheets may be renamed to reflect the relocation site identifier (e.g., RS1), but the data sheet number must remain in the data sheet new name (e.g., 1. RS1 Summary, 2. RS1 Non-ESA, 3. RS1 Non-ESA Diseased 4. RS1 ESA Sites, 5. RS1 ESA, 6. RS1 ESA Diseased). These data sheets must be submitted for Reporting Requirements in Excel format (not converted to pdf or any other format), according to the following schedule:

- At relocation (baseline) + one-week monitoring event: Submit location map(s), representative photograph(s), and all applicable data sheets with applicable data recorded, prior to initiating the one-month monitoring event or within 21 days post one-week event, whichever occurs first.
- One-month monitoring event through one-year monitoring events: Submit representative photograph(s) and all applicable data sheets with applicable data recorded, within 30 days post-event.

Prior to Relocation:

- Review all permits issued by all agencies (and the Biological Opinion if applicable), and determine which format(s) the removal, temporary holding, and relocation site coordinates need to be provided in for all reporting requirements. For ESA-listed species, the Biological Opinion will typically require single-point coordinates.
- Review the "1. Non-ESA Coral Summary" and "4. ESA Site Descriptions" data sheets and "Guideline A" on page 20 to be familiar with the format options for how to record site coordinates in both of these data sheets. Please note that the site coordinates may need to be recorded in more than one format to meet multiple agency permit-required reporting requirements.

At Time of Relocation:

- Take site coordinates as determined prior to relocation to meet all permit-required reporting requirements. This information will be transferred to "1. Non-ESA Coral Summary" and "4. ESA Site Descriptions" data sheets.
- Individually tag or location mark/tag and map the set or subset of relocated corals to be monitored (including assignment of an identification number or alphanumeric character for each coral), so that they can be tracked individually over time for monitoring events. Location marking and tagging for mapping purposes must include a sufficient number of markers/tags to be able to identify the locations of each relocated coral (e.g., corner point markers, central marker, tagging

each row). Maps that are developed for monitoring purposes must be submitted to meet Reporting Requirements.

- Take a representative photograph (or more than one photograph if necessary) of the set or subset of relocated corals to be monitored, from directly above, which includes a scale bar. These representative photographs must be submitted to meet Reporting Requirements.
- Document any corals that were identified as viable candidates for relocation but were not relocated because they failed the visual health assessment. This information will be recorded in the "3. Non-ESA Diseased Colony Info" and "6. ESA Diseased Colony Info" data sheets.

During All Monitoring Events

- The same set or subset of corals that were tagged and photographed must be used for all of the monitoring events.
- All loose or detached colonies (whether in monitoring subset or not) must be reaffixed to their structure or substrate. If a colony is within the monitoring subset, document the attachment status in data sheets appropriately.
- Take a representative photograph (or more than one photograph if necessary) of the set or subset of relocated corals that are being monitored, from directly above, which includes a scale bar. Representative photographs that are taken for monitoring purposes must be submitted to meet Reporting Requirements.

Recording Data

Each cell in all data sheets must have information recorded in it, **OR A VALUE OF ZERO**. Do not include any symbols (e.g., %), or measurements (e.g., m, cm, ft, kts), unless specified in directions (e.g., 0-20, <1, 5+).

List of Data Sheets

***Note – a separate set of all applicable data sheets should be filled out for each relocation site (data sheets 1. - 3. for non-ESA listed corals, and 4. - 6. for ESA-listed corals, for each relocation site).**

- **1. Non-ESA Relocations Summary** – this data sheet is for summarizing the monitoring information for all non-ESA listed coral species from data sheet 2., providing information on the removal, temporary holding, and relocation sites, and for baseline and each monitoring event.
- **2. Non-ESA RelocatedColony Info** – this data sheet is where baseline data and data from all of the subsequent monitoring events is recorded for relocated non-ESA listed coral species.
- **3. Non-ESA Diseased Colony Info** - this data sheet is for providing information on non-ESA listed corals that did not pass the visual health assessment at the removal or temporary holding sites and were not relocated, or became detached at the relocation site and were not reattached because they did not pass the visual health assessment.
- **4. ESA Site Descriptions** – this data sheet is for providing the information on the removal, temporary holding, and relocation sites for ESA-listed species only. Since ESA-listed species are evaluated individually, summarized monitoring information is not necessary for these species.
- **5. ESA Relocated Colony Info** - this data sheet is where baseline data and data from all of the subsequent monitoring events is recorded for relocated ESA listed coral species.
- **6. ESA Diseased Colony Info** – this data sheet is for providing information on ESA-listed corals that did not pass the visual health assessment at the removal or temporary holding sites and were not relocated, or became detached at the relocation site and were not reattached because they did not pass the visual health assessment.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

1. Non-ESA Listed Coral Summary Data Sheet Directions

***Reminder – a separate set of all applicable data sheets should be filled out for each relocation site (data sheets 1-3 for non-ESA listed corals and 4 – 6 for ESA-listed corals).**

In the "1. Non-ESA Relocations Summary" data sheet, record the following information for non-ESA listed coral species PER SPECIES GROUP (not individual colonies), PER RELOCATION SITE:

- Row 2: Provide the project name, FWC license number, person the license is issued to, and affiliation.

A. Provide the Relocation Site Identifier (e.g., name, #, character) as identified in Column BD.
B. Coral Species Name – record each relocated species type by relocation site on a separate row.
C. Total Number of Colonies Relocated – record the total number of colonies for each species type that was relocated by relocation site on a separate row.
D. Total Number of Colonies to be Monitored – record either the total number of individual colonies for each species that will be monitored by relocation site, or the total number of individual colonies for each species that will comprise the "Subset" of colonies to be monitored, by relocation site.
E. Date Relocation Started – this is the date that relocation activities began.
F. Time Remained in Temporary Holding Site – provide the length of time (in # of days) that the corals were held in a temporary holding site before relocation was completed. Record a value of zero if not applicable.
G. Date Relocation Completed – this is the date that relocation activities were completed.
H. At Relocation Baseline (Pooled Coral Live Tissue Area Index) – "sum" the Live Tissue Area Indices auto-calculated for all coral colonies by species type (using column "N" in the "2. Non-ESA RelocatedColony Info" data sheet). The sum can be calculated by using the sum function in Excel using the data range in column R for each pooled species for each relocation site as identified in Column B. The sum function is (=sum(Rstart:R#end)) where the range of data to sum is in column R starting with first row of a relocated colony and ending with the last row of a relocated colony for a pooled species. The species should be sorted to facilitate this. For example, if data for one species are located in rows 6-20 and data for another species are in rows 21-35, the formula would be "=sum(R6:R20)" for the first species and "=sum(R21:R35)" for the second species.
I. 6 Month Monitoring (Pooled Coral Live Tissue Area Index) – "sum" the Live Tissue Area Indices auto-calculated for each coral colony by species type (column "BC" in the "2. Non-ESA RelocatedColony Info" data sheet). The sum can be calculated by using the sum function (=sum(BC#start:BC#end)) in Excel – record the summed amount for each species type identified in Column B. for each relocation site.
J. 1 Year Monitoring (Pooled Coral Live Tissue Area Index) – "sum" the Live Tissue Area Indices auto-calculated for each coral colony by species (column "BR" in the "2. Non-ESA RelocatedColony Info" data sheet). The sum can be calculated by using the sum function (=sum(BR#start:BR#end)) in Excel – record the summed amount for each species type identified in Column B. for each relocation site.
K. 2 Year Monitoring (Pooled Coral Live Tissue Area Index) – "sum" the Live Tissue Area Indices auto-calculated for each coral colony by species (column "CG" in the "2. Non-ESA RelocatedColony Info" data sheet). The sum can be calculated by using the sum function (=sum(CG#start:CG#end)) in Excel – record the summed amount for each species type identified in Column B. for each relocation site.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

L. Change in pooled Live Tissue Area Index – this will auto-populate once Columns H, I, J and K are filled in to provide any changes in the pooled live tissue area index by each species and site.

M. Overall 6 Mo. Survival (%) – the formula provided in Column M can be used to calculate overall survival after pooling each species in data sheet "2. Non-ESA RelocatedColony Info", and using the "countif" function to count the number of corals of the same species with a Coral Tissue Condition % Live greater than zero in column BA. Counts can be calculated by using the countif function in Excel using the data range in column BA for each pooled species for each relocation site. The countif function is (=countif(BA#start:BA#end, ">0")) where the range of data to count is in Column BA starting with first row of a relocated colony and ending with the last row of a relocated colony for a pooled species. The species should be sorted to facilitate this. For example, if data for one species are located in rows 6-20 and data for another species are in rows 21-35, the formula would be "=countif(BA6:BA20, ">0")" for the first species and "=countif(BA21:BA35, ">0")" for the second species. Next, in data sheet "1. Non-ESA Relocations Summary", replace the "countif" portion of the formula (e.g.; (countif(BA#start:BA#end, ">0")) in Column M with the number of corals with a Coral Tissue Condition % Live greater than zero calculated in datasheet "2. Non-ESA RelocatedColony Info" to calculate the overall survival. The number will then auto-populate.

N. The sum can be calculated by using the sum function in Excel using the data range in column R for each pooled species for each relocation site as identified in Column B. The sum function is (=sum(Rstart:R#end)) where the range of data to sum is in column R starting with first row of a relocated colony and ending with the last row of a relocated colony for a pooled species. The species should be sorted to facilitate this. For example, if data for one species are located in rows 6-20 and data for another species are in rows 21-35, the formula would be "=sum(R6:R20)" for the first species and "=sum(R21:R35)" for the second species.

O. Overall 1 Year Survival (%) – the formula provided in Column N can be used to calculate overall survival after pooling each species in data sheet "2. Non-ESA RelocatedColony Info" and using the "countif" function (=countif(BP#start:BP#end)) to count the number of corals with a Coral Tissue Condition % Live greater than zero in column BP. In data sheet "1. Non-ESA Relocations Summary", replace the "countif" portion of the formula in Column N with the number of corals with a Coral Tissue Condition % Live greater than zero to calculate the overall survival. The number will then auto-populate.

P. Overall 2 Year Survival (%) – the formula provided in Column O can be used to calculate overall survival after pooling each species in data sheet "2. Non-ESA RelocatedColony Info" and using the "countif" function (=countif(CE#start:CE#end)) to count the number of corals with a Coral Tissue Condition % Live greater than zero in column CE. In data sheet "1. Non-ESA Relocations Summary", replace the "countif" portion of the formula in Column O with the number of corals with a Coral Tissue Condition % Live greater than zero to calculate the overall survival. The number will then auto-populate.

Q. Notes – document any additional information deemed relevant by the license holder.

R. Removal Site Location Description – provide a brief description of where the removal site is located.

S. Removal Site Identifier – assign and provide a unique operational name/number/alphanumeric character for the removal site.

T. Removal Site Depth – provide the depth (in feet) of the removal site.

- Columns T. through AJ. – Refer to "Guideline A" on page 20 for directions on how to provide coordinates for the removal site. Provide all formats required by all permits for reporting requirements.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

★ The following columns AK. through BD. apply to temporary holding sites (e.g., cache, staging, acclimation). Only provide data for these columns if corals will not be directly relocated and a temporary holding site will be used. Record a value of zero if not applicable.

AK. Temporary Holding Site Location Description – provide a brief description of where the temporary holding site is located. If the temporary holding site is land-based, information for this column should include name of facility operator, affiliation, and address.

AL. Temporary Holding Site Identifier – assign and provide a unique operational name/number/alphanumeric character for the temporary holding site.

AM. Temporary Holding Site Depth – provide the depth (in feet) of the temporary holding site (record a value of zero for land-based site).

- Columns AN. through BD. – Refer to "Guideline A" on page 20 for directions on how to provide coordinates for the temporary holding site. Provide all formats required by all permits for reporting requirements. Record a value of zero for land-based temporary holding sites.

BE. Relocation Site Location Description – provide a brief description of where the relocation site is located.

BF. Relocation Site Identifier – assign and provide a unique operational name/number/alphanumeric character for the relocation site.

BG. Relocation Site Depth – provide the depth (in feet) of the relocation site.

- Columns BH. through BX. – Refer to "Guideline A" on page 20 for directions on how to provide coordinates for the relocation site. Provide all formats required by all permits for reporting requirements.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

2. Non-ESA Listed Relocated Coral Colony Information Data Sheet Directions

***Reminder – a separate set of all applicable data sheets should be filled out for each relocation site (data sheets 1-3 for non-ESA listed corals and 4 – 6 for ESA-listed corals).**

In the "2. Non-ESA RelocatedColony Info" data sheet, record the following information PER INDIVIDUAL COLONY for all relocated colonies that are being monitored:

At Relocation:

- Row 2: Provide the project name, FWC license number, person the license is issued to, and affiliation.

A. Event Date – provide the date that the colony was removed.
B. Removal Site Identifier – provide the unique operational name/number/alphanumeric character assigned to the removal site, as identified in the "1. Non-ESA Relocations Summary" data sheet.
C. Temporary Holding Site Identifier - provide the unique operational name/number assigned to the temporary holding site, as identified in the "1. Non-ESA Relocations Summary" data sheet.
D. Relocation Site Identifier – provide the unique operational name/number assigned to the relocation site, as identified in the "1. Non-ESA Relocations Summary" data sheet.
E. Coral Species Name – record each relocated coral by the species full taxonomic name (no abbreviations) on a separate row. Group same species together to facilitate determining "Coral Live Tissue Area Index" and "Overall Survival" metrics in the 1. Non-ESA Coral Summary data sheet (e.g., all MCAVs grouped in lines 6 - 30; all PSTRs grouped in lines 31-45, etc.)
F. Colony Identifier – record the unique tag or map number/alphanumeric character assigned to each coral being monitored.
G. Coral Relocation Condition – record if the colony was removed and relocated as an (I) = Intact Colony; or as a (RC) = Reconstructed Colony (i.e., colony that fragmented upon removal and was reconstructed on reattachment.)
H. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed during all monitoring events. Detached colonies must be visually reassessed for health and if they meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in the "3. Non-ESA Diseased Colony Info" data sheet.
I. Coral Max Width – the maximum coral width is measured as the outward-facing surface of the colony (perpendicular to the axis of growth). This measurement includes both living tissue and dead areas of the colony.
J. Coral Max Height – the maximum coral height is measured parallel to the axis of growth, perpendicular to growth bands, as viewed from the side of the colony.
K. Coral Skeletal Area – this will auto-populate, and is equal to the average of the two largest dimensions (maximum width and maximum height), squared. To apply this formula to all of the data in this column, you have two options: 1) drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded; or 2) copy and paste the formula for each colony's data recorded.
L. Coral Tissue Condition – % Live – Includes all live tissue, including any bleached tissue (pale or clear living tissue that has lost zooxanthellae), estimated as a percentage of the entire coral

skeleton. Assign a tissue condition percentage for live tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

M. Coral Tissue Condition – % Dead – Includes both recent and old dead tissue; defined as either 1) bright white dead areas where corallite structure is still identifiable, estimated as a percentage of the entire coral skeleton. May be covered by sediment or thin layer of algae; or 2) dead areas that are not bright white and may be overgrown with algae or other encrusting organisms, estimated as a percentage of the entire coral skeleton. Assign a tissue condition percentage for dead tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

N. Coral Live Tissue Area Index (or estimate) – this will auto-populate, and is equal to the Skeletal Area times the % live tissue value. Please copy and paste the formula for each colony's data recorded, or drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded.

O. Comments/Observations – Document any localized event (not specific to relocated corals) that may have negative impacts on the relocation site (e.g., severe weather event, grounding, sedimentation, disease, regional bleaching, predation, competition), and document any other information deemed relevant by the data collector.

P. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

Q. % Cloud Cover – record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

R. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

S. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

<u>One Week After Relocation:</u>

T. Event Date – provide the date that the colony was monitored.

U. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

V. % Cloud Cover – record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

W. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

X. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

Y. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed during all monitoring events. Detached colonies must be visually reassessed for health and if they

meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in data sheet 5. Diseased Coral Colony Info.

<u>At One Month After Relocation:</u>

Z. Event date – provide the date that the colony was monitored.

AA. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

AB. % Cloud Cover - record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

AC. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

AD. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

AE. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed

during all monitoring events. Detached colonies must be visually reassessed for health and if they meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in the "3. Non-ESA Diseased Colony Info" data sheet.

AF. Sediment Indicators – Record any indicators of sedimentation as follows:

- (SD) = Sediment Dusting - A fine powdering of sediment observable on the surface of the colony or individual. May occur in patches or over the entire organism. Powdering does not obscure features of the colony or individual (i.e., polyps are still observable).
- (SA) = Sediment Accumulation - Patches (areas) of sediment thicker than dusting are observable on the top or sides of the organism. Features of the colony or individual (i.e., polyps) are likely obscured by sediment patches.
- (PB) = Partial Burial - Portions of the organism are covered by sediment, including at least some portion of the base (point of attachment). Features of colonies and individuals are obscured.
- (BB) = Burial of the Base - Sediment covers the entire point of attachment / base of the organism.
- (CB) = Complete Burial - Entire organism is covered by sediment.
- (SH) = Sediment Halo - A pattern of partial colony mortality in which a concentric ring of dead coral skeleton occurs at the base of the coral colony, as results from prior burial of the colony edges. Sedimentation does not have to be present or observed for this indicator to be discernible.

AG. Presence of Other Conditions – record the following observed conditions: bleaching, disease, predation (active or inactive), *Cliona*.

AH. Comments/Observations – Document any localized event (not specific to relocated corals) that may have negative impacts on the relocation site (e.g., weather event, grounding, sedimentation, disease, regional bleaching, predation, competition), and document any other information deemed relevant by the data collector.

<u>At Three Months After Relocation</u>

Repeat columns Z. through AH. for columns AI. through AQ.

<u>At Six Months After Relocation:</u>

AR. Event date – provide the date that the colony was monitored.

AS. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

AT. % Cloud Cover - record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

AU. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

AV. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

AW. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed during all monitoring events. Detached colonies must be visually reassessed for health and if they meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in the "3. Non-ESA Diseased Colony Info" data sheet.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

AX. Coral Max Width – the maximum coral width is measured as the outward-facing surface of the colony (perpendicular to the axis of growth). This measurement includes both living tissue and dead areas of the colony.

AY. Coral Max Height – the maximum coral height is measured parallel to the axis of growth, perpendicular to growth bands, as viewed from the side of the colony.

AZ. Coral Skeletal area – this will auto-populate, and is equal to the average of the two largest dimensions (maximum width and maximum height), squared. Please copy and paste the formula for each colony's data recorded, or drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded.

BA. Coral Tissue Condition – % Live – Includes all live tissue, including bleached tissue, estimated as a percentage of the entire coral skeleton. Assign a tissue condition percentage for live tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

BB. Coral Tissue Condition – % Dead – Includes both recent and old dead tissue; defined as either 1) bright white dead areas where corallite structure is still identifiable, estimated as a percentage of the entire coral skeleton. May be covered by sediment or thin layer of algae, or 2) dead areas that are not bright white and may be overgrown with algae or other encrusting organisms, estimated as a percentage of the entire coral skeleton. Assign a tissue condition percentage for dead tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

BC. Coral Live Tissue Area Index (or estimate) – this will auto-populate, and is equal to the Skeletal Area times the % live tissue value. Please copy and paste the formula for each colony's data recorded, or drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded.

BD. Sediment Indicators – Record any indicators of sedimentation as follows:

- (SD) = Sediment Dusting - A fine powdering of sediment observable on the surface of the colony or individual. May occur in patches or over the entire organism. Powdering does not obscure features of the colony or individual (i.e., polyps are still observable).
- (SA) = Sediment Accumulation - Patches (areas) of sediment thicker than dusting are observable on the top or sides of the organism. Features of the colony or individual (i.e., polyps) are likely obscured by sediment patches.
- (PB) = Partial Burial - Portions of the organism are covered by sediment, including at least some portion of the base (point of attachment). Features of colonies and individuals are obscured.
- (BB) = Burial of the Base - Sediment covers the entire point of attachment / base of the organism.
- (CB) = Complete Burial - Entire organism is covered by sediment.
- (SH) = Sediment Halo - A pattern of partial colony mortality in which a concentric ring of dead coral skeleton occurs at the base of the coral colony, as results from prior burial of the colony edges. Sedimentation does not have to be present or observed for this indicator to be discernible.

BE. Presence of Other Conditions – record the following observed conditions: bleaching, disease, predation (active or inactive), *Cliona*.

BF. Comments/Observations – document any localized event (not specific to relocated corals) that may have negative impacts on the relocation site (e.g., weather event, grounding, sedimentation, disease, regional bleaching, predation, competition), and document any other information deemed relevant by the data collector.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

At One Year After Relocation
Repeat columns AR. through BF. for columns BG. through BU.

At Two Years After Relocation
Repeat columns AR. through BF. for columns BV. through CJ.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

3. Non-ESA Listed Diseased Coral Colony Information Data Sheet Directions

***Reminder – a separate set of all applicable data sheets should be filled out for each relocation site (data sheets 1-3 for non-ESA listed corals and 4 – 6 for ESA-listed corals).**

In the "3. Non-ESA Diseased Colony Info" data sheet, record the following information PER INDIVIDUAL COLONY of non- ESA listed coral species that were not relocated or reattached due to disqualifying conditions:

- Row 2: Provide the project name, FWC license number, person the license is issued to, and affiliation.

A. Event Date – provide the date that the colony was monitored.
B. Removal Site Identifier – provide the unique operational name/number/alphanumeric character assigned to the removal site, as identified in data sheet "1. Non-ESA Relocations Summary".
C. Temporary Holding Site Identifier (if applicable) – provide the unique operational name/number/ alphanumeric character assigned to the temporary holding site, as identified in data sheet "1. Non-ESA Relocations Summary".
D. Relocation Site Identifier – if the coral became detached at the Relocation Site, was not reattached and was disposed of on land or donated, provide the unique operational name/number/alphanumeric character assigned to the relocation site, as identified in data sheet "1. Non-ESA Relocations Summary".
E. Coral Species Name – record each diseased coral by the species full taxonomic name (no abbreviations) on a separate row.
F. Coral Max Width – the maximum coral width is measured as the outward-facing surface of the colony (perpendicular to the axis of growth). This measurement includes both living tissue and dead areas of the colony.
G. Coral Max Height – the maximum coral height is measured parallel to the axis of growth, perpendicular to growth bands, as viewed from the side of the colony.
H. Disposition – identify what happened to the coral as: DNR = Did not remove from original removal site; DIS = Removed from temporary holding or relocation site and disposed of on land; DON = Removed from any site and donated.
I. Colony Identifier – if the coral became detached at the Relocation Site, was not reattached and was disposed of or donated, provide the Colony Identifier.
J. Coral Disqualifier – identify what condition disqualified the coral colony from relocation or reattachment, using the key code provided. *Note - Stress indicators do not disqualify corals from being relocated from interior waterways unless 100% bleached. Predators must be removed prior to relocation and are also not a disqualifying condition.
K. Type of Coral Disqualifying Stress Indicator – if the coral was disqualified from relocation or reattachment due to a stress indicator, use the key code provided to identify the stress indicator that disqualified the coral. *Note - Stress indicators do not disqualify corals from being relocated from interior waterways unless 100% bleached.
L. Type of Recent Mortality: if the coral was disqualified from relocation or reattachment due to recent mortality, use the key code provided to identify the type/amount of recent mortality that disqualified the coral.
M. Type of Coral Disqualifying Active Disease or Suspect Disease Indicator – if the coral was disqualified from relocation or reattachment due to an active disease or suspect disease indicator, use the key code provided to identify the disease or disease indicator that disqualified the coral.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

N. Type of Coral Disqualifying Competition/Overgrowth Condition – if the coral was disqualified from relocation or reattachment due to competition or overgrowth, use the key code provided to identify the predation, competition or overgrowth condition that disqualified the coral. *Note - Predators must be removed prior to relocation and are not a disqualifying condition.
O. Comments/Observations - provide any comments or observation details for unknown diseases or conditions, name of entity that diseased corals were donated to (if donated), and any other information deemed relevant by the data collector.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

4. ESA-Listed Species Site Descriptions Data Sheet Directions

***Reminder – a separate set of all applicable data sheets should be filled out for each relocation site (data sheets 1-3 for non-ESA listed corals and 4 – 6 for ESA-listed corals).**

In the "4. ESA Site Descriptions" data sheet, record the following information PER INDIVIDUAL COLONY for all relocated colonies that are being monitored:

- Row 2: Provide the project name, FWC license number, person the license is issued to, and affiliation.

A. ESA-Listed Coral Species – record each relocated species type (not by individual coral) by relocation site on a separate row.
B. Removal Site Location Description – provide a brief description of where the removal site is located.
C. Removal Site Identifier – assign and provide a unique operational name/number/alphanumeric character for the removal site.
D. Removal Site Depth – provide the depth (in feet) of the removal site.

- Columns E. through U. – Refer to "Guideline A" on page 20 for directions on how to provide coordinates for the removal site. Provide all formats required by all permits for reporting requirements.

★ The following columns V. through AO. only apply to temporary holding sites (e.g., cache, staging, acclimation). Only provide data for these columns if ESA-listed corals will not be directly relocated, and a temporary holding site will be used. Provide a value of zero if not applicable.

V. Temporary Holding Site Location Description – provide a brief description of where the temporary holding site is located.
W. Temporary Holding Site Identifier – assign and provide a unique operational name/number/alphanumeric character for the temporary holding site.
X. Temporary Holding Site Depth – provide the depth (in feet) of the temporary holding site.

- Columns Y. through AO. – Refer to "Guideline A" on page 20 for directions on how to provide coordinates for the temporary holding site. Provide all formats required by all permits for reporting requirements.

AP. Relocation Site Location Description – provide a brief description of where the relocation site is located.
AQ. Relocation Site Identifier – assign and provide a unique operational name/number/alphanumeric character for the relocation site.
AR. Relocation Site Depth – provide the depth (in feet) of the relocation site.

- Columns AS. through BI. – Refer to "Guideline A" on page 20 for directions on how to provide coordinates for the relocation site. Provide all formats required by all permits for reporting requirements.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

5. ESA-Listed Relocated Coral Colony Information Data Sheet Directions

***Reminder – a separate set of all applicable data sheets should be filled out for each relocation site (data sheets 1-3 for non-ESA listed corals and 4 – 6 for ESA-listed corals).**

In the "5. ESA Relocated Colony Info" data sheet, record the following information PER INDIVIDUAL COLONY for all relocated colonies that are being monitored:

At Relocation:

- Row 2: Provide the project name, FWC license number, person the license is issued to, and affiliation.

AA. Event Date – provide the date that the colony was removed.

BB. Removal Site Identifier – provide the unique operational name/number/alphanumeric character assigned to the removal site, as identified in the "4. ESA Site Descriptions" data sheet.

CC. Temporary Holding Site Identifier - provide the unique operational name/number assigned to the temporary holding site, as identified in the "4. ESA Site Descriptions" data sheet.

DD. Relocation Site Identifier – provide the unique operational name/number assigned to the relocation site, as identified in the "4. ESA Site Descriptions" data sheet.

EE. Coral Species Name – record each relocated coral by the species full taxonomic name (no abbreviations) on a separate row. Group the same species together to facilitate determining the Coral Live Tissue Area Index (e.g., all ACERs grouped in lines 6 - 30; all OFAVs grouped in lines 31-45, etc.)

FF. Colony Identifier – record the unique tag or map number/alphanumeric character assigned to each coral being monitored.

GG. Coral Relocation Condition – record if the colony was removed and relocated as an (I) = Intact Colony; or as a (RC) = Reconstructed Colony (i.e., colony that fragmented upon removal and was reconstructed on reattachment.)

HH. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed during all monitoring events. Detached colonies must be visually reassessed for health and if they meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in the "6. ESA Diseased Colony Info" data sheet.

II. Coral Max Width – the maximum coral width is measured as the outward-facing surface of the colony (perpendicular to the axis of growth). This measurement includes both living tissue and dead areas of the colony.

JJ. Coral Max Height – the maximum coral height is measured parallel to the axis of growth, perpendicular to growth bands, as viewed from the side of the colony.

KK. Coral Skeletal Area – this will auto-populate, and is equal to the average of the two largest dimensions (maximum width and maximum height), squared. To apply this formula to all of the data in this column, you have two options: 1) drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded; or 2) copy and paste the formula for each colony's data recorded.

LL. Coral Tissue Condition – % Live – Includes all live tissue, including any bleached tissue (pale or clear living tissue that has lost zooxanthellae), estimated as a percentage of the entire coral

skeleton. Assign a tissue condition percentage for live tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

MM. Coral Tissue Condition – % Dead – Includes both recent and old dead tissue; defined as either 1) bright white dead areas where corallite structure is still identifiable, estimated as a percentage of the entire coral skeleton. May be covered by sediment or thin layer of algae; or 2) dead areas that are not bright white and may be overgrown with algae or other encrusting organisms, estimated as
a percentage of the entire coral skeleton. Assign a tissue condition percentage for dead tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

NN. Coral Live Tissue Area Index (or estimate) – this will auto-populate, and is equal to the Skeletal Area times the % live tissue value. Please copy and paste the formula for each colony's data recorded, or drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded.

OO. Comments/Observations – Document any localized event (not specific to relocated corals) that may have negative impacts on the relocation site (e.g., severe weather event, grounding, sedimentation, disease, regional bleaching, predation, competition), and document any other information deemed relevant by the data collector.

PP. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

QQ. % Cloud Cover – record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

RR. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

SS. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

<u>One Week After Relocation:</u>

TT. Event Date – provide the date that the colony was monitored.

UU. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

VV. % Cloud Cover – record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

WW. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

XX. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

YY. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed during all monitoring events. Detached colonies must be visually reassessed for health and if they meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in the "6. ESA Diseased Colony Info" data sheet.

<u>At One Month After Relocation:</u>

ZZ. Event date – provide the date that the colony was monitored.

AA. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

AB. % Cloud Cover - record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

AC. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

AD. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

AE. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed

during all monitoring events. Detached colonies must be visually reassessed for health and if they meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in the "6. ESA Diseased Colony Info" data sheet.

AF. Sediment Indicators – Record any indicators of sedimentation as follows:

- (SD) = Sediment Dusting - A fine powdering of sediment observable on the surface of the colony or individual. May occur in patches or over the entire organism. Powdering does not obscure features of the colony or individual (i.e., polyps are still observable).
- (SA) = Sediment Accumulation - Patches (areas) of sediment thicker than dusting are observable on the top or sides of the organism. Features of the colony or individual (i.e., polyps) are likely obscured by sediment patches.
- (PB) = Partial Burial - Portions of the organism are covered by sediment, including at least some portion of the base (point of attachment). Features of colonies and individuals are obscured.
- (BB) = Burial of the Base - Sediment covers the entire point of attachment / base of the organism.
- (CB) = Complete Burial - Entire organism is covered by sediment.
- (SH) = Sediment Halo - A pattern of partial colony mortality in which a concentric ring of dead coral skeleton occurs at the base of the coral colony, as results from prior burial of the colony edges. Sedimentation does not have to be present or observed for this indicator to be discernible.

AG. Presence of Other Conditions – record the following observed conditions: bleaching, disease, predation (active or inactive), *Cliona*.

AH. Comments/Observations – Document any localized event (not specific to relocated corals) that may have negative impacts on the relocation site (e.g., weather event, grounding, sedimentation, disease, regional bleaching, predation, competition), and document any other information deemed relevant by the data collector.

<u>At Three Months After Relocation</u>

Repeat columns Z. through AH. for columns AI. through AQ.

<u>At Six Months After Relocation:</u>

AR. Event date – provide the date that the colony was monitored.

AS. Visibility – this is measured either from the surface, or between two divers, using a secchi disk.

AT. % Cloud Cover - record the percentage of cloud cover as 0-20; 20-40; 40-60; 60-80; 80-100.

AU. Wave Height – record the wave height in feet as <1; 1-2; 2-3; 3-4; 4-5; 5+

AV. Wind Speed – record the wind speed in knots as 0-5; 5-10; 10-15; 15-20; 20-25

AW. Attachment – conduct a visual survey for attachment condition of relocated colonies, and record condition status as (F) = Firm; (LR) = Loose and Reaffixed; (DR) = Detached and Reaffixed; (DD) = Detached and Disposed of on land; (M) = Missing. All loose colonies must be reaffixed during all monitoring events. Detached colonies must be visually reassessed for health and if they meet all health criteria, reaffixed to their structure or substrate during all monitoring events. Detached corals that do not meet all visual health assessment criteria should be removed and disposed of on land, and such disposition must be recorded in the "6. ESA Diseased Colony Info" data sheet.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

AX. Coral Max Width – the maximum coral width is measured as the outward-facing surface of the colony (perpendicular to the axis of growth). This measurement includes both living tissue and dead areas of the colony.

AY. Coral Max Height – the maximum coral height is measured parallel to the axis of growth, perpendicular to growth bands, as viewed from the side of the colony.

AZ. Coral Skeletal area – this will auto-populate, and is equal to the average of the two largest dimensions (maximum width and maximum height), squared. Please copy and paste the formula for each colony's data recorded, or drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded.

BA. Coral Tissue Condition – % Live – Includes all live tissue, including bleached tissue, estimated as a percentage of the entire coral skeleton. Assign a tissue condition percentage for live tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

BB. Coral Tissue Condition – % Dead – Includes both recent and old dead tissue; defined as either 1) bright white dead areas where corallite structure is still identifiable, estimated as a percentage of the entire coral skeleton. May be covered by sediment or thin layer of algae, or 2) dead areas that are not bright white and may be overgrown with algae or other encrusting organisms, estimated as a percentage of the entire coral skeleton. Assign a tissue condition percentage for dead tissue, and record as a decimal, with two decimal places – e.g., 10% = .10

BC. Coral Live Tissue Area Index (or estimate) – this will auto-populate, and is equal to the Skeletal Area times the % live tissue value. Please copy and paste the formula for each colony's data recorded, or drag the formula down the column by clicking in the cell in row 6 with the value of "0", and dragging the green box in the lower right hand corner of the cell down to the last colony that has data recorded.

BD. Sediment Indicators – Record any indicators of sedimentation as follows:

- SD) = Sediment Dusting - A fine powdering of sediment observable on the surface of the colony or individual. May occur in patches or over the entire organism. Powdering does not obscure features of the colony or individual (i.e., polyps are still observable).
- (SA) = Sediment Accumulation - Patches (areas) of sediment thicker than dusting are observable on the top or sides of the organism. Features of the colony or individual (i.e., polyps) are likely obscured by sediment patches.
- (PB) = Partial Burial - Portions of the organism are covered by sediment, including at least some portion of the base (point of attachment). Features of colonies and individuals are obscured.
- (BB) = Burial of the Base - Sediment covers the entire point of attachment / base of the organism.
- (CB) = Complete Burial - Entire organism is covered by sediment.
- (SH) = Sediment Halo - A pattern of partial colony mortality in which a concentric ring of dead coral skeleton occurs at the base of the coral colony, as results from prior burial of the colony edges. Sedimentation does not have to be present or observed for this indicator to be discernible.

AG. Presence of Other Conditions – record the following observed conditions: bleaching, disease, predation (active or inactive), *Cliona*.

AH. Comments/Observations – Document any localized event (not specific to relocated corals) that may have negative impacts on the relocation site (e.g., weather event, grounding, sedimentation, disease, regional bleaching, predation, competition), and document any other information deemed relevant by the data collector.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

BE. Presence of Other Conditions – record the following observed conditions: bleaching, disease, predation (active or inactive), *Cliona*.

BF. Comments/Observations – document any localized event (not specific to relocated corals) that may have negative impacts on the relocation site (e.g., weather event, grounding, sedimentation, disease, regional bleaching, predation, competition), and document any other information deemed relevant by the data collector.

At One Year After Relocation

Repeat columns AR. through BF. for columns BG. through BU.

At Two Years After Relocation

Repeat columns AR. through BF. for columns BV. through CJ.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

6. ESA Listed Diseased Coral Colony Information Data Sheet Directions

***Reminder – a separate set of all applicable data sheets should be filled out for each relocation site (data sheets 1-3 for non-ESA listed corals and 4 – 6 for ESA-listed corals).**

In the "6. ESA Diseased Colony Info" data sheet, record the following information PER INDIVIDUAL COLONY of ESA listed coral species that were not relocated or reattached due to disqualifying conditions:

- Row 2: Provide the project name, FWC license number, person the license is issued to, and affiliation.

P. Event Date – provide the date that the colony was monitored.

Q. Removal Site Identifier – provide the unique operational name/number/alphanumeric character assigned to the removal site, as identified in data sheet "1. Non-ESA Relocations Summary".

R. Temporary Holding Site Identifier (if applicable) – provide the unique operational name/number/ alphanumeric character assigned to the temporary holding site, as identified in data sheet "1. Non-ESA Relocations Summary".

S. Relocation Site Identifier – if the coral became detached at the Relocation Site, was not reattached and was disposed of on land or donated, provide the unique operational name/number/alphanumeric character assigned to the relocation site, as identified in data sheet "1. Non-ESA Relocations Summary".

T. Coral Species Name – record each diseased coral by the species full taxonomic name (no abbreviations) on a separate row.

U. Coral Max Width – the maximum coral width is measured as the outward-facing surface of the colony (perpendicular to the axis of growth). This measurement includes both living tissue and dead areas of the colony.

V. Coral Max Height – the maximum coral height is measured parallel to the axis of growth, perpendicular to growth bands, as viewed from the side of the colony.

W. Disposition – identify what happened to the coral as: DNR = Did not remove from original removal site; DIS = Removed from temporary holding or relocation site and disposed of on land; DON = Removed from any site and donated.

X. Colony Identifier – if the coral became detached at the Relocation Site, was not reattached and was disposed of or donated, provide the Colony Identifier.

Y. Coral Disqualifier – identify what condition disqualified the coral colony from relocation or reattachment, using the key code provided. *Note - Stress indicators do not disqualify corals from being relocated from interior waterways unless 100% bleached. Predators must be removed prior to relocation and are also not a disqualifying condition.

Z. Type of Coral Disqualifying Stress Indicator – if the coral was disqualified from relocation or reattachment due to a stress indicator, use the key code provided to identify the stress indicator that disqualified the coral. *Note - Stress indicators do not disqualify corals from being relocated from interior waterways unless 100% bleached.

AA. Type of Recent Mortality: if the coral was disqualified from relocation or reattachment due to recent mortality, use the key code provided to identify the type/amount of recent mortality that disqualified the coral.

BB. Type of Coral Disqualifying Active Disease or Suspect Disease Indicator – if the coral was disqualified from relocation or reattachment due to an active disease or suspect disease indicator, use the key code provided to identify the disease or disease indicator that disqualified the coral.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

CC. Type of Coral Disqualifying Competition/Overgrowth Condition – if the coral was disqualified from relocation or reattachment due to competition or overgrowth, use the key code provided to identify the predation, competition or overgrowth condition that disqualified the coral. *Note - Predators must be removed prior to relocation and are not a disqualifying condition.

DD. Comments/Observations - provide any comments or observation details for unknown diseases or conditions, name of entity that diseased corals were donated to (if donated), and any other information deemed relevant by the data collector.

Florida Fish and Wildlife Conservation Commission (FWC)
Coral Mitigation Relocation Monitoring Requirements

Guideline A

Coordinates – There are four options for providing coordinates for the removal site, temporary holding site, and relocation site. These options are designed to meet regulatory requirements (as specifically required by any agency permit or Biological Opinion (BO)), accommodate for site design and activity size (if a specific format is not required by agency permits), and provide accuracy for permit enforcement purposes (all formats accommodate this). Provide any and all of the formats that are necessary to meet all regulatory requirements for all project-issued permits (first), and if a format is not specified in any permit, then provide the format that best fits the site design and activity (second). It is not necessary to provide all four formats unless required by permits. The four options are as follows:

- Single Point – Single point coordinates are usually required in most BOs for listed species, but may also be appropriate for use in smaller scale relocation activities. It is likely that if relocation activities include both listed and non-listed species, you will need to provide both single point coordinates for the listed species, and some other format for non-listed species. Provide the latitude and longitude (separate columns) of the single point coordinate in decimal degree format.
- Linear – Linear coordinates may be appropriate for use when the site is in somewhat of a straight line (e.g., seawall, rip rap). Provide the latitude and longitude (separate columns) of the beginning point and the end point of the site in decimal degree format.
- Corners – Some permits require a single point coordinate of each corner of a site to be provided, regardless of the design of the site. Provide the latitude and longitude (separate columns) of the single point coordinates of the NE, NW, SE, SW corners of the site, in decimal degree format.
- Undefined – Undefined coordinates may be appropriate for use when the site design is undefined (i.e., random, opportunistic). Provide the latitude and longitude (separate columns) of the single center point coordinate in decimal degree format, and a radius (in meters) from the single center point that will encompass the site.

DEPARTMENT OF THE ARMY PERMIT TRANSFER REQUEST

WND PERMIT NUMBER: _____

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. Although the construction period for works authorized by Department of the Army permits is finite, the permit itself, with its limitations, does not expire.

To validate the transfer of this permit and the associated responsibilities associated with compliance with its terms and conditions, have the transferee sign and date below and mail to the U.S. Army Corps of Engineers, Enforcement Section, Post Office Box 4970, Jacksonville, FL 32232-0019 or submit via electronic mail to: SAJ-RD-Enforcement@usace.army.mil (not to exceed 15 MB).

_____
(TRANSFEREE-SIGNATURE)

_____
(DATE)

_____
(NAME-PRINTED)

_____

_____
(MAILING ADDRESS)

_____
(CITY, STATE, ZIP CODE)

_____
(SUBDIVISION)

_____ _____
(LOT) **(BLOCK)**

_____
(STREET ADDRESS)