**DEPARTMENT OF THE ARMY**
**JACKSONVILLE DISTRICT CORPS OF ENGINEERS**
**ANTILLES OFFICE**
**FUND. ANGEL RAMOS ANNEX BLDG., SUITE 202**
**383 F.D. ROOSEVELT AVE.**
**SAN JUAN, PUERTO RICO 00918**

**REPLY TO ATTENTION OF**

**July 10, 2018**

Regulatory Division
South Branch
Antilles Section
SAJ-2004-12518 (SP-JCM)

Project Name: St. John Marina, Coral Bay, St. John, USVI

Mr. David Bernhart
Assistant Regional Administrator
Protected Resources Division
National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Mr. Bernhart:

Reference is made to Department of the Army (DA) permit application number SAJ-2004-12518 (SP-JCM), submitted by The Summer's End Group, LLC (SEG), for the proposed construction of a private commercial marina. The proposed project would require a permit from the U.S. Army Corps of Engineers (Corps) pursuant to Section 10 of the Rivers and Harbors Act (RHA) of 1899, as amended (33 U.S.C. § 403). The proposed marina would be located at Coral Harbor, Estate Carolina, Coral Bay, St. John, U.S. Virgin Islands. Specifically, the proposed project would be located at coordinates 18.343277 °N, - 64.714555 °W.

On July 9, 2015, the Corps issued a Public Notice (PN) regarding the referenced permit application. Via e-mail dated July 18, 2015, the National Marine Fisheries Service (NMFS), Protected Resources Division (NMFS-PRD) provided comments in response to the PN. On October 22, 2015, we asked the applicant to address the comments provided by NMFS-PRD, as well as those provided by other Federal agencies and the general public in response to the PN. Therein, we also asked the applicant to provide additional information necessary for the Corps to complete the required regulatory evaluation, processing, and interagency coordination of the permit application. Since the issuance of the PN, the Corps has been engaged in extensive coordination with the applicant to obtain the relevant information necessary to complete the evaluation of the proposed marina. As part of this coordination, the Corps issued two additional requests for information on October 26, 2017 and January 26, 2018. To address the Corps' requests for information, the applicant presented several studies

and analysis, and submitted extensive information packages on August 15, 2017, December 18, 2017, February 27, 2018, March 15, 2018, and June 21, 2018.

For your reference, in the enclosed DVD, we are providing copy of the above referenced permit application and Public Notice. Therein, we are also providing copy of requests for information that we sent to the applicant, as well as the documents and information listed below, which were provided by the applicant as part of our coordination for the permit application. These documents address the comments provided by NMFS-PRD regarding the permit application. The attached DVD includes the following documents or files:

1. Enclosure 1 - DA permit application, received on June 10, 2015
2. Enclosure 2 - Environmental Assessment Report (EAR) - Upland, received on June 10, 2015
3. Enclosure 3 - Environmental Assessment Report (EAR) - Marina, received on June 10, 2015
4. Enclosure 4 - DA Public Notice, issued on July 9, 2015
5. Enclosure 5 - Corps request for additional information dated October 22, 2015
6. Enclosure 6 - SEG additional information submittal dated August 15, 2017
7. Enclosure 7 - Corps request for additional information dated October 26, 2017
8. Enclosure 8 - SEG additional information submittal dated December 18, 2017
9. Enclosure 9 - Corps request for additional information dated January 26, 2018
10. Enclosure 10 - SEG additional information submittal dated February 27, 2018
11. Enclosure 11 - SEG additional information submittal dated March 15, 2018
12. Enclosure 12 - SEG additional information submittal dated August 21, 2018
13. Enclosure 13 - Project Drawings, submitted on August 21, 2018
14. Enclosure 14 - NMFS-SERO Pile Driving Noise Calculator
15. Enclosure 15 - Coral Bay Community Council Comments, August 20, 2015
16. Enclosure 16 - Coral Bay Community Council and Save Coral Bay Comments, May 4, 2018

The applicant's specific response to the comments provided by NMFS-PRD in response to the Corps Public Notice are included in Enclosure 6C1 in the attached DVD. Through the above listed submittals the applicant has documented the steps that have been taken and the measures that would be implemented to avoid and minimize the potential impacts of the proposed project on the aquatic environment, particularly to federally protected species and habitats under the purview of NMFS-PRD. Some of these steps and measures include: analysis of alternatives locations and project layout designs; completion of comprehensive benthic assessments; use of grated decking on the proposed docking structures, finger piers and walkways; design of the marina to avoid dredging; positioning of larger vessels and slips in deeper waters; inclusion of pump out and waste collection facilities in the marina design; implementation of a boaters education program as part of the operations of the marina; implementation of a Clean Marina Action Plan; implementation of acoustic impact attenuation measures

during the proposed pile driving activities; use of erosion and sediment control measures during upland construction and floating silt curtains during in-water work; implementation of Water Quality and Environmental Monitoring plans; transplant of seagrasses within the footprint of proposed piles; compliance with NMFS' *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006, as well as NMFS' *Vessel Strike Avoidance Measures and Reporting for Mariners*, revised on February 2008; and implementation of a Compensatory Mitigation Plan, including the removal of debris and repair of corals within Coral Harbor, mangrove planting, and long term management/maintenance of storm water control structures throughout the Coral Bay Watershed.

After evaluating the proposed project and the information submitted by the applicant, the Corps has determined that the proposed project may affect but is not likely to adversely affect the federally listed endangered Blue (*Balaenoptera musculus*), Fin (*Balaenoptera physalus*), Sei (*Balaneoptera borealis*) and Sperm (*Physeter microcephalus*) whales. We hereby request NMFS concurrence with our determinations pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1536), and the consultation procedures at 50 CFR Part 402.

In addition, the Corps has determined that the proposed project may affect and is likely to adversely affect the federally listed threatened Green (*Chelonia mydas*) and Loggerhead (*Caretta caretta*) sea turtles, and the federally listed endangered Hawksbill (*Eretmochelys imbricata*) and Leatherback (*Dermochelys coriacea*) sea turtles; the federally listed threatened Nassau grouper (*Epinephelus striatus*), Giant manta ray (*Manta birostris*), Oceanic white tip shark (Carcharinus lonigmanus), and Scalloped hammerhead shark (*Sphyrna lewini*); the federally listed threatened Elkhorn (*Acropora palmata*), Mountainous star coral (*Orbicella faveolata*), Lobed star (*Orbicella annularis*), and Pilar (*Dendrogyra cylindrus*) corals; and the designated critical habitat for Elkhorn and Staghorn (*Acropora cervicornis*) corals. Therefore, we hereby request NMFS initiation of formal consultation with your agency, pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1536), and the consultation procedures at 50 CFR Part 402.

According to guidance provided in the Endangered Species Consultation Handbook dated March 1998, the Corps requests that you initiate formal consultation upon receipt of this request or provide a response within 30 days of receipt of this request stating what information is necessary to meet the requirements of 50 CFR Part 402.14(c). Upon your initiation of formal consultation, please provide this office with an expected completion date so that we may inform the applicant of the associated timeframes.

In accordance with 50 CFR Part 402.14(c), Enclosure 17 below provides the following information concerning potential impacts of this project on the above referenced federally protected species and habitats:

A. Description of the proposed action to be considered
B. Description of the affected or action area
C. Description of the listed species and/or designated critical habitat that may be affected by the action
D. Description and analysis of the potential routes of effect or the manner in which the action may affect listed species
E. Description and analysis of the potential routes of effect or the manner in which the action may affect designated critical habitat
F. Summary of Corps determinations of effect pursuant to Section 7 of the ESA

We understand that the information provided or referenced herein is sufficient to support the above described determinations, allow you to concur with our "may affect but no likely to adversely affect" determination for potential effects to ESA listed whales, and allow us to initiate formal consultation regarding potential project impacts ESA listed sea turtles, fish, and corals, and designated critical habitat of Elkhorn and Staghorn corals. We await your evaluation of the potential impacts of this project upon the referenced federally threatened and endangered species, and designated critical habitat.

If you have any questions regarding this case, please contact Mr. José A. Cedeño-Maldonado in writing at the letterhead address, by e-mail at jose.cedeno-maldonado@usace.army.mil, or by telephone at (787) 729-6944.

Sincerely,

CASTILLO.SINDULFO.1182884851
Digitally signed by CASTILLO.SINDULFO.1182884851
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=CASTILLO.SINDULFO.1182884851
Date: 2018.07.10 17:30:36 -04'00'

Sindulfo Castillo
Chief, Antilles Regulatory Section

Enclosures

Antilles Regulatory Section
SAJ-2004-12518 (SP-JCM)

St. John Marina, Coral Harbor, St. John, USVI
Request for Initiation of ESA Section 7 Formal Consultation
NOAA - National Marine Fisheries Service - Protected Resources Division

Enclosure 17

## A. PROPOSED ACTION

1. Description of the proposed action: As stated above, the proposed project consists in the construction of a private commercial marina at Coral Harbor, Estate Carolina, Coral Bay, St. John, U.S. Virgin Islands. Specifically, the proposed project would be located at coordinates 18.343277 °N, - 64.714555 °W. Figures 1A and 1B below show the location of the proposed project. Figures 2A, 2B and 2C below depict the general components of the proposed project. Additional project drawings are provided in Enclosure 13 in the attached DVD.

The applicant seeks authorization to construct a 144-slip fixed-dock marina with slips of varying sizes for boats up to 160 feet long. The marina would also provide 12 permanent mooring buoys. Each mooring buoy would be secured to the marine bottom using three (3) helmken embedment auger type anchors with 10-foot embedment depth and properly floated lines. The docks, finger piers and walkways of the marina would have grated decking with 43 % open space. The main pier of the proposed marina would be 737 feet 10 inches long and 16 feet wide. Lateral piers would be 10, 12, and 15 feet wide. Finger piers for boat slips would be 5.08, 8, and 10 feet wide. The lateral pier closest to the shoreline would provide slips with boat lifts for 22 boats up to 35 feet in length. The footprint of the docks, finger piers, and walkways of the marina would extend over approximately 1.69 acres of marine bottom. The surface of the docks would maintain a clearance of approximately five (5) ft. from the mean sea level. Average water depths within the marina footprint would be approximately 12 feet. Construction of the marina would not require dredging of any areas within Coral Harbor. On the other hand, the construction of the marina would require the installation of 960 piles to support the docking structures. Sixty six (66) of those would be 14-inch square concrete piles; 457 would be 14-inch steel pipe piles filled with concrete; and 437 would be 18-inch steel pipe piles filled with concrete. The cumulative footprint of the 960 piles would occupy approximately 1,350 square feet (0.03 acre) of marine bottom. Mooring piles would not be installed to operate this marina because each slip includes a full-length dock finger to support each vessel. The docks, moorings, slips, and navigation ways of the marina would occupy approximately 25.8 acres of the approximate 97.164 acres of marine bottom that make up Coral Harbor, which account for approximately 26.5 % of the harbor area.

Figure 1A
Project Location Map

Figure 1B
Project Location Aerial Photo

Figure 2A
Marina Components

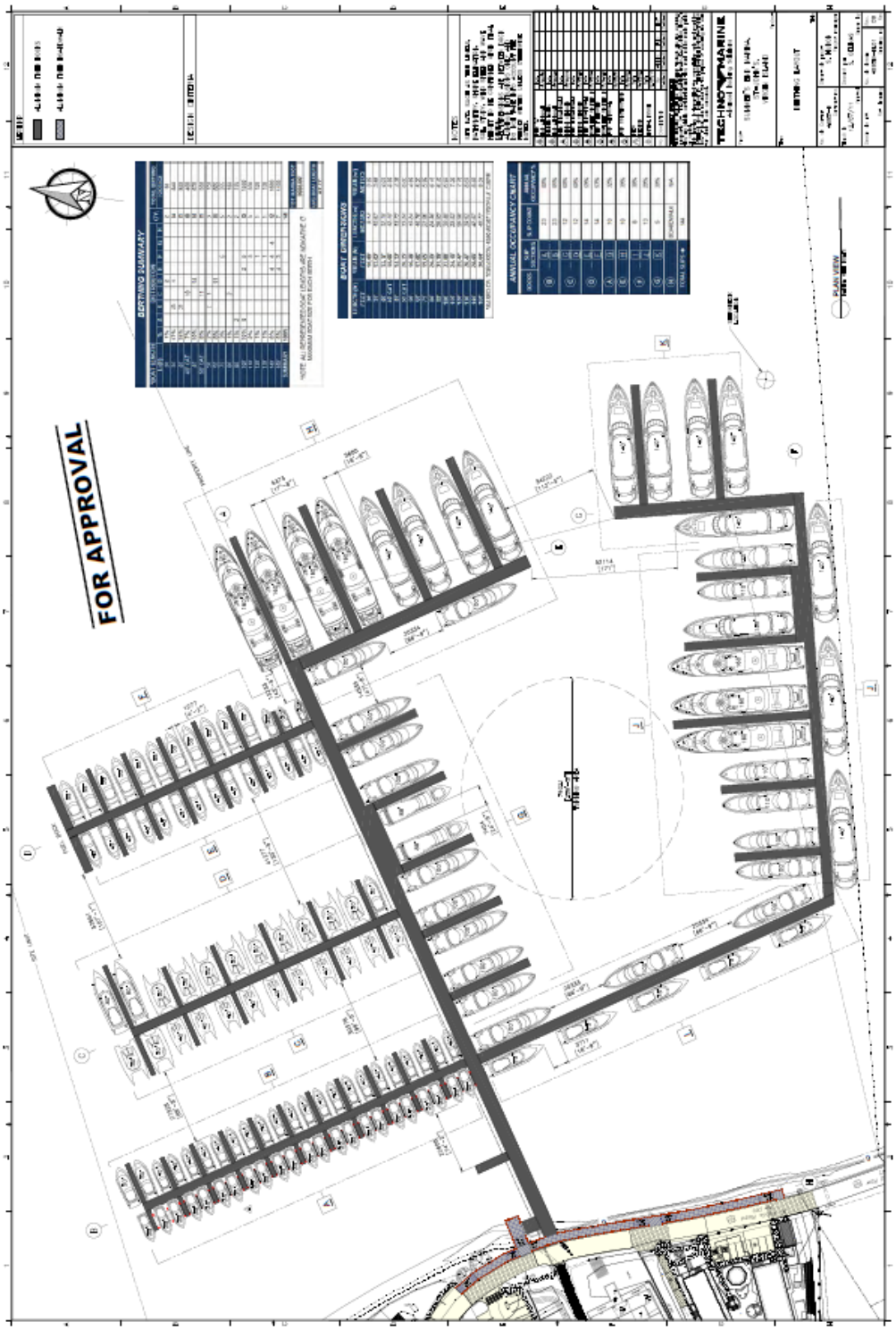
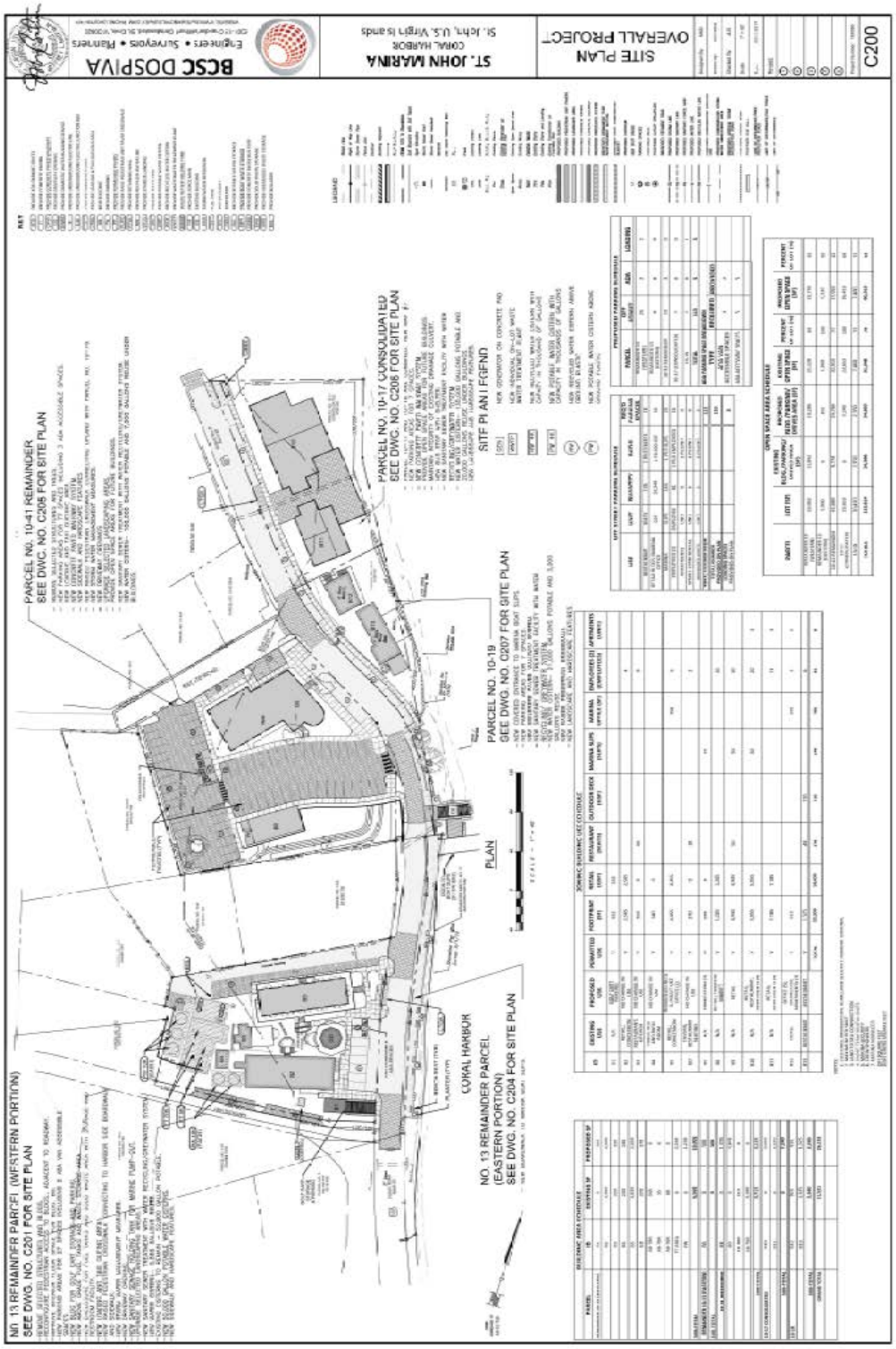


Figure 2B
Marina with Mooring Buoys

Figure 2C
Upland Components



A boardwalk would be constructed along the shoreline, which would provide access from land to the docks and walkways of the marina. The boardwalk would be constructed above the mean sea level, without impacting navigable waters of the U.S. The boardwalk would connect to the main docking structure of the marina through a 45-foot 10-inch long and 16-foot wide aluminum ramp. A 10-foot by 40-foot dinghy dock would be located midway between the shoreline and the first lateral pier of the marina. The marina would provide facilities for fueling, solid waste disposal, potable water and electrical power supply and sewage pump-out services. There is an existing rip-rap revetment along the southern shoreline of Coral Harbor, which would not be modified or affected as part of the proposed project.

The construction of the marina would be completed from the land and from the water using barges. An impact hammer from a barge would be used to install the proposed dock supporting piles and the auger anchors for the mooring buoys. A maximum of six (6) piles would be installed each day. The installation of each pile would require an average of 300 blows with the impact hammer. The installation of the 960 proposed piles would be completed in approximately 160 days. An air bubble curtain and wood block cushions would be used to attenuate noise generated during the installation of the piles with the impact hammer. The installation of the 36 auger anchors for the 12 mooring buoys would require six (6) additional days.

The table below summarizes the proposed pile installation:

Table 1. Pile Installation Summary

| **Pile Material** | **Pile Diameter (inches)** | **Number of Piles** | **Installation Method** | **# of Strikes per pile** | **Duration of pile driving activity (days)** | **Confined Space or Open Water** |
|---|---|---|---|---|---|---|
| Steel Pipe | 14 | 457 | Impact hammer | 300 | 76 | Open Water |
| Steel Pipe | 18 | 437 | Impact hammer | 300 | 73 | Open Water |
| Concrete (square) | 14 | 66 | Impact hammer | 300 | 11 | Open Water |

The proposed project also includes the installation of seven (7) informational buoys to warn boaters about the presence of the sensitive marine resources and shallow areas on the approach to the marina. The informational buoys would be located at: 18°20.703' N, -64°42.897' W; 18°20.460' N, -64°42.750' W; 18° 20.437' N, -64°42.542'

W; 18°20.122' N, -64°42.437' W; 18°19.949' N, -64°42.046' W; 18°20.061' N, -64°41.409' W; and 18°19.819' N, -64°40.709' W. The buoys would be secured with screw anchors and floated lines to prevent impact on the marine bottom. The buoys would be installed in areas dominated by sandy bottom and seagrass beds.

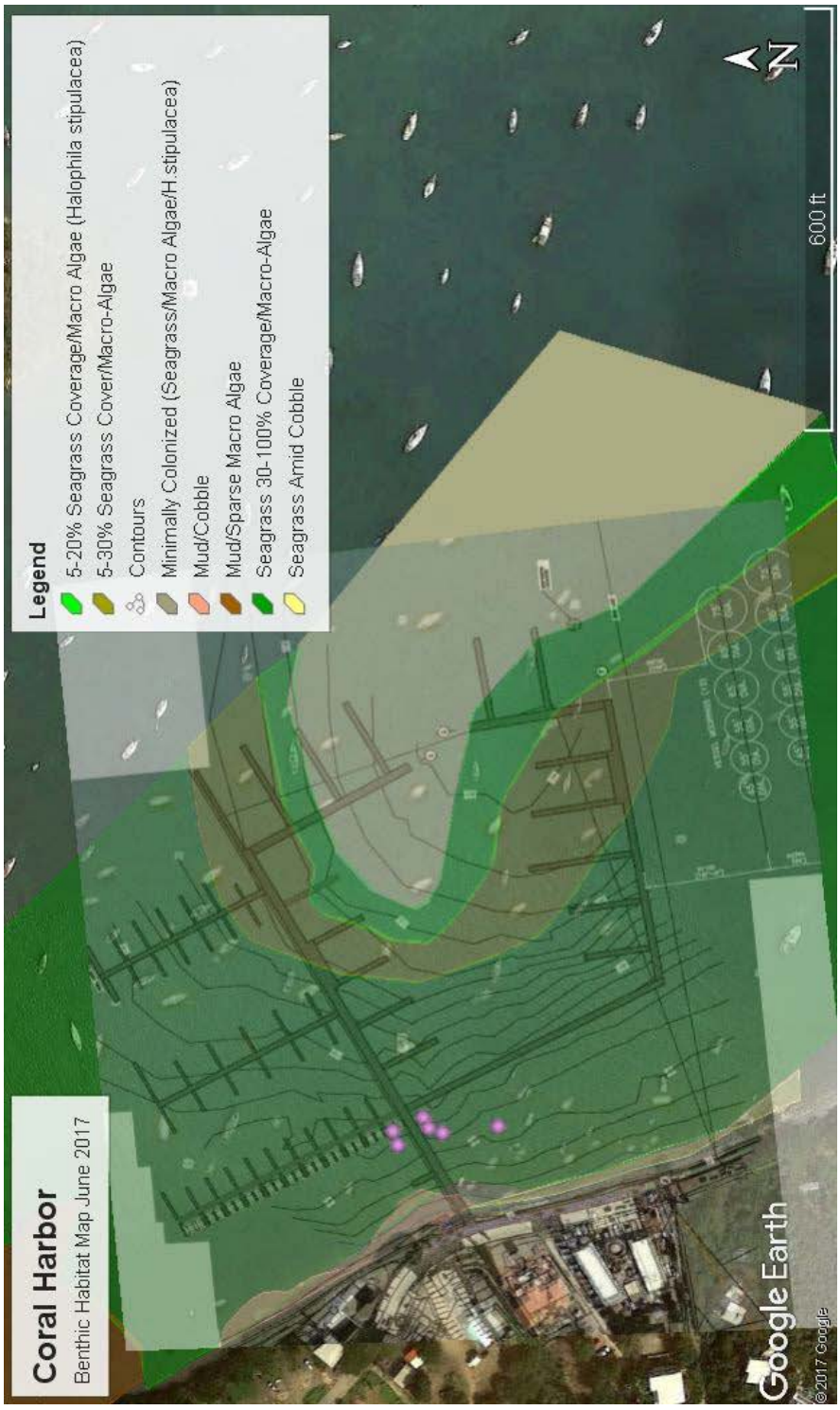
In addition, 17 mooring buoys and their corresponding moored vessels, which are presently located within the footprint of the proposed marina, would be relocated. The relocation of these moorings and vessels would be conducted in coordination with the USVI - Department of Planning and Natural Resources (DPNR) and the owners of the vessels prior to initiate project construction.

Furthermore, the project includes redevelopment of upland areas and properties adjoining the marina. This upland redevelopment would provide needed services and utilities for the marina, including: off-street parking; a restaurant; Customs and Border Protection office; administrative, engineering and security offices; shower and locker facilities; storm water, solid and liquid waste management facilities; water and fuel storage; and additional commercial space. No boat maintenance facilities would be provided within this upland redevelopment. In addition, as indicated above, a 300 ft. long and 10 ft. boardwalk would be constructed in uplands along the shoreline and Route 107 for pedestrian safety while accessing the proposed marina. The proposed upland redevelopment components would not require impacts to waters of the U.S.

Figure 3 below depicts the benthic habitats located within and in the immediate vicinity of the proposed marina footprint, according to benthic studies conducted in 2015, 2016, May and June of 2017, and February 2018.

In terms of effects to seagrasses, the installation of the proposed 960 dock supporting piles would directly impact approximately 1,350 square feet (0.03 acre) of seagrasses with a 30% to 100% cover density. As discussed below in more detail, seagrasses located within the footprint of the proposed piles would be transplanted prior to begin project construction. The proposed docking structures would extend over approximately 39,258 square feet (0.90 acre) of seagrasses, the majority of which have cover densities between 20% and 100%. The applicant estimates that approximately 21,199 square feet (0.487 acre) of seagrasses would be lost due to shading from the docking structures. In addition, approximately 5.65 acres of seagrass colonized marine bottom would be located within the footprint of the proposed marina slips. The applicant estimates that at maximum occupancy, approximately 2.825 acres of seagrasses would be lost due to shading from vessels docking at the proposed marina slips. The estimates of shading impacts to seagrasses were calculated based on Landry, 2008. The applicant further estimates that project construction related activities such as barge spudding, would result in the loss of approximately 1,020 sq. ft. (0.0234 acre) of seagrasses. Moreover, the applicant estimates that prop wash scour associated with the operation of the marina could result in the loss of approximately 0.385 acres of seagrasses. Finally, the applicant estimates that the relocation of the existing mooring

Figure 3
Benthic Habitats



buoys to an area outside of the proposed project footprint would result in maximum potential loss of approximately 4,080 sq. ft. (0.094 acre) of seagrasses. In summary, according to applicant estimates the construction and operation of the proposed marina would result in the loss of approximately 3.75 acres of seagrasses.

2. Description of the project purpose: Construct a private commercial offshore marina with ancillary and commercial facilities in adjacent uplands in St. John, USVI.

3. Description of minimization measures: The applicant has provided the following information in support of efforts to avoid and/or minimize impacts to the aquatic environment:

Alternatives Analysis

In order to select the least environmentally damaging practicable location and design for the construction of the marina, the applicant evaluated 10 alternative locations around St. John and four (4) alternative layouts or designs. The potential environmental effects of each of the alternatives considered were compared and contrasted with the "No Build" option. Details about the alternatives analysis completed are provided in the "Alternatives and Site Minimization Analysis", which is included in Enclosure 8A in the attached DVD. Additional information regarding the alternative analysis conducted is provided in Enclosures 1 and 6 in the attached DVD.

The alternatives analysis was completed in two tiers, evaluating the sites for: compatibility with existing land uses and landscape; potential effects to existing business and local economy; compatibility with and potential effects to existing infrastructure; potential conflicts and adverse effects related with navigation; quantification of potential impacts to benthic habitats; and potential effects to protected or sensitive resources; and the ability to meet the objectives of the proposed project. The sites analyzed included: Coral Bay West (proposed location); Enighed Pond; Cruz Bay; Caneel Bay; Haul Over Bay; Hansen Bay; Johnston Bay; Lameshur Bay; Rendezvous Bay; and Northern Coral Bay. The applicant concluded that of the ten sites evaluated in the first tier analysis, five (5) were determined to be practicable for the development of a marina; these were: Coral Bay West (proposed location); Enighed Pond; Hansen Bay; Johnston Bay; and Northern Coral Harbor. These five alternative sites were carried forward and evaluated in further detail through the second tier analysis.

The applicant determined that of the five alternative sites considered in the second tier analysis, developing a marina in Enighed Pond would have the least amount of environmental impact of any of the alternatives considered. However the marina would be very small in size limiting its economic viability and profitability, as well as its ability to satisfy the existing demand for dock space in St. John.

According to the applicant, the construction of the marina in any of the alternatives sites evaluated would have similar potential acoustic impacts on the marine fauna.

The applicant also described that Hansen Bay is currently being used for some marine related activities and a small marina could probably be built in that location with moderate environmental impacts. Access to the site would require navigation near shallow coral resources and there would be a high potential for accidental groundings. Although informational buoys could be employed to mitigate that risk, boat grounding could seriously harm coral reefs. Similar to Enighed Pond, a marina in Hansen Bay would be very small in size limiting its economic viability and profitability, as well as its ability to satisfy the existing demand for dock space in St. John. Developing a larger for economically feasible and profitable marina at Hansen Bay would require impacts to an existing reef, which support ESA listed *Orbicella* species and *Dendrogyra cylindrus.*

According to the applicant, developing a marina at Johnsons Bay would have the greatest environmental impact of all the alternatives considered due mainly to the lush seagrass resources present within the bay. While seagrass could be transplanted the overall impact would be higher than the impacts of any of the other sites considered.

The applicant further indicated that based on the alternatives analysis completed, a marina at northern Coral Harbor could potentially have less direct and indirect seagrass impacts. However, because of the finer sediments in that part of the harbor, it would probably have greater impact to water quality due to resuspension of sediments during construction and operation. The applicant also asserted that in order to be economically feasible and profitable, a marina at northern Coral Harbor would have to utilize a much larger portion of the bay than if located in the western portion of the harbor, which would displace far more moored boats and would interfere with navigation in the traditional channel at Coral Harbor. The marina which is currently proposed by others at the northern portion of the bay involves dredging, which would have a far greater impact on the bay due to the long term suspension of sediment and degradation of water quality as well as impacts to the mangrove community along the shoreline.

Based on the above, the applicant concluded that of all available alternative sites that could physically accommodate a marina, West Coral Harbor (proposed site) is the best location for a marina serving varying size vessels and providing needed services and amenities to boaters. The applicant further concluded that any unavoidable environmental impacts of developing a marina at West Coral Harbor, could be effectively and adequately mitigated through seagrass transplant, coral repair and seagrass debris clean up and ongoing maintenance of storm water facilities in the vicinity of the project. The depth of the area is adequate to moor large vessels and the approach to site is not impacted by existing reefs. The proposed site at West Coral Harbor is in an existing commercial location, in an area that has long been used for mooring boats. Thus, according to the applicant, West Coral Harbor is the best location for constructing a marina in St. John.

With regards to the analysis of alternative layouts or designs for the marina at West Coral Harbor, the applicant explained that taking in consideration the very soft and silty sediments that dominate the seafloor, as well as the water quality and circulation issues therein, it was decided that dredging would be avoided as much as possible. To avoid or minimize dredging, the marina docking structures are being proposed as far from shallow near shore waters. The applicant also decided to limit the alternatives evaluated to fixed docks rather than considering floating docks. Floating docks were discarded from consideration mainly because since they would be directly over the surface of the water they would greatly increase potential shading impacts on the existing seagrasses. In addition, floating docks would be much more susceptible to wave action, which could result in safety issues for boats and boaters in the marina during periods of high surge or high winds from the southeast. Furthermore, floating docks would require a similar number of piles, therefore presenting similar potential acoustics than fixed docks. Other factors limiting the number of alternative layouts considered were the boundaries of the upland properties associated with the marina development; the water depth; the location of the navigation channel in Coral Bay, and the financial viability and profitability of the desired vessel mix.

Two of the alternative layouts considered would have required dredging at different areas of Coral Harbor. These alternatives were discarded due to the potential environmental impacts of dredging within the harbor, particularly to water quality within the bay. One of the alternative layouts considered by the applicant was to divide the marina in two separate docks. This would reduce shading impacts to seagrasses. However, the construction impacts would be similar, and the operation of the marina would be more complex and less efficient. In addition, this would reduce the number of slips, limiting the economic viability or profitability of the marina. The applicant's proposed or preferred layout would completely avoid dredging, would avoid impacts to an existing historic wreck, and would provide an economically viable and profitable mix of vessels. To support the need for the number and mix of proposed slips to ensure the profitability of the project, the applicant prepared and submitted a Marina Market Analysis, copy of which is provided in Enclosure 6G in the attached DVD.

In spite of the above, the Corps understands that additional practical alternative designs, which could further reduce the potential effects of the marina on seagrasses and the marine ecosystem, are available but were not considered or evaluated by the applicant. Such alternatives could involve using mooring piles instead of full boat length finger piers; and reducing the width of some of the docks and lateral piers. This would reduce the shading footprint of the marina and the number of docking supporting piles.

Use of Grated Decking

In order to minimize potential shading effects to seagrasses located within the footprint of the proposed docking structures, finger piers and walkways, the applicant

proposes to use grated decking to allow sun light penetration to the marine bottom. The slots in the grated panels would account for 43% of open space. According to technical data provided by the applicant, the expected total average light availability under the proposed grated decking docks with a height of five (5) ft. above mean sea level would be approximately 84 % of the incident light with angles between 0 to 90° (Enclosures 6B1 and 13 in the attached DVD). If a final decision is made to issue a DA permit for this project, the Corps would require compliance with this measure, including it as a Special Condition in the permit.

Avoidance of Shipwreck

As a result of the studies conducted during the planning of the proposed marina, a potential historically significant shipwreck was identified within the footprint of the original marina layout as depicted in the Corps Public Notice for the project. After coordination with the U.S. Virgin Islands State Historic Preservation Office (SHPO), it was decided to eliminate the finger pier and associated slip that was closest to the shipwreck location, to avoid any potential impacts during the construction and operation of the marina. If a final decision is made to issue a DA permit for this project, the Corps would require compliance with this measure, including it as a Special Condition in the permit.

Positioning of larger vessels and slips in deeper waters

The applicant has indicated that the proposed marina layout positions those slips that were designed for larger size vessels in the deepest waters encompassed within the project footprint. According to the applicant, this would effectively reduce potential sediment stir-up, which could be caused by vessel movement during the operation of the marina.

Pump out and Waste Collection Facilities

Currently, there are no waste water pump out or waste disposal facilities at Coral Bay. The applicant proposes to provide these services to all boaters in the bay, not just to those docking at the marina. Such facilities would help to substantially reduce the unpermitted discharges of waste into the harbor and help lower the nutrient input. The applicant proposes to have both a pump out facility at the dock and a pump out vessel scheduled regularly to service vessels in the harbor.

Boaters Education Program

The applicant proposes that as part of the operation of the marina, information would be provided to all users of the marina regarding the need to protect sensitive marine resources, including ESA protected species, and the importance of abiding to safe boating practices. Signage would also be placed in conspicuous places on the docks

showing nearby shallow areas, proper anchoring procedures and steps necessary to protect sea turtles and marine mammals. If a final decision is made to issue a DA permit for this project, the Corps would require compliance with this measure, including it as a Special Condition in the permit.

Clean Marina Action Plan

The applicant proposes to operate the marina in compliance with the goals and management practices set forth in the Clean Marina Action Plan, developed by the Florida Department of Environmental Protection Clean Marina Program. Details and references about the Clean Marina Program and Plan are provided in Enclosures 12-4E and 12-4F in the attached DVD.

Sea Turtle and Marine Mammal Protective Measures

All in-water construction work would be limited to daylight hours only. Construction barges would be spudded in place while conducting in-water work. As discussed in Enclosure 6F in the attached DVD, the applicant proposes to implement a sea turtle and marine mammal monitoring protocol during the construction of the proposed marina. Trained observers would visually monitor a 500-meter safety zone around any active construction, including the pile driving work. Monitoring would commence at least 30 minutes prior to initiating any construction activity, and would continue throughout the day. If at any time sea turtles or marine mammals are observed within the 500-meter safety zone, all construction work would be shut down until the animals leave the safety zone of own volition. Records would be maintained of all sea turtle and marine mammal sightings in the area, including date and time, weather conditions, species identification, approximate distance from the project area, direction and heading in relation to the project area, and behavioral observations. During construction activities the following protocols would be implemented and followed: NMFS *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006, as well as NMFS *Vessel Strike Avoidance Measures and Reporting for Mariners*, revised on February 2008*;* and *USFWS Standard Manatee Conditions for In-Water Work*. Prior to the start of any construction work, a meeting would be held with all construction personal, where the above conditions would be explained, emphasizing that there are civil and criminal penalties for harming, harassing, or killing sea turtles or marine mammals, which are protected under federal law. If a final decision is made to issue a DA permit for this project, the Corps would require compliance with these measures, including them as Special Conditions in the permit.

Acoustic Impact Attenuation Measures

As stated in the Project Description above, in order to attenuate potential acoustic impacts on marina fauna, contractors involved in the construction of the marina would be required to use air bubble curtains and wood block cushions during the installation of

the piles with the impact hammer. This should effectively reduce the underwater noise levels that would be generated, minimizing potential injury and or effects in the behavior of marine animals that may be present in the vicinity the pile installation work. The applicant also proposes to initiate the pile installation each day dry-firing and ramping-up the impact hammer for 30 minutes to allow any marine animals to leave the work area. Dry firing of a pile-driving hammer is a method of raising and dropping the hammer with no compression of the pistons, producing a lower-intensity sound than the full power of the hammer. Ramping-up involves slowly increasing the power of the hammer and noise produced over the ramp-up period. In addition, as stated above the applicant would implement a sea turtle and marine mammal monitoring protocol during the construction of the proposed marina. Trained observers would visually monitor a 500-meter safety zone around any active construction, including the pile driving work. Monitoring would commence at least 30 minutes prior to initiating any construction activity. If at any time sea turtles or marine mammals are observed within the 500-meter safety zone, all construction work would be shut down until the animals leave the safety zone of their volition. If a final decision is made to issue a DA permit for this project, the Corps would require compliance with these measures, including them as Special Conditions in the permit.

Water Quality and Environmental Monitoring

The applicant proposes to implement Water Quality and Environmental Monitoring plans during the construction and operation of the marina to assess associated potential sedimentation effects and determine the need to implement additional measures and best management practices to protect the marine environment. These plans are described in detail in Enclosure 6F in the attached DVD.

As part of the Water Quality Monitoring Plan, a baseline of water quality conditions would be established prior to the start of construction. A total of 12 sampling location would be established in the project area and throughout the harbor. At each site, the turbidity expressed as NTUs, pH, dissolved oxygen, salinity and temperature would be sampled at a depth of 1 meter from the surface on a weekly basis for two months prior to start project construction. Baseline data would be compared with data collected during project construction to help assess whether readings are a result of the construction or due to ambient conditions.

Erosion and sediment control measures including silt fences would be installed between upland construction areas and the shoreline of Coral Harbor to prevent sediment discharges from the project areas into aquatic habitats. In addition, floating turbidity curtains would be installed around all in-water pile driving work, to reduce transport of resuspended sediments outside of the work areas into adjacent aquatic habitats.

During construction, six sampling locations, in addition to the 12 already established to assess the baseline, would be established around the in-water work area. Water samples would be collected one meter below the surface and would be analyzed using an YSI multi-meter for turbidity expressed as NTUs, pH, Dissolved Oxygen, Salinity and Temperature. Baseline samples and samples collected at remote locations from the active in-water work areas would be utilized to determine whether elevated turbidity is a function of the project or due to ambient conditions. If the water samples show readings in excess of 0.5 NTUs over background, the USVI-DPNR, the Corps, and NMFS would be notified by email. If it is determined that the elevated turbidity is the result of the marina construction, the construction work would stop and any potential deficiencies in the deployed turbidity control would be corrected. Construction would only resume once turbidity has fallen to background levels. If no deficiencies in the deployed turbidity control are observed, additional curtains or similar methods would be deployed or pile driving would be slowed down or stopped, until turbidity levels return to background levels. If the additional measures cannot be deployed which are adequate to control turbidity then in water work would have to be shut down every time readings become elevated over acceptable ranges and would only be able to resume once they have fallen back to background levels.

Upon completion of project construction, water sampling and monitoring would continue on a weekly basis for two months and then every three months indefinitely throughout the life of the marina and after all rainfalls exceeding one inch as measured at the marina site. Reports would be delivered to the agencies after every quarterly sampling. Reports would document changes and if issues are seen that should be corrected.

As part of the Environmental Monitoring Plan five (5) permanently marked modified meter square photoquadrats would be established on the adjacent seagrass beds to the east of the marina. PVC stakes would be inserted in the marine substrate to serve as markers for the camera stand to insure the exact relocation of the photograph in repetitive samplings. Seagrass abundance and health would be assessed at each quadrat. In addition, ten coral quadrats would be established on the shallow reefs to the southeast of the marina, on the northern and southern sides of the harbor entrance. These quadrats would help assess potential effects to the ESA listed *Acropora, Orbicella* and *Dendrogyra* colonies located on these two shallow reefs. The quadrats would be established and monitored monthly for a period of two months prior to the commencement of the project to establish a baseline. During construction, the photoquadrats would be monitored on a monthly basis during in-water work. All visible changes would be documented and reasons for these changes assessed. Photographs and detailed survey information containing the above listed parameters would be provided to USVI-DPNR, Corps, and NMFS on a monthly basis.

Once construction of the project is completed, environmental monitoring of the quadrat would continue for two months and then on a quarterly basis for the duration of

the monitoring program. If at any time any of the monitoring sites shows significant deterioration that does not appear to be due to natural phenomena, USVI-DPNR, USACE and NMFS would be immediately notified in order to define remedial measures to prevent future negative impacts. Within each quadrat the number and health of all benthic invertebrates such as sea cucumbers, anemones, urchins and mollusks would be assessed as part of the monitoring. If significant changes in numbers of individuals are noted the concerned agencies would be immediately notified. If a deterioration of health of any of the organisms are noted the concerned agencies would be also notified immediately.

If a final decision is made to issue a DA permit for this project, the Corps would require compliance with these measures, including them as Special Conditions in the permit.

Seagrass Transplant

To minimize the direct impact of pilings to seagrass, prior to initiate project construction the proposed location for the pilings would be marked and the seagrasses within the piling footprints would be transplanted to a recipient site in the northwest corner of the Coral Bay, which has been impacted by the deposition of sediment from storm water runoff. In addition, the applicant proposes to transplant to the same recipient site all seagrasses that could be impacted by the relocation of the up to 17 mooring buoys and vessels presently located within the footprint of the proposed marina. The transplanted seagrasses would be monitored on a monthly basis for two years, and then every three months for three additional years. Reports on the progress and condition of the transplanted seagrass would be provided to any concerned agencies within 30 days of each monitoring event. Additional details about the proposed seagrass transplant and monitoring are provided in the “Compensatory Mitigation Plan” document, which is included in Enclosure 10-2A in the attached DVD. If a final decision is made to issue a DA permit for this project, the Corps would require compliance with this measure, including it as a Special Condition in the permit.

Compensatory Mitigation Plan

As compensation for unavoidable impacts of the proposed marina on the aquatic environment, the applicant proposes to execute the following actions, which are described in more detail in the “Compensatory Mitigation Plan” document, which is included in Enclosure 10-2A in the attached DVD:

Clean up of Debris and Repair of Corals within Coral Harbor - The applicant proposes to collect and remove a minimum of 1,200 sq. ft. of debris, which is presently scattered in the seagrass beds within and in the vicinity of the proposed project footprint. In addition, the applicant proposes to collect and remove a minimum of 10,000 sq. ft. of debris which is currently found on reefs and seagrass beds found within

approximately 750 acres of the marine bottom of Coral Harbor. The presence of this debris, which is mainly due to the effects of Hurricane Maria, was identified during benthic surveys and dives within the harbor. The debris consists primarily of vegetative material, trash, roofing and construction material, chairs, tires, cans, pieces of cloth, and vessel parts. The debris would be collected by divers, using lift bags as needed, and taken by boat or small, shallow draft barge to an upland site so it can be transported for proper final disposal at the Bovoni Landfill in St. Thomas. The debris removal process would be documented with photographs and a report submitted to all concerned agencies. Seventy five stations would be located throughout the debris clean up area to monitor for coral re-colonization. The stations would be monitored on a monthly basis for two years, and then every three months for three additional years. Furthermore, the applicant proposes to survey the reefs within the 750 acres area, to locate and re-attach to their natural substrate using epoxy any coral or coral fragments that may have been broken or knocked-loose as a result of Hurricane Maria. Re-attached corals would be marked and monitored on a monthly basis for three months and then on a yearly basis for a period of five years.

Mangrove Planting - The applicant proposes to plant 300 red mangrove propagules along an 850 feet long section of the shoreline to the west of the proposed marina. The propagules would be placed amid the existing riprap/stones. The mangroves would be monitored on a monthly basis for the first year, and every six months for the following four years. Any dead individuals would be replaced as needed to ensure colonization of the entire shoreline.

Watershed Storm Water Management - The applicant proposes to assume the long term maintenance of a series of structures that were installed at various points throughout the Coral Bay Watershed to manage and control land based sources of pollution, particularly storm water discharges, into Coral Bay. Those structures or best management practices (BMPs) were originally designed and constructed by the Coral Bay Community Council (CBCC), mainly through Federal grants. The BMPs were documented by the CBCC to improve water quality within Coral Harbor. However, due to lack of recurring funding, many of the BMPs have not been properly maintained and are no longer providing the best results for improving and maintaining water quality within the harbor. As discussed in more detail in Enclosures 10, 10-4A, 10-4B, 10-4C, and 10-4D in the attached DVD, the applicant has identified a series of those BMPs, and is proposing to implement certain repairs and improvements to them. The applicant is also proposing to provide long term maintenance to those BMPs. In addition, the applicant is proposing to conduct long term monitoring of the water quality within Coral Bay Harbor for the life of the proposed marina. As part of this long term water quality monitoring, the applicant would establish 12 monitoring stations, and monitor on a quarterly basis for turbidity (NTUs), dissolved oxygen, salinity, pH, and temperature. Sediment traps would also be deployed and monitored quarterly to check for changes in sediment deposition. Sediment samples would be taken every five years. Photoquadrats would be established to monitor the condition of seagrasses and corals.

The data from the monitoring program would help evaluate the performance of the BMPs, as well as the water quality control measures established in the proposed marina, and help determine the need for additional measures to improve the water quality and habitats within the bay. Reports of the water quality monitoring program would be submitted to the USVI-DPNR, NMFS and the Corps on a quarterly basis.

Installation of Informational Buoys - As indicated in the Project Description above, to minimize potential boat groundings and the associated impacts to sensitive marine resources in shallow waters on the approach to the marina, the applicant proposes to install seven informational buoys (i.e., aids to navigation) within Coral Bay. The buoys would be placed in sandy bottom and seagrass beds dominated marine bottom, using screw anchors and floated lines. This is described in more detail in the "Compensatory Mitigation Plan" document, which is included in Enclosure 10-2A in the attached DVD

Financial Assurances - To ensure the success of the proposed compensatory mitigation plan (including the debris removal, the repair of damaged corals, the mangrove planting and the installation of navigation aids) the applicant would provide financial assurances in the form of a performance bond for the amount of $862,112.50, which is the cost of implementing the proposed mitigation and monitoring.

If a final decision is made to issue a DA permit for this project, the Corps would require compliance with these measures, including them as Special Conditions in the permit.

## B. ACTION AREA

Pursuant to 50 C.F.R. § 402.02, the term *Action Area* is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." Accordingly, the Action Area typically includes the affected jurisdictional waters and other areas affected by the authorized work or structures within a reasonable distance. The ESA regulations recognize that, in some circumstances, the Action Area may extend beyond the limits of the Corps' regulatory jurisdiction.

For the purposes of this consultation, the Corps has defined the Action Area to include approximately 114 acres of navigable waters, which could be subject to the potential direct and indirect impacts of the proposed project. The Action Area boundaries are shown in Figure 4 below. The Action Area encompasses the entirety of Coral Harbor and extends to the south to include portions of two areas of coral reef and colonized hard bottom, where colonies of ESA listed species were located, as described below in more detail.

Coral Harbor is heavily used for mooring and anchoring by local and transient boats. The USVI Department of Planning and Natural Resources (DPNR) has established a

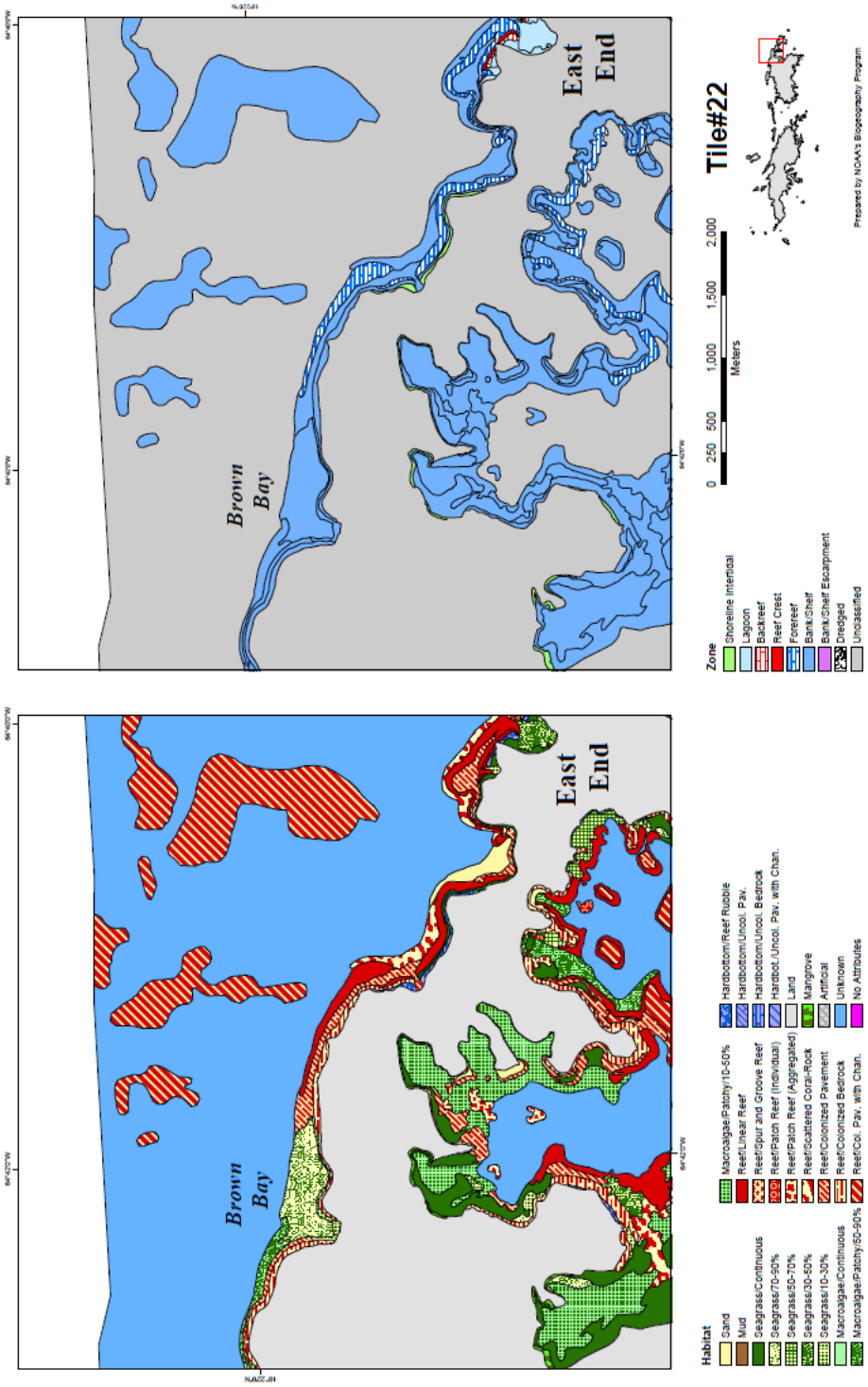
Figure 4
Action Area

mooring area within Coral Harbor. Approximately 115 boats are regularly anchored or moored within Coral Harbor. According to NOAA's Environmental Sensitivity Index (ESI) Maps and information provided by the applicant, shoreline habitats present around Coral Harbor include mangrove fringes dominated by red mangrove (*Rhizophora mangle*), gravel beaches and mixed sand/gravel beaches. Riprap revetment was also installed to stabilize a section of the southwest shoreline of Coral Harbor. NOAA's Benthic Habitat Maps indicate that continuous dense seagrasses extend along the shoreline of Coral Harbor, covering approximately 67 % of the harbor's benthos; while patchy areas dominated by macroalgae with a 10-50% density are present in the central portions, covering approximately 33 % of the harbor's benthos (Figure 5).

Benthic assessments conducted by the applicant on January-February 2014 (Enclosure 6E in the attached DVD) describe that the footprint of the proposed project includes seagrass areas with cover densities between 30 % to 100 %, which are dominated by *Thalassia testudinum* (80%) and *Syringodium filiforme* (20%) at depths between 1 ft to 11 ft, with algal species increasing in density toward deeper areas. Small patches of *Halodule beaudettei* are present especially in areas of regrowth. As depth increases, animal burrows increase and seagrass densities fall, while *Syringodium* becomes more prevalent. Between depths of approximately 11 ft and 13 ft seagrass densities fall to between 5 and 30% and by the time the water reaches 13 ft to 14 ft the seagrass densities fall to 5% and the amount of macroalgae increases. By 15 ft of depth there is only an occasional *Thalassia* shoot, and macroalgae is the dominant colonizer covering between 10% and 70% of the seafloor. *Halimeda* is the most common algae present. Also found in relatively high abundance are *Caulerpa, Udotea, Avrainvillea, Penicillus capitatus, Laurencia, Hypnea* and *Dictyota.* At depths greater than 15 ft, the macroalgae density decreases. The system is light limited at this depth. Blowouts and scars predominantly caused by debris, anchoring and moorings are found scattered throughout the seagrass and macroalgae colonized areas. Beyond the inner harbor, dense seagrass is present in depths exceeding 25 ft.

Additional benthic assessments were conducted in the project areas in 2015, 2016 and May-June 2017 (Enclosures 8G and 10-2A in the attached DVD). Furthermore, the project areas were resurveyed on February 2018 to assess the effects of Hurricanes Irma and María on the benthic communities. The changes noted after the hurricanes include an increase in the abundance of *Halophila stipulacea.* Prior to the 2017 hurricanes, *H. stipulacea* was present in the deepest areas with primarily macro-algal cover, as regrowth in some areas where there were previously scars in seagrass beds from anchor and rope drags, and in new areas that had been disturbed by anchor and rope drags. It is now also present within the *Thalassia* and *Syringodium beds*. In general, the benthic survey report and map prepared in 2014 still accurately depicts the abundance and distribution of species (Figure 3). There are additional damaged areas within the seagrass beds as a result of the hurricanes but there are also areas which have obvious seagrass recolonization. There is not a significant change in distribution of seagrasses across the harbor.

Figure 5
NOAA NOS Benthic Map



According to the benthic assessments conducted by the applicant, the proposed project footprint does not include hard bottom or coral colonized areas. However, several coral colonies, including the species *Solenastrea bournoni* and *Siderastrea radicans*, are found scattered within the general project area. On the other hand, shallow reef and hard bottom colonized areas are found to the south and southeast of the proposed project footprint, on both sides of the mouth of Coral Harbor. Approximately 0.8 acre of shallow reef/hardbottom is located on the west side of the mouth of Coral Harbor, about 1,100 ft from the project site. In addition, approximately 2.15 acres of shallow reef and hardbottom are located on the east side of the mouth of Coral Harbor, about 2,100 ft from the project site. Both of these shallow reef/harbottom areas are located within the Action Area. According to the most recent benthic assessment conducted by the applicant after the 2017 hurricanes, about six small colonies of the federally listed threatened lobed star coral (*Orbicella annularis*) are found on the reef/hardbottom area located at the west side of the mouth of Coral Harbor (Figure 4). Furthermore, about six colonies of lobed star coral, four colonies of the federally listed threatened Mountainous star coral (*Orbicella faveolata*), five colonies of the federally listed threatened elkhorn coral (*Acropora palmata*) and one colony of the federally listed threatened pillar coral (*Dendrogyra cylindrus*) were observed within the reef/hard bottom areas at the east side of the mouth of Coral Harbor (Figure 4).

Sea turtles, in particular green sea turtles (*Chelonia mydas*) and hawksbill sea turtles (*Eretmochelys imbricata*) are known to inhabit and forage in the seagrasses within Coral Harbor. Leatherback sea turtles (*Dermochelys coriacea*) are also known to be present in waters around St. John. The shoreline in the vicinity of the project site consists primarily of cobble and revetted shoreline and has an extremely narrow eroded shoreline that is not suitable nesting habitat for these turtles. In response to NMFS comments regarding the Corps Public Notice for this proposed project, the applicant commissioned a specific survey to assess the extent in which sea turtles and marine mammals use Coral Harbor and Coral Bay (Enclosure 6C1 in the attached DVD). The survey including observations along six transects in 20 days over a 2.5 year period, extending from November 2015 to June 2017. A total of 158 sea turtle sightings, including 51 hawksbill sea turtles, 35 green sea turtles, and 72 unidentified species, were recorded throughout the survey. Green and hawksbill sea turtles were observed within Coral Harbor, but were more commonly observed in other areas of Coral Bay. No leatherbacks or loggerhead sea turtles were sighted during the survey. However, leatherback sea turtles have been observed within southern Coral Bay, outside of Coral Harbor. Similarly, no whales were sighted during the survey. Notwithstanding, whales are known to inhabit the near shore and shelf waters around St. John.

The information provided by the applicant also indicates that tarpon *(Megalops atlanticus)*, yellowtail jacks *(Lutjanus chyrsurus)*, black tip sharks *(Carcharhinus limbatus),* as well as juvenile and adult individuals of the federally listed threatened Nassau grouper (*Epinephelus striatus*) were observed during the surveys conducted within the project areas. Coral Harbor and Coral Bay have been documented to serve

as a shark nursery, particularly for black tip and lemon sharks (*Negaprion brevirostris)* (Legare et al, 2015).

In terms of water quality, quarterly samples taken by the USVI - Department of Planning and Natural Resources (DPNR) characterize Coral Harbor as an area of fluctuating water quality with varying turbidity and occasional contamination by fecal coliform and enterococci bacteria (Enclosure 3 in the attached DVD). The total suspended solids (TSS) and turbidity are high compared with other more open embayments. During times of run off the turbidity become extremely elevated from upland erosion. Coral Harbor is highly impacted by the input of terrestrial sediment due to runoff and is further impacted by boat anchoring and mooring which serve to resuspend fine bottom sediments and by discharges from these vessels. Spring Gut discharges into Coral Harbor and the footprint of the discharge is readily visible in the marine environment.

To accurately assess the water mixing and flushing capacity of Coral Harbor, as well as the potential effects of the operation of the marina on the sedimentation, turbidity and water quality levels therein, the Corps requested the applicant to complete and submit a water circulation modeling study of the harbor. However, the applicant did not submit such study. Instead, the applicant collected water current measurements within the project footprint for a two year period, and then analyzed those observations in accordance with methods described by Ketchum (1951). According to the applicant's measurements and analysis, water movement in Coral Bay, particularly in Coral Harbor, is sluggish with circulation and currents being both tidally and wind influenced. The analysis showed a sluggish exchange affected by tidal fluctuations. The circulation is affected by wind direction and when strong consistent winds occurs from the southeast it pushes water into the bay contributing to flushing. Circulation decreases to the north of the bay. The highest current recorded was 0.6 ft/sec, but the average was 0.36 ft/sec. Under those conditions water within Coral Harbor flows out with the tides, it slowly mixes with the adjacent water in greater Coral Bay, and then flows back into Coral Harbor as the tide shifts. This is an exchange with water previously mixed with water from the bay. This exchange is clearly visible when the turbidity plume extends out of the bay during the outgoing tide and then is pulled back into the bay with the incoming tide. Therefore, only limited exchange or flushing occurs which is clear by the difference in turbidity in and out of the bay. Rarely is turbidity low within the harbor.

A Suitability Analysis (Enclosure 8B in the attached DVD) commissioned by the applicant describes that winds at the project site typically blow from the east, east-southeast and southeast directions, and average 9 mph. Although the average winds are relatively weak, the prevailing winds are blowing in the worst-case direction relative to the site (i.e., the southeast quadrant), as the marina is exposed to the offshore waters from the southeast quadrant. Relatively speaking, locally generated wind waves from this direction will be greatest. The analysis also describes that with regards to waves the local fetch affecting the proposed marina site is very short in most directions. The

only significant fetch is to the south southeast, and extreme waves from this direction will be from locally generated wind waves and offshore swell during hurricane events. Based on reports from others the analysis further described that over a period of nine months from 2012-2014 wave heights within Coral Harbor never exceeded 0.5 ft., but that in the proposed marina footprint waves as much as one foot in height have been noted impacting the shore to the south. The Suitability Analysis concluded that the estimated 1-year return wave heights at the project site would exceed established industry design guidelines for acceptable berthing operational conditions. The analysis also indicates that to ensure the operational criteria are not exceeded, additional infrastructure, such as a floating wave attenuator, would be required. In addition, the analysis indicates that the probability of a 50-year wave event (which could cause damage and/or failure of the marina) impacting the project site at some point over a 25-year period is 40%; and that to mitigate the effects of such event, additional coastal infrastructure, such as a rubble mound breakwater, would be required. Furthermore, the analysis report indicates that a higher level of confidence in its findings would require more thorough analysis of the site supported by in-situ measurement data, all of which was excluded from the analysis completed.

## C. AFFECTED SPECIES/HABITAT

Project activities have the potential to affect listed species and/or designated critical habitat under the purview of NMFS within the Action Area as shown in Tables 2 and 3 below. Table 4 describes the species use of the Action Area, as well as the designated critical habitat within the project area.

Table 2. Species in the Action Area or its vicinity

| Species | ESA Listing Status | Listing Rule/Date | Most Recent recovery plan date | USACE Effect Determination (Species) |
|---|---|---|---|---|
| Green sea turtle[1] | T | 81 FR 20057/ April 6, 2016 | October 1991 | LAA |
| Leatherback sea turtle | E | 35 FR 8491/ June 2, 1970 | April 1992 | LAA |
| Loggerhead sea turtle[2] | T | 76 FR 58868/ September 22, 2011 | January 2009 | LAA |
| Hawksbill sea turtle | E | 35 FR 8491/ June 2, 1970 | December 1993 | LAA |
| Nassau grouper | T | 81 FR 42268/ June 29, 2016 | N/A | NLAA |

[1] North Atlantic and South Atlantic DPS
[2] Northwest Atlantic Ocean DPS

| Species | ESA Listing Status | Listing Rule/Date | Most Recent recovery plan date | USACE Effect Determination (Species) |
|---|---|---|---|---|
| Scalloped hammerhead shark[3] | T | 79 FR 38213/ July 3, 2014 | N/A | NLAA |
| Oceanic white tip shark | T | 83 FR 4153/ January 1, 2018 | N/A | NLAA |
| Giant manta ray | T | 83 FR 2916/ January 22, 2018 | N/A | NLAA |
| Blue whale | E | 35 FR 18319/ December 2, 1970 | July 1998 | NLAA |
| Fin whale | E | 35 FR 18319/ December 2, 1970 | August 2010 | NLAA |
| Sei whale | E | 35 FR 18319/ December 2, 1970 | December 2011 | NLAA |
| Sperm whale | E | 35 FR 18319/ December 2, 1970 | December 2010 | NLAA |
| Elkhorn coral | T | 71 FR 26852/ May 9, 2006 | March 2015 | LAA |
| Mountainous star coral | T | 79 FR 53852/ September 10, 2014 | N/A | LAA |
| Lobed star coral | T | 79 FR 53852/ September 10, 2014 | N/A | LAA |
| Pillar coral | T | 79 FR 53852/ September 10, 2014 | N/A | LAA |

Table 3: DCH in the Action Area

| Species | DCH in the Action Area | DCH Rule/Date | USACE Effect Determination (DCH) |
|---|---|---|---|
| Elkhorn coral | St. John/St. Thomas Area | 73 FR 72210/ November 26, 2008 | LAA |
| Staghorn coral | St. John/St. Thomas Area | 73 FR 72210/ November 26, 2008 | LAA |

Table 4. Species use of the Action Area and Designated Critical Habitat Description

| Species | Species Use of the Action Area and/or DCH Description |
|---|---|
| Green sea turtle | Green sea turtles were observed swimming during the surveys conducted within the proposed project area. The |

[3] Central and southwest Atlantic DPS

| Species | Species Use of the Action Area and/or DCH Description |
|---|---|
| | extensive seagrasses, as well as the reef/colonized pavement located within the Action Area provide suitable refuge and foraging habitat for this species. |
| Leatherback sea turtle | Although leatherback sea turtles have been observed within Coral Bay, no individuals of these species were sighted during the surveys conducted within the Action Area. The proposed project area lies within the know distribution range of leatherback sea turtles. Leatherback sea turtles are an offshore species, rarely observed close to shore except during their nesting season, which extends from approximately February to August in the U.S. Caribbean. Leatherbacks may be also present within the Action Area if jellyfish which serve as forage are present. |
| Loggerhead sea turtle | Loggerhead sea turtles are uncommonly seen in the U.S. Virgin Islands. No loggerhead sea turtles were observed during the surveys conducted within the Action Area. The reef/colonized pavement and seagrasses located within the Action Area, could provide suitable refuge and foraging habitat for loggerhead sea turtles. |
| Hawksbill sea turtle | Hawksbill sea turtles were observed swimming during the surveys conducted within the proposed project area. The extensive seagrasses, as well as the reef/colonized pavement located within the Action Area provide suitable refuge and foraging habitat for this species. |
| Nassau grouper | Adult and juvenile Nassau grouper individuals were observed during the benthic surveys conducted for this project. The extensive seagrasses, macroalgae, hardbottom, and mangroves present within Coral Harbor and the Action Area provide suitable nursery, refuge and/or foraging habitat for this species. |
| Scalloped hammerhead shark | The proposed project area lies within the reported distribution range for Scalloped hammerhead sharks. This species can be found in coastal warm temperate and tropical seas worldwide. They occur over continental and insular shelves, as well as adjacent deep waters. They have also been documented entering enclosed bays and estuaries. Adult aggregations are most common offshore over seamounts and near islands, whereas neonate and juvenile aggregations are more common in nearshore nursery habitats. As juveniles, when they occur primarily in inshore and shallow coastal waters their diet consists of small reef fish and |

| Species | Species Use of the Action Area and/or DCH Description |
|---|---|
| | crustaceans. Generally, as they become larger, they begin to venture into neighboring deep-water habitats to feed on the larger pelagic fishes and squid. During the day, Scalloped hammerhead sharks are commonly observed refuging in large aggregations in shallow, nearshore coastal areas, off islands, and over seamount ridges. Nursery habitats for scalloped hammerhead sharks are generally identified as shallow inshore areas, including bays and estuaries.<br><br>No Scalloped hammerhead sharks were observed during the surveys conducted within the project area. In fact, the Corps has no information of confirmed sightings of this species in waters of the U.S. Virgin Islands. Moreover, NMFS considers the waters under U.S. jurisdiction within the Central & SW Atlantic DPS range to be unoccupied (80 FR 71774, November 17, 2015). However, since the species has been reported for the waters around the USVI, and Coral Harbor is a documented shark nursery, we are including the species here for consideration of potential project impacts. |
| Oceanic white tip shark | The proposed project area lies within the know distribution range of the Oceanic white tip shark. These sharks are found worldwide in warm tropical and subtropical waters. They live near the surface in warm waters in the open ocean, usually well offshore. No Oceanic white tip sharks were observed during the surveys conducted within the proposed project area. However, since the species has been reported for the waters around the USVI, and Coral Harbor is a documented shark nursery, we are including the species here for consideration of potential project impacts. |
| Giant manta ray | The proposed project area lies within the know distribution range of the Giant manta ray. This species is thought to be a seasonal visitor along productive coastlines with regular upwelling, in oceanic island groups, and near offshore pinnacles and seamounts. Giant manta rays visit cleaning stations on shallow reefs, are sighted feeding at the surface inshore and offshore, and are also occasionally observed in sandy bottom areas and seagrass beds. No Giant manta rays were observed during the surveys conducted within the proposed project area. However, in the U.S. Virgin Islands, Giant manta rays are typically found offshore in the open |

| Species | Species Use of the Action Area and/or DCH Description |
|---|---|
| | ocean, but may sometimes be found around nearshore reefs, such as those in the Action Area. |
| Whales (Blue, fin, sei and sperm) | The Corps was not able to locate survey data for ESA-listed whale species in the area of USVI. However, based on data from Puerto Rico, Blue, fin, and sei whales may be common in waters around St. John, including the vicinity of the Action Area, during their winter migration to the Caribbean. Because of its location in relatively shallow and narrow bay, it is unlikely that whales could be present within the Action Area. The Corps is not aware of any reports of whales within Coral Harbor or the Action Area. However, the Corps is aware of anecdotal reports of whale sightings in waters just outside of Coral Bay. |
| Elkhorn coral | Several colonies of Elkhorn coral are located within the Action Area for this project. According to the benthic assessments conducted for this project, five colonies of this species are found on the shallow reef and hardbottom areas located at the east side of the mouth of Coral Harbor, approximately 2,100 ft from the project site. |
| Mountainous star coral | Several colonies of Mountainous star coral are located within the Action Area for this project. According to the benthic assessments conducted for this project, four colonies of this species are found on the shallow reef and hardbottom area located on the east side of the mouth of Coral Harbor, approximately 2,100 ft from the project site. |
| Lobed star coral | Several colonies of Mountainous star coral are located within the Action Area for this project. According to the benthic assessments conducted for this project, six colonies of this species are found on the shallow reef and hardbottom area located on the east side of the mouth of Coral Harbor, approximately 2,100 ft from the project site. Six additional colonies of this species are found on the shallow reef and hardbottom area located on the west side of the mouth of Coral Harbor, approximately 1,100 ft from the project site. |
| Pillar coral | According to the benthic assessments conducted for this project, a single colony of this species is found on the shallow reef and hardbottom area located on the east side of the mouth of Coral Harbor, approximately 2,100 ft from the project site. |

| Species | Species Use of the Action Area and/or DCH Description |
|---|---|
| Designated critical habitat for Elkhorn and Staghorn corals | According to information provided by the applicant, an area of approximately 0.08 acre of shallow colonized reef and hardbottom is present on the west side of the mouth of Coral Harbor, about 1,100 ft from the project site. Another area of approximately 2.15 acres of shallow colonized reef and hardbottom are present on the east side of the mouth of Coral Harbor, about 2,100 ft from the project site. These areas, support the essential features of *Acropora* spp. designated critical habitat. |

D. ROUTE(S) OF EFFECT TO SPECIES:

1. Species Not Likely to be Adversely Affected

a) Whales (Blue, fin, sei and sperm)

The Corps does not have survey data for ESA-listed whale species in the area of USVI. Based on data from Puerto Rico, including reports of strandings, humpbacks are likely common during their winter migration to the Caribbean. Last year, there was a stranding of a baby sperm whale on Vieques Island, Puerto Rico, which is part of the Spanish Virgin Islands and not far from St. Thomas and St. John. Blue, fin, and sei whales may also be present in the vicinity of the Action Area during winter migration. The Corps is aware of anecdotal reports of sightings of whales in waters around St. John and just outside of Coral Bay. However, because of its location in relatively shallow and narrow bay, it is unlikely that whales would be present within the Action Area. The Corps is not aware of any reports of whales within Coral Harbor or the Action Area. ESA-listed whale species could be struck by work vessels transiting to and from Coral Harbor during project construction, in particular if work takes place during winter migration. The USACE would require compliance with NMFS *Vessel Strike Avoidance Measures and Reporting for Mariners*, revised on February 2008. Work vessels would operate at low speeds and have sea turtle and marine mammal observers. This would provide protection to ESA-listed whales during the transit of work vessels by requiring vessels maintain set distances from whales for their transit. In addition to the required implementation of NMFS's vessel strike guidance, the marina construction contractors would implement a sea turtle and marine mammal monitor or observer training program for vessel crew members and construction personnel (Enclosure 6F in the attached DVD). Because whales are not likely to be present in the Action Area year-round, and given the survey programs and permit conditions the Corps would require, we believe the risk of injury from collision with work vessels during the construction of the proposed marina would be discountable.

ESA-listed whales could also be struck by vessels transiting to or from the proposed marina, particularly considering a potential increase in vessel traffic as a result of the addition of 144 new boat slips in the area. The Corps has no information documenting any vessel-whale collisions around St. John or the U.S Virgin Islands. Notwithstanding, the Corps would require the implementation of an education program, including the installation of signs and placards alerting all marina users about the potential presence of ESA listed whales around St. John and providing information about safe navigation practices to protect marine mammals and prevent vessel strikes. We expect vessel operators to be able to see whales at a distance and steer a course away from them. Also, because of their mobility, we expect whales to move away from in-transit vessels. Smaller vessels are less likely to strike whales, are typically only used in good conditions when whales are more visible, and can be more easily and quickly maneuvered to avoid whales. Therefore, we believe the likelihood of whales being struck by vessels as a result of increasing the number of slips by 144 will be discountable.

2. Species Likely to be Adversely Affected

a) Sea Turtles (Green, Leatherbacks, Loggerhead and Hawksbill)

Effects to Green, Leatherback, Loggerhead and Hawksbill sea turtles include the potential risk of injury from being struck by in-water construction machinery (barges, cranes, spuds, anchors, etc.) during the proposed construction work. Sea turtles could be struck also by work and support vessels transiting to and from the proposed work areas. As described above, Green and Hawksbill sea turtles were observed during surveys conducted within the Action Area for this project. The Action Area is located in an open bay, so access to open water is not impeded in any way for sea turtles that might be in the area during operation of in-water construction machinery and vessels. All in-water construction work would be limited to daylight hours only. Construction barges would be spudded in place while conducting in-water work. In addition, the barges and all other support vessels would move at very low speeds. As a result, sea turtles would be able to hear and see in water construction machinery and vessels. The Corps expects any animals that approach the in-water work areas to swim away. Sea turtles have been reported to flee approximately 60% of the time from slow moving vessels (2.5 miles per hour [mph]) (Hazel et al. 2007). Also, according to NMFS 2015, unpublished sea turtle stranding data from the U.S. Virgin Islands Department of Planning and Natural Resources (DPNR) indicate that from 1982 to 2006 there were 22 strandings in St. Thomas with only four caused by boats. In St. Croix, there were 74 strandings with only five caused by boats. In addition, the Corps would require compliance with NMFS *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006. The implementation of the construction conditions would provide protection to sea turtles by requiring temporary work stoppages to protect any sea turtles that approach the in-water work area. The Corps would also require

compliance with NMFS *Vessel Strike Avoidance Measures and Reporting for Mariners*, revised on February 2008. All work vessels involved in the construction of the marina would operate at low speeds and have sea turtle and marine mammal observers. This would provide protection to sea turtles during the transit of work vessels by requiring that vessels maintain set distances from sea turtles for their transit. Additionally, the proper use of turbidity curtains would prevent these species from coming into close proximity to active in water work areas. Marina construction contractors would also implement a sea turtle monitoring program (Enclosure 6F in the attached DVD) during the proposed work, which would include training of personnel involved in in-water work as observers. Observers would visually monitor a 500-meter safety zone around any active construction. If at any time sea turtles are observed within the 500-meter safety zone, all construction work would be shut down until the animals leave the safety zone of own volition. Records would be maintained of all sea turtle sightings in the area, including date and time, weather conditions, species identification, approximate distance from the project area, direction and heading in relation to the project area, and behavioral observations. Reports would be provided to the Corps, NMFS, and DPNR on a monthly basis. Based on the above, the Corps believes the risk of injury to sea turtles from being struck by in-water construction machinery or collisions with in-transit work vessels would be discountable.

In addition, sea turtles could be struck by vessels transiting to or from the marina during the operation of the project. An increase in vessel traffic, as a result of the construction and operation of the marina, may also increase the potential for vessel strikes to sea turtles. The project would provide new docking space for 144 vessels within Coral Harbor. However, even if 144 new vessels are introduced to this area, according to NMFS' analysis it would take the introduction of at least 300 vessels to an area to result in the take of one sea turtle in a single year (NMFS, 2013). Based on these findings, we believe sea turtles are unlikely to be struck as a result of increasing the number of vessels in the area by 144, which is the number of new slips to be created by the marina. In addition, the marina would implement an education program for the users of the marina, which would include the placement of signs or placards informing boaters about sea turtle awareness and vessel strike prevention. Therefore, we find the likelihood of sea turtles being struck as a result of increased vessel traffic associated with the construction and operation of the marina to be discountable.

Sea turtles might be adversely affected by their inability to access the project area for foraging, refuge, and/or nursery habitat, due to their avoidance of construction activities, and physical exclusion from the project area due to blockage by turbidity curtains. However, since pipe installation activities would be limited to daylight hours, a maximum of six piles, and 1800 impact hammer strikes per day, sea turtles would be able to resume normal activities during quiet periods between pile installations, immediately after completion of the noise producing activities each day, and at night. In addition, there are similar natural habitats outside of the Action Area, which would remain available to sea turtles during the temporary project construction. Therefore,

any potential limitations in the ability of sea turtles to use habitats within the Action Area as a result of the construction of the proposed project are expected to be very minor, temporary, and insignificant.

Sea turtles could also be impacted by the temporary or permanent degradation or loss of foraging or refuge habitat associated with the construction of the proposed marina. As described above, applicant estimates indicate that the construction of the proposed project would result in impacts to 3.365 acres of seagrasses, due to the installation of the pilings, spudding of working barges, and shading from the docking structures and the vessels at the marina. It is relevant to indicate that estimates made by others (Enclosure 16C in the attached DVD) suggest that shading from docking structures and vessels at the proposed marina would result in the loss of 7.8 acres of seagrasses. The Corps understands that additional practical alternative designs, which could further reduce the potential effects of the project on seagrasses, are available but were not considered or evaluated by the applicant. Such alternatives could involve using mooring piles instead of full boat length finger piers; and reducing the size and width of some of the piers and docks. This would reduce the shading footprint of the marina, the number of proposed piles, and their associated impacts to seagrasses. The use of silt curtains and the implementation of the proposed water quality and environmental monitoring plans would effectively minimize sediment transport and impacts, including degradation and/or loss, to seagrasses adjoining the project footprint during in-water construction work. Also, shading impacts to seagrasses within the footprint of the marina would be minimized through the use of grated decking. In addition, approximately 0.03 acre of seagrasses located within the footprint of the proposed dock supporting piles would be transplanted prior to begin project construction preventing their loss. To compensate for project impacts to seagrasess, the applicant proposes to remove approximately 11,200 sq. ft. of debris, which is presently scattered and damaging the seagrass beds throughout Coral Harbor and Coral Bay, thereby enhancing the existing sea turtle foraging and refuge habitat. Furthermore, the applicant proposes to assume the long term maintenance of storm water runoff management structures located throughout the Coral Bay Watershed. The applicant asserts that maintenance of those structures would result in improved water quality within Coral Harbor, which would in turn benefit the seagrass beds and the aquatic environment, enhancing sea turtle foraging and refuge habitat. In spite of the applicant's assertions, based on the available information and studies the Corps cannot fully assess or quantify the beneficial effects of the proposed debris removal and maintenance of storm water runoff on the condition and extent of seagrasses within Coral Harbor. In addition, as described below in more detail, the Corps understands that the operation of the marina would result in increased and potentially chronic turbidity within the harbor, which could outweigh the benefits of the proposed compensatory measures. The Corps further understands that the mitigation plan proposed by the applicant would not provide sufficient compensation for the potential impacts of the marina on seagrasses, which serve as sea turtle foraging and refuge habitat. As previously described, sea turtles, particularly hawksbill and green sea

turtles, have been documented using the resources and habitats within Coral Harbor. There are extensive seagrass beds in other portions of Coral Bay, which would continue to provide high quality foraging and refuge habitat for sea turtles. However, the Corps believes that the potential loss of 3.365 to 7.8 acres of seagrasses within the Action Area would be detrimental for, and could affect the recovery of, sea turtles, which regularly utilize those seagrasses as foraging and refuge habitat. Based on the above, the Corps has determined that the temporary or permanent loss of use of foraging or refuge habitat due to the installation of the pilings, spudding of working barges, and shading from the docking structures and vessels at the marina is likely to adversely affect the above referenced ESA listed sea turtles.

In addition to the above, the applicant estimates that the operation of the marina would result in the loss of approximately 0.385 acre of seagrasses due to prop wash and sediment stir-up and resuspension from vessels while docked, docking at, or departing from the marina. The Corps understands that the applicant may have underestimated those impacts. Average water depth within the marina footprint would be approximately 12 feet. The proposed marina would provide docking space for 144 vessels up to 160 feet in length. Thirty nine (39) of the 144 proposed slips would be for vessels 100 feet long or longer. Vessels of that size commonly have drafts between five to nine feet. Some of the docks for 100 feet long vessels would be located in water depths of eight to nine feet. With such a limited clearance from the marine bottom such large vessels could damage the seagrasses located within the footprint of slips by burying or breaking them with prop wash, or by continuously stirring-up and re-suspending sediments. This increased sedimentation and turbidity could extend throughout the Action Area impacting and damaging the seagrass beds and other benthic habitats located therein. To accurately assess the water mixing and flushing capacity of Coral Harbor, as well as the potential effects of the operation of the marina on the sedimentation, turbidity and water quality levels therein, the Corps requested the applicant to complete and submit a water circulation modeling study of the harbor. However, the applicant did not submit such study. Instead, the applicant collected water current measurements within the project footprint for a two year period, and then analyzed those observations in accordance with methods described by Ketchum (1951). According to the applicant's measurements and analysis, water movement in Coral Bay, particularly in Coral Harbor, is sluggish with circulation and currents being both tidally and wind influenced. Only limited exchange or flushing occurs which is clear by the difference in turbidity in and out of the bay. Rarely is turbidity low within the harbor. The applicant's analysis acknowledges that under those conditions, resuspended fine sediments would remain in the water column of Coral Harbor for an extended period of time potentially resulting long-term increases in turbidity and associated detrimental effects to the benthic community. Therefore, the Corps believes that it could be reasonably expected that the operation of the marina would generate and maintain chronic high turbidity, worsening the already compromised water quality of Coral Harbor, and potentially resulting in extensive deterioration and loss of the seagrasses located therein. This would reduce the foraging and refuge habitat available for sea

turtles within the Action Area, and could affect the recovery of the species. Estimates made by others (Enclosure 16C in the attached DVD) suggest that prop wash impacts associated to the operation of the marina would result in the loss of approximately 4.25 to 5.5 acres of seagrasses. As stated above, based on the available information and studies the Corps cannot fully assess or quantify the beneficial effects of the proposed debris removal and maintenance of storm water runoff on the condition and extent of seagrasses within Coral Harbor. Furthermore, the Corps understands that the mitigation plan proposed by the applicant would not provide sufficient compensation for the potential impacts of the marina on seagrasses, which serve as sea turtle foraging and refuge habitat. Based on this information, the Corps has determined that the temporary or permanent loss of foraging or refuge habitat associated with sediment stir-up and resuspension from vessel prop wash as part of the operation of the marina is likely to adversely affect the above referenced ESA listed sea turtles.

As stated in the project description, the proposed project includes the installation of 12 mooring buoys, which would be secured to the marine floor using auger anchors and floated lines. Also, seven informational buoys would be installed using screw anchors and floated lines. In addition, floating silt curtains would be installed around the pile driving work areas. The mooring tackle or lines of those buoys could pose an entanglement risk for sea turtles if the lines becomes slack or are capable of forming loops. However, we expect that the anchoring lines would be given only enough slack to enable the buoys to move up and down with the wind and waves and are not expected to form loops. The Corps could not locate any information documenting entanglements with similar mooring tackle in the USVI. Based on a review of the entanglement risks to larger marine animals posed by moorings used for offshore energy systems, it was found that moorings pose a relatively modest risk in terms of entanglement (Benjamins et al., 2014). The buoys and their mooring tackle would be inspected periodically to ensure they remain in good condition and do not pose any risk of entanglement. Similarly, the floating silt curtains would be inspected constantly to ensure they are taut and are not presenting a risk of entanglement to marine fauna. Based on this information, we believe the threat of entanglement of sea turtles in the mooring tackle and silt curtains is discountable.

Sea turtles could be adversely impacted by potential spills of fuels during the operation of the proposed project, particularly since the operation of the marina would include vessel fueling facilities and expects to dispatch a maximum of 10,500 gallons of fuel to the largest size vessels utilizing the marina (Enclosure 8F in the attached DVD). The applicant has indicated that all components of the fueling system would be constructed in compliance with U.S. Environmental Protection Agency (USEPA) and DPNR requirements (Enclosure 3 in the attached DVD). As part of its operations, the marina would obtain a Terminal Facility License in order to be able to provide fuel. In addition, the marina would have a DPNR approved Spill Prevention Countermeasure and Control Plan, prior to commence operations. This plan would address measures to prevent, address and minimize the effects of any potential minor or major fuel spills

(Enclosures 3 and 6C2 in the attached DVD). Based on this information, the Corps understands that it would be unlikely that any fuel spill would be severe enough to produce adverse effects to sea turtles. Therefore, the Corps believes that the potential for adverse effects to sea turtles from potential fuel spills during the operation of the proposed marina would be discountable.

Underwater noise generated during the installation of the proposed dock supporting piles has the potential to physically injure or change the behavior of ESA listed species, which could be present in the vicinity of the project area. Injurious effects to these species can occur in two ways. First, immediate adverse effects can occur to listed species if a single noise event exceeds the threshold for direct physical injury. Second, effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects, if animals are exposed to the noise levels for sufficient periods. Behavioral effects can be adverse if such effects prevent animals from migrating, feeding, resting, or reproducing, for example. To evaluate potential effects to ESA listed marine species as a result of noise created by the proposed dock supporting piles installation we utilized the Practical Spreading Loss Model of Pile Driving Noise Calculator Tool, dated August 16, 2017, from NMFS South East Region (Enclosure 14 in the attached DVD).

Our underwater noise or acoustic effects analysis considered the specific details of the proposed steel pipe pile driving activities, as summarized above in the Description of the Proposed Action and Table 1. Construction of the proposed marina would require installing 960 piles to support the docking structures. Sixty six (66) of those would be 14-inch square concrete piles; 457 would be 14-inch steel pipe piles filled with concrete; and 437 would be 18-inch steel pipe piles filled with concrete. Pile installation work would be limited to daylight hours only. An impact hammer would be used to install all piles. Wood block cushions and air bubble curtains would be used to attenuate noise from the impact hammer pile driving work. A maximum of six (6) piles would be installed each day. The installation of each pile would require an average of 300 blows with the impact hammer. The installation of the 960 proposed piles would be completed in approximately 160 days. Even though three different types of piles would be installed, following a conservative approach, the noise analysis was completed using the largest pile with the largest potential for noise generation, which was the 18-inch in diameter steel pipe piles. Since the NMFS Pile Driving Noise Calculator Tool does not provide information for Steel Pipe Piles with 18" diameter, we used the data 40 for Steel Pipe Piles with 20" in diameter installed with impact hammer at a water depth between 3 to 5 meters, with attenuation of 3-5 dB. Since the applicant is proposing to use wood blocks and air bubble curtains to attenuate noise, we included an attenuation factor of 11 dB in the calculations. The 11 dB was obtained adding an 11 dB reduction for the use of wood blocks and a 5 dB reduction for the use of air bubble curtains and then subtracting the 5 dB attenuation already including in the pile driving noise data provided in the tool. Since there would be open water portions of the bay without solid objects within 260 feet of any proposed pile driving activity, the project area was considered an

open water environment (Figure 6). The results of our noise analysis are summarized in Table 5 below.

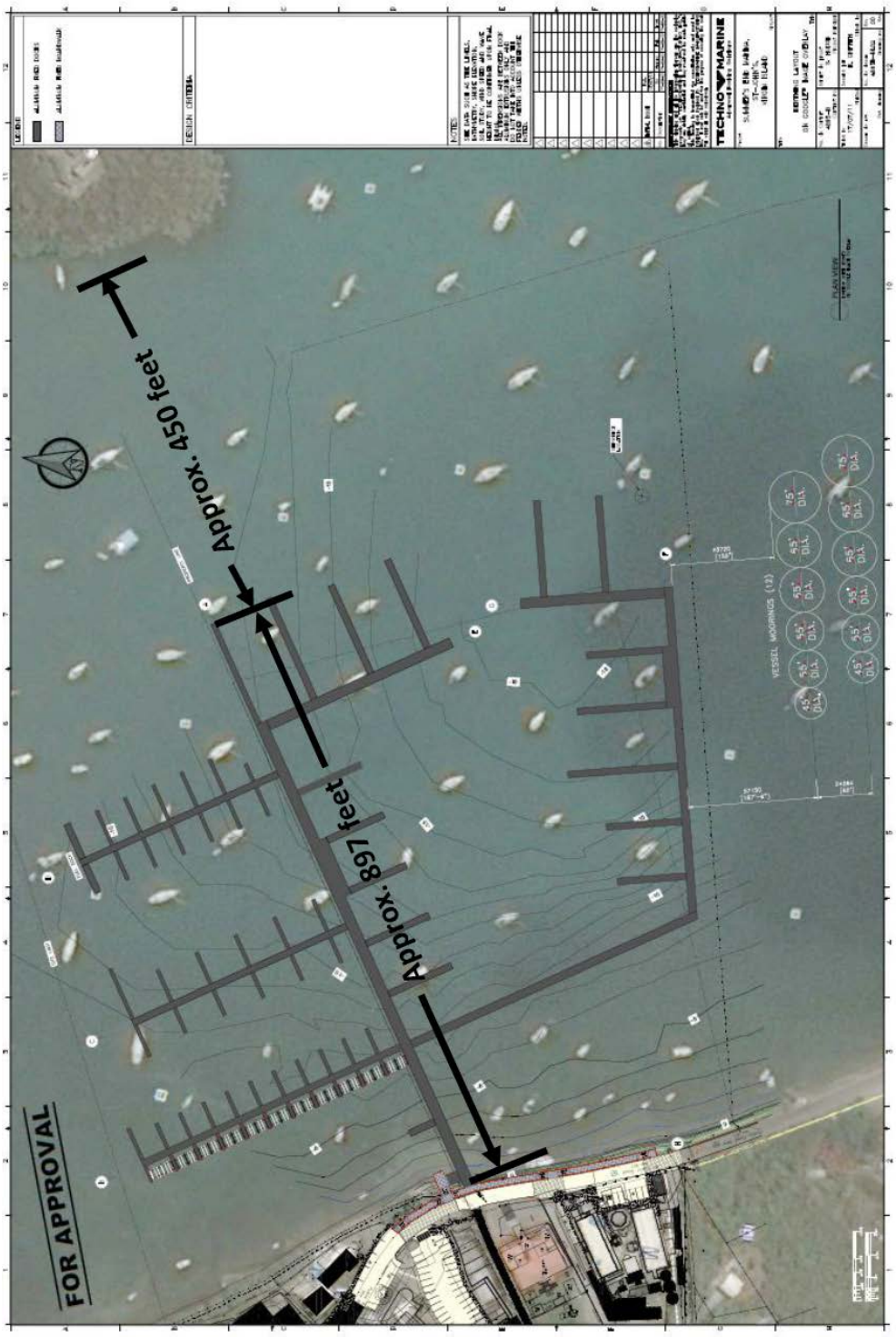
Table 5. Hydraulic (Impact) Hammer Installation of Steel Pipe Piles (18 inch diameter)

| **Calculated Distances** | | | | | |
|---|---|---|---|---|---|
| | Onset of Physical Injury | | | Fish Behavior | Sea Turtle Behavior |
| | Peak | Cumulative SEL dB** | | RMS | RMS |
| | Sea Turtles & Fish | Sea Turtles & Fish ≥ 2 g | Fish < 2 g | dB | dB |
| Threshold value | 206 | 187 | 183 | 150 | 160 |
| Distance to threshold (m) | **2.512** | **5.053** | **9.336** | **54.117** | **11.659** |
| Distance to threshold (ft) | **8.241 ft** | **16.577 ft** | **30.631 ft** | **177.549 ft** | **38.252 ft** |
| | ** This calculation assumes that single strike SELs < 150 dB do not accumulate to cause injury (Effective Quiet) | | | | |

According to our results, the proposed installation of steel pipe piles by hydraulic impact hammer would cause single-strike or peak-pressure injury to sea turtles at a radius of up to 2.512 m (8.2411 ft). In addition, the cumulative sound exposure level (cSEL) of multiple pile strikes over the course of a day may cause injury to sea turtles at a radius of up to 5.053 m (16.577 ft). To minimize potential impacts to federally protected sea turtles, the applicant is proposing and the Corps would require establishing a 500-m safety/monitoring zone around the project area during project construction. Trained observers would visually monitor the safety zone for at least 30 minutes prior to beginning all in-water construction activities. If at any time, a sea turtle is observed in this safety zone, which is well before the sea turtles threshold for injurious effects, the operation would be shut down until the animal leaves the safety zone of its own volition. This would effectively protect sea turtles from potential noise impact related injury if they were to approach the pile installation area. Additionally, the proper use of turbidity curtains would prevent these species from coming into close proximity to active in water work areas. Also, due to the mobility sea turtles, we expect them to move away from noise disturbances. Because we anticipate the animal would move away, we believe that the possibility of a sea turtle suffering physical injury from noise would be extremely unlikely. Therefore, the likelihood of any injurious cSEL effects to sea turtles would be discountable. An animal's movement away from the injurious impact zone is a behavioral response, with the same effects discussed below.

Based on our noise calculations, impact hammer pile installation could also cause behavioral effects to sea turtles at a radius of up to 11.659 m (38.252 ft). Due to the mobility of sea turtles, we expect them to move away from noise disturbances. Because there are similar habitats nearby, we believe behavioral effects would be insignificant. If a sea turtle chooses to remain within the behavioral response zone, it

Figure 6
Open Water Environment



could be exposed to behavioral noise impacts during pile installation. Since pipe installation activities would be limited to daylight hours, a maximum of six piles, and 1800 impact hammer strikes per day, sea turtles would be able to resume normal activities during quiet periods between pile installations, immediately after completion of the noise producing activities each day, and at night. Therefore, we anticipate that any project related behavioral effects to sea turtles would be insignificant.

Notwithstanding the above, it is important to note that our noise analysis above relied on the pile driving information provided by the applicant (Enclosure 12 in the attached DVD). This information estimated that an average of 300 strikes would be required to install each pile, six piles would be installed per day, and all pile driving would be completed in 166 days. These estimates were based on the assumption that sediments within the proposed marina footprint are composed of a mix of fine, silty sand and clay throughout the 25 feet embedment depth necessary to adequately install the piles. However, even though the Corps requested it, no geotechnical data or study was provided by the applicant to support those assumptions. If rocky layers, bedrock or harder substrate are found within the needed embedment depth, additional strikes could be needed to install each pile, and/or the pile installation work duration could be extended. This could affect the noise analysis results and determinations provided above.

b) Fish Species (Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray)

Effects to Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray from this project include the potential risk of injury from being struck by in-water construction machinery and vessels (barges, anchors, spuds, crane, etc.) within the in-water work footprint. Sightings data for the project area indicate that only Nassau groupers have been observed within the proposed work areas. However, the colonized reef, hard bottom areas, macroalgae and seagrass areas within the Action Area could also provide suitable foraging habitats for the Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray. Notwithstanding, the construction of the proposed marina would be completed using work vessels operating at slow speeds. Due to their mobility and ability to avoid construction activities, we expect Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals to move away from any operating in-water equipment. Additionally, the proper use of turbidity curtains would prevent these species from coming into close proximity to active in water work areas. Based on the above, we believe injury from in-water construction machinery is extremely unlikely to occur; therefore this effect would be discountable.

Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals might be adversely affected by their inability to access the project area for foraging, refuge, and/or nursery habitat, due to their avoidance of

construction activities, and physical exclusion from the project area due to blockage by turbidity curtains. However, since pipe installation activities would be limited to daylight hours, a maximum of six piles, and 1,800 impact hammer strikes per day, ESA listed fish species would be able to resume normal activities during quiet periods between pile installations, immediately after completion of the noise producing activities each day, and at night. In addition, there are similar natural habitats outside of the Action Area, which would remain available to these species during the temporary project construction. Therefore, any potential limitations in the ability of Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals to use habitats within the Action Area as a result of the construction of the proposed project are expected to be very minor, temporary, and insignificant.

Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals could also be impacted by the temporary or permanent degradation or loss of nursery, foraging and/or refuge habitat associated with the construction of the proposed marina. As described above, applicant estimates suggest that the construction of the proposed project would result in impacts to 3.365 acres of seagrasses, due to the installation of the pilings, spudding of working barges, and shading from the docking structures and the vessels at the marina. It is relevant to indicate that estimates made by others (Enclosure 16C in the attached DVD) suggest that shading from docking structures and vessels at the proposed marina would result in the loss of 7.8 acres of seagrasses. The Corps understands that additional practical alternative designs, which could further reduce the potential effects of the project on seagrasses, are available but were not considered or evaluated by the applicant. Such alternatives could involve using mooring piles instead of full boat length finger piers; and reducing the size and width of some of the piers and docks. This would reduce the shading footprint of the marina, the number of proposed piles, and their associated impacts to seagrasses. The use of silt curtains and the implementation of the water quality and environmental monitoring plans would effectively minimize sediment transport and would prevent impacts to adjoining seagrasses during project construction. Also, shading impacts to seagrasses within the footprint of the marina would be minimized through the use of grated decking. In addition, approximately 0.03 acre of seagrasses located within the footprint of the proposed dock supporting piles would be transplanted prior to begin project construction preventing their loss. To compensate for project impacts to seagrasess, the applicant proposes to remove approximately 11,200 sq. ft. of debris, which is presently scattered and damaging the seagrass beds throughout Coral Harbor and Coral Bay, thereby enhancing the existing ESA listed fish species nursery, foraging and/or refuge habitat. Furthermore, the applicant proposes to assume the long term maintenance of storm water runoff management structures located throughout the Coral Bay Watershed. The applicant asserts that maintenance of those structures would result in improved water quality within Coral Harbor, which would in turn benefit the seagrass beds and the aquatic environment, enhancing ESA listed fish species nursery, foraging and/or refuge habitat. In spite of the applicant's assertions, based on the available information and studies the

Corps cannot fully assess or quantify the beneficial effects of the proposed debris removal and maintenance of storm water runoff on the condition and extent of seagrasses within Coral Harbor. In addition, as described below in more detail, the Corps understands that the operation of the marina would result in increased and potentially chronic turbidity within the harbor, which could outweigh the benefits of the proposed compensatory measures. The Corps further understands that the mitigation plan proposed by the applicant would not provide sufficient compensation for the potential impacts of the marina on seagrasses, which serve as ESA-listed fish species nursery, foraging and/or refuge habitat. As previously described, ESA listed fish species, particularly Nassau grouper, have been documented using the resources and habitats within Coral Harbor. In addition, Coral Harbor has been documented to serve as a shark nursery habitat. There are extensive seagrass beds in other portions of Coral Bay, which would continue to provide high quality nursery, foraging and/or refuge habitat for ESA listed fish species. However, the Corps believes that the potential loss of 3.365 to 7.8 acres of seagrasses within the Action Area would be detrimental for, and could affect the recovery of, ESA listed fish species, particularly Nassau grouper, which regularly utilize those seagrasses as nursery, foraging and/or refuge habitat. Based on the above, the Corps has determined that the temporary or permanent loss of use of nursery, foraging and/or refuge habitat due to the installation of the pilings, spudding of working barges, and shading from the docking structures and vessels at the marina is likely to adversely affect the above referenced ESA listed fish species.

In addition to the above, the applicant estimates that the operation of the marina would result in the loss of approximately 0.385 acre of seagrasses due to prop wash and sediment stir-up and resuspension from vessels while docked, docking at, or departing from the marina. The Corps understands that the applicant may have underestimated those impacts. Average water depth within the marina footprint would be approximately 12 feet. The proposed marina would provide docking space for 144 vessels up to 160 feet in length. Thirty nine (39) of the 144 proposed slips would be for vessels 100 feet long or longer. Vessels of that size commonly have drafts between five to nine feet. Some of the docks for 100 feet long vessels would be located in water depths of eight to nine feet. With such a limited clearance from the marine bottom such large vessels could damage the seagrasses located within the footprint of slips by burying or breaking them with prop wash, or by continuously stirring-up and re-suspending sediments. This increased sedimentation and turbidity could extend throughout the Action Area impacting and damaging the seagrass beds and other benthic habitats located therein. To accurately assess the water mixing and flushing capacity of Coral Harbor, as well as the potential effects of the operation of the marina on the sedimentation, turbidity and water quality levels therein, the Corps requested the applicant to complete and submit a water circulation modeling study of the harbor. However, the applicant did not submit such study. Instead, the applicant collected water current measurements within the project footprint for a two year period, and then analyzed those observations in accordance with methods described by Ketchum (1951). According to the applicant’s measurements and analysis, water movement in Coral Bay,

particularly in Coral Harbor, is sluggish with circulation and currents being both tidally and wind influenced. Only limited exchange or flushing occurs which is clear by the difference in turbidity in and out of the bay. Rarely is turbidity low within the harbor. The applicant's analysis acknowledges that under those conditions, resuspended fine sediments would remain in the water column of Coral Harbor for an extended period of time potentially resulting long-term increases in turbidity and associated detrimental effects to the benthic community. Therefore, the Corps believes that it can be reasonably expected that the operation of the marina would generate and maintain chronic high turbidity, worsening the already compromised water quality of Coral Harbor, and potentially resulting in extensive loss of the seagrasses located therein. This would reduce the nursery, foraging and/or refuge habitat available for ESA listed fish species within the Action Area, and could affect the recovery of those species. Estimates made by others (Enclosure 16C in the attached DVD) suggest that prop wash impacts associated to the operation of the marina would result in the loss of approximately 4.25 to 5.5 acres of seagrasses. As stated above, based on the available information and studies the Corps cannot fully assess or quantify the beneficial effects of the proposed debris removal and maintenance of storm water runoff on the condition and extent of seagrasses within Coral Harbor. Furthermore, the Corps understands that the mitigation plan proposed by the applicant would not provide sufficient compensation for the potential impacts of the marina on seagrasses, which serve as ESA listed fish species nursery, foraging and/or refuge habitat. Based on this information, the Corps has determined that the temporary or permanent loss of nursery, foraging or refuge habitat associated with sediment stir-up and resuspension from vessel prop wash as part of the operation of the marina is likely to adversely affect the Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray.

As stated in the project description, the proposed project includes the installation of 12 mooring buoys, which would be secured to the marine floor using auger anchors and floated lines. Also, seven informational buoys would be installed using screw anchors and floated lines. In addition, floating silt curtains would be installed around the pile driving work areas. The mooring tackle or lines of the buoys could pose an entanglement risk for Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals if the buoy lines becomes slack or is capable of forming loops. However, we expect that would be given only enough slack to enable the buoys to move up and down with the wind and waves and are not expected to form loops. The Corps could not locate any information documenting entanglements with similar mooring chains in USVI. Based on a review of the entanglement risks to larger marine animals posed by moorings used for offshore energy systems, it was found that moorings pose a relatively modest risk in terms of entanglement (Benjamins et al., 2014). Abandoned fishing gear was found to pose a far greater risk of entanglement. The buoys and their mooring tackle would be inspected periodically to ensure they remain in good condition and do not pose any risk of entanglement. Similarly, the floating silt curtains would be inspected constantly to ensure they are taut and are not

presenting a risk of entanglement to marine fauna. Based on this information, we believe the threat of entanglement of Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray in the mooring tackle or silt curtains would be discountable.

Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals could be adversely impacted by potential spills of fuels during the operation of the proposed project, particularly since the operation of the marina would include vessel fueling facilities and expects to dispatch a maximum of 10,500 gallons of fuel to the largest size vessels utilizing the marina (Enclosure 8F in the attached DVD). The applicant has indicated that all components of the fueling system would be constructed in compliance with U.S. Environmental Protection Agency (USEPA) and DPNR requirements (Enclosure 3 in the attached DVD). As part of its operations, the marina would obtain a Terminal Facility License in order to be able to provide fuel. In addition, the marina would have a DPNR approved Spill Prevention Countermeasure and Control Plan, prior to commence operations. This plan would address measures to prevent, address and minimize the effects of any potential minor or major fuel spills (Enclosures 3 and 6C2 in the attached DVD). Based on this information, the Corps understands that it would be unlikely that any fuel spill would be severe enough to produce adverse effects to fish species. Therefore, the Corps believes that the potential for adverse effects to Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals from potential fuel spills during the operation of the proposed marina would be discountable.

Noise generated during the proposed installation of anchor pilings has the potential to physically injure or change the behavior of ESA listed fish species, including Nassau grouper, Scalloped hammerhead shark, Oceanic white tip shark, and Giant manta ray individuals, which could be present in the vicinity of the project area. Injurious effects to these species can occur in two ways. First, immediate adverse effects can occur to listed species if a single noise event exceeds the threshold for direct physical injury. Second, effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects, if animals are exposed to the noise levels for sufficient periods. Behavioral effects can be adverse if such effects prevent animals from migrating, feeding, resting, or reproducing, for example. To evaluate potential effects to ESA listed fish species as a result of noise created by the proposed dock supporting piles installation we utilized the Practical Spreading Loss Model of Pile Driving Noise Calculator Tool, dated August 16, 2017, from NMFS South East Region (Enclosure 14 in the attached DVD).

Our underwater noise or acoustic effects analysis considered the specific details of the proposed steel pipe pile driving activities, as summarized above in the Description of the Proposed Action and Table 1. Construction of the proposed marina would require installing 960 piles to support the docking structures. Sixty six (66) of

those would be 14-inch square concrete piles; 457 would be 14-inch steel pipe piles filled with concrete; and 437 would be 18-inch steel pipe piles filled with concrete. Pile installation work would be limited to daylight hours only. An impact hammer would be used to install all piles. Wood block cushions and air bubble curtains would be used to attenuate noise from the impact hammer pile driving work. A maximum of six (6) piles would be installed each day. The installation of each pile would require an average of 300 blows with the impact hammer. The installation of the 960 proposed piles would be completed in approximately 160 days. Even though three different types of piles would be installed, following a conservative approach, the noise analysis was completed using the largest pile with the largest potential for noise generation, which was the 18-inch in diameter steel pipe piles. Since the NMFS Pile Driving Noise Calculator Tool does not provide information for Steel Pipe Piles with 18" diameter, we used the data 40 for Steel Pipe Piles with 20" in diameter installed with impact hammer at a water depth between 3 to 5 meters, with attenuation of 3-5 dB. Since the applicant is proposing to use wood blocks and air bubble curtains to attenuate noise, we included an attenuation factor of 11 dB in the calculations. The 11 dB was obtained adding an 11 dB reduction for the use of wood blocks and a 5 dB reduction for the use of air bubble curtains and then subtracting the 5 dB attenuation already including in the pile driving noise data provided in the tool. Since there would be open water portions of the bay without solid objects within 260 feet of any proposed pile driving activity, the project area was considered an open water environment. The results of our noise analysis are summarized in Table 5 above.

According to our results, the installation of the dock supporting piles by hydraulic impact hammer would cause single-strike or peak-pressure injury to ESA-listed fish (Nassau grouper, Scalloped hammerhead sharks, Oceanic white tip sharks, and Giant manta rays) at a radius of up to 2.512 m (8.241 ft). The cumulative sound exposure level (cSEL) of multiple pile strikes over the course of a day may cause injury to those ESA listed fish species at a radius of up to 9.336 m (30.631 ft). However, the proper use of turbidity curtains would prevent these species from coming into close proximity to active in water work areas. Also, due to the mobility of ESA-listed fish species, we expect them to move away from noise disturbances. Because we anticipate fish to move away, we believe that an animal suffering physical injury from noise would be extremely unlikely to occur and the likelihood of any injurious cSEL effects would be discountable. An animal’s movement away from the injurious impact zone is a behavioral response, with the same effects discussed below.

Based on our noise calculations, impact hammer pile installation could also cause behavioral effects to ESA-listed fish species at radius of up to 54.117 m (177.549 ft). Due to the mobility of ESA-listed fish species, we expect them to move away from noise disturbances. Because there are similar habitats nearby, we believe behavioral effects would be insignificant. If a listed fish chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since pipe installation activities would be limited to daylight hours, a maximum of six

piles, and 1,800 impact hammer strikes per day, fish species would be able to resume normal activities during quiet periods between pile installations, immediately after completion of the noise producing activities each day, and at night. Therefore, we anticipate that any project related behavioral effects to ESA-listed fish species would be insignificant.

Notwithstanding the above, it is important to note that our noise analysis above relied on the pile driving information provided by the applicant (Enclosure 12 in the attached DVD). This information estimated that an average of 300 strikes would be required to install each pile, six piles would be installed per day, and all pile driving would be completed in 166 days. These estimates were based on the assumption that sediments within the proposed marina footprint are composed of a mix of fine, silty sand and clay throughout the 25 feet embedment depth necessary to adequately install the piles. However, even though the Corps requested it, no geotechnical data or study was provided by the applicant to support those assumptions. If rocky layers, bedrock or harder substrate are found within the needed embedment depth, additional impact hammer strikes could be needed to install each pile, and/or the pile installation work duration could be extended. This could affect the noise analysis results and determinations provided above.

c) Corals (Elkhorn, Mountainous star, Lobed star, and Pillar corals)

As stated above in Table 4, Elkhorn, Mountainous star, Lobed star, and Pillar corals are present within the Action Area. According to the benthic assessments conducted for this project, five colonies of Elkhorn coral, four colonies of Mountainous star coral, 12 colonies of Lobed star, and one colony of Pillar coral are found on the shallow reef and hard bottom areas located on both sides of the mouth of Coral Harbor, between 1,100 ft and 2,100 ft from the project site.

The project could result in indirect impacts to these ESA listed coral colonies due to the discharge, resuspension, and transport of sediments during the proposed construction and pile-driving work. ESA listed coral colonies could also be affected by transport of sediments discharged into the harbor from the upland construction areas of the project. However, erosion and sediment control measures including silt fences would be installed between upland construction areas and the shoreline of Coral Harbor to prevent sediment discharges from the project areas into aquatic habitats. In addition, floating turbidity curtains would be installed around all in-water pile driving work, to minimize transport of resuspended sediments outside of the in-water work areas into adjacent aquatic habitats. Furthermore, Water Quality and Environmental Monitoring plans would be implemented during the construction of the marina to assess associated potential sedimentation effects. If elevated turbidity above background levels is detected outside of the immediate work areas, the construction work would stop and any potential deficiencies in the deployed turbidity control would be corrected. Therefore, we believe that the risk of impacts to ESA listed corals associated with the

potential discharge, resuspension, and transport of sediments from the proposed marina construction and pile-driving work would be discountable.

The project could also result in indirect impacts to the above referenced colonies of ESA listed corals if as part of its operation sediments are resuspended due to prop wash from vessels at the marina, and those sediments are transported to the mouth of Coral Harbor. Average water depth within the marina footprint would be approximately 12 feet. The proposed marina would provide docking space for 144 vessels up to 160 feet in length. Thirty nine (39) of the 144 proposed slips would be for vessels 100 feet long or longer. Vessels of that size commonly have drafts between five to nine feet. Some of the docks for 100 feet long vessels would be located in water depths of eight to nine feet. With such a limited clearance from the marine bottom such large vessels could generate prop wash, continuously stirring-up and re-suspending sediments. This increased sedimentation and turbidity could extend throughout the Action Area reaching the mouth of the harbor and impacting the ESA listed corals located therein. To accurately assess the water mixing and flushing capacity of Coral Harbor, as well as the potential effects of the operation of the marina on the sedimentation, turbidity and water quality levels therein, the Corps requested the applicant to complete and submit a water circulation modeling study of the harbor. However, the applicant did not submit such study. Instead, the applicant collected water current measurements within the project footprint for a two year period, and then analyzed those observations in accordance with methods described by Ketchum (1951). According to the applicant's measurements and analysis, water movement in Coral Bay, particularly in Coral Harbor, is sluggish with circulation and currents being both tidally and wind influenced. Only limited exchange or flushing occurs which is clear by the difference in turbidity in and out of the bay. Rarely is turbidity low within the harbor. The applicant's analysis acknowledges that under those conditions, resuspended fine sediments would remain in the water column of Coral Harbor for an extended period of time potentially resulting long-term increases in turbidity and associated detrimental effects to the benthic community. Therefore, the Corps believes that it can be reasonably expected that the operation of the marina would generate and maintain chronic high turbidity, worsening the already compromised water quality of Coral Harbor, and potentially resulting in impacts to the ESA listed coral colonies located within the Action Area. As previously stated, based on the available information and studies the Corps cannot fully assess or quantify the beneficial effects of the proposed maintenance of storm water runoff control structures on the water quality and turbidity levels of Coral Harbor. Based on the above information, the Corps has determined that the sediment stir-up, resuspension and transport from vessel prop wash as part of the operation of the marina is likely to adversely affect the above referenced ESA listed coral colonies.

In addition, ESA listed coral colonies could be affected by the transit of work vessels to and from the in-water construction areas of the proposed marina if a work vessel was to ground on the shallow reef and colonized hard bottom located at both sides of the mouth of Coral Harbor. In order to minimize the potential for accidental

groundings associated with the project, the Corps would require that no work takes place at night. Also, prior to begin project construction seven informational buoys or aids to navigation would be deployed in shallow areas on the approach to the marina location, including the reefs and hard bottom areas at both sides of the mouth of Coral Harbor. These aids to navigation would alert all boaters, including the operators of work vessels associated with the construction of the marina, about the presence of those shallow areas and the sensitive resources located therein, so they can maneuver the boats to avoid those areas. For these reasons, we believe the potential for impacts to ESA listed coral colonies from accidental groundings of work vessels associated with the construction of the proposed marina is discountable.

Furthermore, ESA listed coral colonies could be affected by groundings of vessels transiting to or from the marina during the operation of the project. Since the project would provide new docking space for 144 vessels within Coral Harbor, the associated increase in vessel traffic, as a result of the construction and operation of the marina may also increase the potential for vessel groundings in ESA listed coral colonized habitats within the Action Area. However, the marina would implement an education program for the users of the marina, which would include the placement of signs or placards informing boaters about the presence of ESA listed corals in shallow reef and hard bottom areas of Coral Harbor, as well as safe navigation practices to prevent groundings and impacts to those sensitive resources. Also, prior to begin project construction seven informational buoys or aids to navigation would be deployed in shallow areas on the approach to the marina location, including the reefs and hard bottom areas at both sides of the mouth of Coral Harbor, to alert all boaters and users of the marina about the presence of those shallow areas and the sensitive resources located therein, so they can maneuver the boats to avoid those areas. For these reasons, we believe that the potential for impacts to ESA listed coral colonies from accidental groundings associated with increased vessel traffic to and from Coral Harbor as a result of the operation of the marina would be discountable.

ESA listed corals could be adversely impacted by potential spills of fuels during the operation of the proposed project, particularly since the operation of the marina would include vessel fueling facilities and expects to dispatch a maximum of 10,500 gallons of fuel to the largest size vessels utilizing the marina (Enclosure 8F in the attached DVD). The applicant has indicated that all components of the fueling system would be constructed in compliance with U.S. Environmental Protection Agency (USEPA) and DPNR requirements (Enclosure 3 in the attached DVD. As part of its operations, the marina would obtain a Terminal Facility License in order to be able to provide fuel. In addition, the marina would have a DPNR approved Spill Prevention Countermeasure and Control Plan, prior to commence operations. This plan would address measures to prevent, address and minimize the effects of any potential minor or major fuel spills (Enclosures 3 and 6C2 in the attached DVD). Based on this information, the Corps understands that it would be unlikely that any fuel spill would be severe enough to produce adverse effects to the above reference ESA listed coral

colonies. Therefore, the Corps believes that the potential for adverse effects to Elkhorn, Mountainous star, Lobed star, and Pillar corals from potential fuel spills during the operation of the proposed marina would be discountable.

## E. ROUTES OF EFFECT TO ELKHORN AND STAGHORN DESIGNATED CRITICAL HABITAT

On November 26, 2008, a Final Rule designating *Acropora* critical habitat was published in the Federal Register (73 FR 72210: November 26, 2008). Critical habitat consists of specific areas within the geographic area occupied by a listed species at the time it was listed on which are found those physical or biological features essential to the conservation of the species, as well as unoccupied habitat that is deemed essential for the conservation of the species. The feature essential to the conservation of *Acropora* species (also known as the essential feature) is substrate of suitable quality and availability, in water depths from the mean high water line to 30 m, to support successful larval settlement and recruitment, and reattachment and recruitment of asexual fragments. "Substrate of suitable quality and availability" means natural consolidated hard substrate or dead coral skeletons free from fleshy macroalgae or turf algae and sediment cover [50 CFR 226.216(a)]. Elkhorn and staghorn corals require hard, consolidated substrate, including attached, dead coral skeleton, devoid of turf or fleshy macroalgae for their larvae to settle. Areas containing these features have been identified in three locations within the U.S. Caribbean: Puerto Rico, St. Thomas/St. John, and St. Croix (Figure 7). The St. John/St. Thomas marine unit comprises approximately 121 mi2 (313 km2) of ESA-designated critical habitat. Of this area, approximately 26 mi2 (67 km2) are likely to contain the essential element of ESA designated *Acropora* coral critical habitat, based on the amount of coral, rock reef, colonized hard bottom, and other coralline communities mapped by National Ocean Service (NOS) in 2000 (Kendall et al. 2001).

As stated above in Table 4, Elkhorn and Staghorn designated critical habitat is present within the Action Area. According to information provided by the applicant, an area of approximately 0.08 acre of shallow colonized reef and hard bottom is present on the west side of the mouth of Coral Harbor, about 1,100 ft from the project site. Another area of approximately 2.15 acres of shallow colonized reef and hard bottom are present on the east side of the mouth of Coral Harbor, about 2,100 ft from the project site. These areas, support the essential features of Elkhorn and Staghorn designated critical habitat.

Elkhorn and Staghorn designated critical habitat within the Action Area could be indirectly affected by sediment resuspension, and transport of sediments within Coral Harbor during the proposed marina construction and pile-driving work. Elkhorn and Staghorn designated critical habitat could also be affected by transport of sediments discharged into the harbor from the upland construction areas of the project. However,

Figure 7
Acropora Designated Critical Habitat

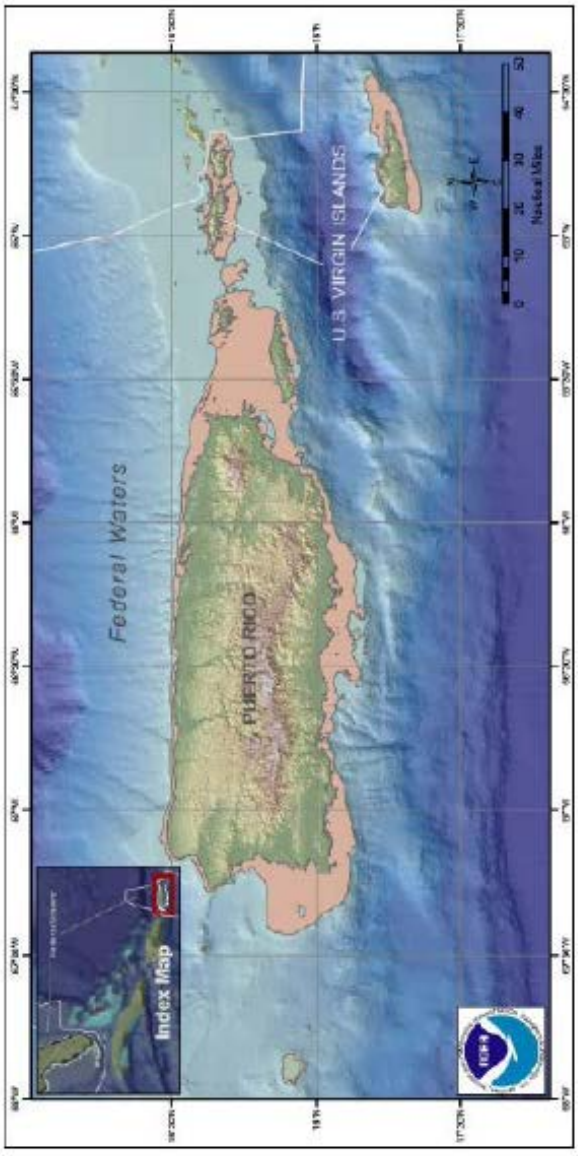



Figure 5. Critical habitat mapfor elkhorn and staghorn corals showing the 3 Caribbean units (St. Thomas/St. John, St. Croix, and Puerto Rico (*Acropora* Critical Habitat map created by NMFS, 2008; see http://sero.nmfs.noaa.gov/maps_gis_data/protected_resources/)

erosion and sediment control measures including silt fences would be installed between upland construction areas and the shoreline of Coral Harbor to prevent sediment discharges from the project areas into aquatic habitats. In addition, floating turbidity curtains would be installed around all in-water pile driving work, to minimize transport of resuspended sediments outside of the in-water work areas into adjacent aquatic habitats. Furthermore, Water Quality and Environmental Monitoring plans would be implemented during the construction of the marina to assess associated potential sedimentation effects. If elevated turbidity above background levels is detected outside of the immediate work areas, the construction work would stop and any potential deficiencies in the deployed turbidity control would be corrected. Therefore, we believe that the risk of impacts to Elkhorn and Staghorn designated critical habitat associated with the potential discharge, resuspension, and transport of sediments from the proposed marina construction and pile-driving work would be discountable.

The project could also result in indirect impacts to Elkhorn and Staghorn designated critical habitat if as part of its operation sediments are resuspended due to prop wash from vessels at the marina, and those sediments are transported to the mouth of Coral Harbor. Average water depth within the marina footprint would be approximately 12 feet. The proposed marina would provide docking space for 144 vessels up to 160 feet in length. Thirty nine (39) of the 144 proposed slips would be for vessels 100 feet long or longer. Vessels of that size commonly have drafts between five to nine feet. Some of the docks for 100 feet long vessels would be located in water depths of eight to nine feet. With such a limited clearance from the marine bottom such large vessels could generate prop wash, continuously stirring-up and re-suspending sediments. This increased sedimentation and turbidity could extend throughout the Action Area reaching the mouth of the harbor and impacting the Elkhorn and Staghorn designated critical habitat located therein. To accurately assess the water mixing and flushing capacity of Coral Harbor, as well as the potential effects of the operation of the marina on the sedimentation, turbidity and water quality levels therein, the Corps requested the applicant to complete and submit a water circulation modeling study of the harbor. However, the applicant did not submit such study. Instead, the applicant collected water current measurements within the project footprint for a two year period, and then analyzed those observations in accordance with methods described by Ketchum (1951). According to the applicant's measurements and analysis, water movement in Coral Bay, particularly in Coral Harbor, is sluggish with circulation and currents being both tidally and wind influenced. Only limited exchange or flushing occurs which is clear by the difference in turbidity in and out of the bay. Rarely is turbidity low within the harbor. The applicant's analysis acknowledges that under those conditions, resuspended fine sediments would remain in the water column of Coral Harbor for an extended period of time potentially resulting long-term increases in turbidity and associated detrimental effects to the benthic community. Therefore, the Corps believes that it can be reasonably expected that the operation of the marina would generate and maintain chronic high turbidity, worsening the already compromised water quality of Coral Harbor, and potentially resulting in impacts to Elkhorn and

Staghorn designated critical habitat located within the Action Area. As previously stated, based on the available information and studies the Corps cannot fully assess or quantify the beneficial effects of the proposed maintenance of storm water runoff control structures on the water quality and turbidity levels of Coral Harbor. Based on the above information, the Corps has determined that the sediment stir-up, resuspension and transport from vessel prop wash as part of the operation of the marina is likely to adversely affect Elkhorn and Staghorn designated critical habitat.

In addition, Elkhorn and Staghorn designated critical habitat could be affected by the transit of work vessels to and from the in-water construction areas of the proposed marina if a work vessel was to ground on the shallow reef and colonized hard bottom located at both sides of the mouth of Coral Harbor. In order to minimize the potential for accidental groundings associated with the project, the Corps would require that no work takes place at night. Also, prior to begin project construction seven informational buoys or aids to navigation would be deployed in shallow areas on the approach to the marina location, including the reefs and hard bottom areas at both sides of the mouth of Coral Harbor. These aids to navigation would alert all boaters, including the operators of work vessels associated with the construction of the marina, about the presence of those shallow areas and the sensitive resources located therein, so they can maneuver the boats to avoid those areas. For these reasons, we believe the potential for impacts to Elkhorn and Staghorn designated critical habitat from accidental groundings of work vessels associated with the construction of the proposed marina is discountable.

Furthermore, Elkhorn and Staghorn designated critical habitat could be affected by groundings of vessels transiting to or from the marina during the operation of the project. Since the project would provide new docking space for 144 vessels within Coral Harbor, the associated increase in vessel traffic, as a result of the construction and operation of the marina may also increase the potential for vessel groundings in Elkhorn and Staghorn designated critical habitat within the Action Area. However, the marina would implement an education program for the users of the marina, which would include the placement of signs or placards informing boaters about the presence of ESA listed corals and Elkhorn and Staghorn designated critical habitat in shallow reef and hard bottom areas of Coral Harbor, as well as safe navigation practices to prevent groundings and impacts to those sensitive resources. Also, prior to begin project construction seven informational buoys or aids to navigation would be deployed in shallow areas on the approach to the marina location, including the reefs and hard bottom areas at both sides of the mouth of Coral Harbor, to alert all boaters and users of the marina about the presence of those shallow areas and the sensitive resources located therein, so they can maneuver the boats to avoid those areas. For these reasons, we believe that the potential for impacts to Elkhorn and Staghorn designated critical habitat from accidental groundings associated with increased vessel traffic to and from Coral Harbor as a result of the operation of the marina would be discountable.

Elkhorn and Staghorn designated critical habitat could be adversely impacted by potential spills of fuels during the operation of the proposed project, particularly since the operation of the marina would include vessel fueling facilities and expects to dispatch a maximum of 10,500 gallons of fuel to the largest size vessels utilizing the marina (Enclosure 8F in the attached DVD – last response letter). The applicant has indicated that all components of the fueling system would be constructed in compliance with U.S. Environmental Protection Agency (USEPA) and DPNR requirements (Enclosure 3 in the attached DVD). As part of its operations, the marina would obtain a Terminal Facility License in order to be able to provide fuel. In addition, the marina would have a DPNR approved Spill Prevention Countermeasure and Control Plan, prior to commence operations. This plan would address measures to prevent, address and minimize the effects of any potential minor or major fuel spills (Enclosures 3 and 6C2 in the attached DVD). Based on this information, the Corps understands that it would be unlikely that any fuel spill would be severe enough to produce adverse effects to the above reference Elkhorn and Staghorn designated critical habitat. Therefore, the Corps believes that the potential for adverse effects to Elkhorn and Staghorn designated critical habitat from potential fuel spills during the operation of the proposed marina would be discountable.

## F. DETERMINATIONS OF EFFECT

Based on the above, the Corps has determined that the proposed project may affect but is not likely to adversely affect the federally listed endangered Blue (*Balaenoptera musculus*), Fin (*Balaenoptera physalus*), Sei (*Balaneoptera borealis*) and Sperm (*Physeter microcephalus*) whales. We hereby request NMFS concurrence with our determinations pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1536), and the consultation procedures at 50 CFR Part 402.

In addition, the Corps has determined that the proposed project may affect and is likely to adversely affect the federally listed threatened Green (*Chelonia mydas*) and Loggerhead (*Caretta caretta*) sea turtles, and the federally listed endangered Hawksbill (*Eretmochelys imbricata*) and Leatherback (*Dermochelys coriacea*) sea turtles; the federally listed threatened Nassau grouper (*Epinephelus striatus*), Giant manta ray (*Manta birostris*), Oceanic white tip shark (Carcharinus lonigmanus), and Scalloped hammerhead shark (*Sphyrna lewini*); the federally listed threatened Elkhorn (*Acropora palmata*), Mountainous star coral (*Orbicella faveolata*), Lobed star (*Orbicella annularis*), and Pilar (*Dendrogyra cylindrus*) corals; and the designated critical habitat for Elkhorn and Staghorn (*Acropora cervicornis*) corals. Therefore, we hereby request NMFS initiation of formal consultation with your agency, pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1536), and the consultation procedures at 50 CFR Part 402.

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