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 12, 2018

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

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

Mrs. Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division
National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Mrs. Fay:

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. Through the PN, the Corps requested initiation of consultation with National Marine Fisheries Service (NMFS), Habitat Conservation Division (NMFS-HCD) on Essential Fish Habitat (EFH) for the proposed project as required by the Magnuson-Stevens Act (MSA). Via email dated September 11, 2015, NMFS-HCD provided EFH Conservation Recommendations with regards to the proposed project pursuant to the provisions of the MSA. Therein, NMFS-HCD also determined that the project would adversely impact aquatic resources of national importance pursuant to Part IV 3(b) of the Memorandum of Agreement between the Department of Commerce and the Department of the Army dated August 11, 1992.

On October 22, 2015, we asked the applicant to address the comments and recommendations provided by NMFS-HCD, 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/consultation for 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 PN. Therein, we are also providing copy of the requests for information 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 and recommendations provided by NMFS-HCD 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 - Coral Bay Community Council Comments, August 20, 2015
15. Enclosure 15 - Coral Bay Community Council and Save Coral Bay Comments, May 4, 2018

The applicant's specific response to the comments provided by NMFS-HCD in response to the Corps PN are included in Enclosure 6C2 in the attached DVD. However, some of the information included in that specific response was updated through the additional applicant submittals listed above. Through the above listed submittals the applicant 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, including EFH and fishery resources under the

purview of NMFS-HCD. 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.

The attached Enclosure 16 provides the following information concerning potential impacts of this project on EFH and fishery resources:

A. Description of the proposed action
B. Description of the affected or action area
C. Description and analysis of the potential routes of effect or the manner in which the action may affect EFH
D. Summary of Corps determinations of effect pursuant to the provisions of the MSA

Based on the available information, the Corps has determined that the proposed project is likely to adversely affect seagrass and coral colonized hardbottom, which have been identified as EFH for federally managed fisheries in the Caribbean.

As part of our ongoing MSA consultation for this project, we request your review and evaluation of the information included or referenced herein. We also request that you please confirm whether this additional information: adequately addresses the concerns expressed in your February 5, 2015 and March 2, 2015 letters; would allow you to revise your EFH Conservation Recommendation and your determination regarding effects to aquatic resources of national importance; and, satisfies the consultation procedures outlined in 50 CFR Section 600.920 to implement the EFH provisions of the MSA. We respectfully request that you please provide a response within 30 days from the date of this letter.

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,

CEDENO-MALDONADO.JOSE.A.1227784748

Digitally signed by CEDENO-MALDONADO.JOSE.A.1227784748
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=CEDENO-MALDONADO.JOSE.A.1227784748
Date: 2018.07.12 07:38:37 -04'00'

for Sindulfo Castillo
Chief, Antilles Regulatory Section

Enclosures

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

St. John Marina, Coral Harbor, St. John, USVI
Magnuson Stevens Act (MSA) - Essential Fish Habitat (EFH) Consultation
NOAA - National Marine Fisheries Service - Habitat Conservation Division

Enclosure 16

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

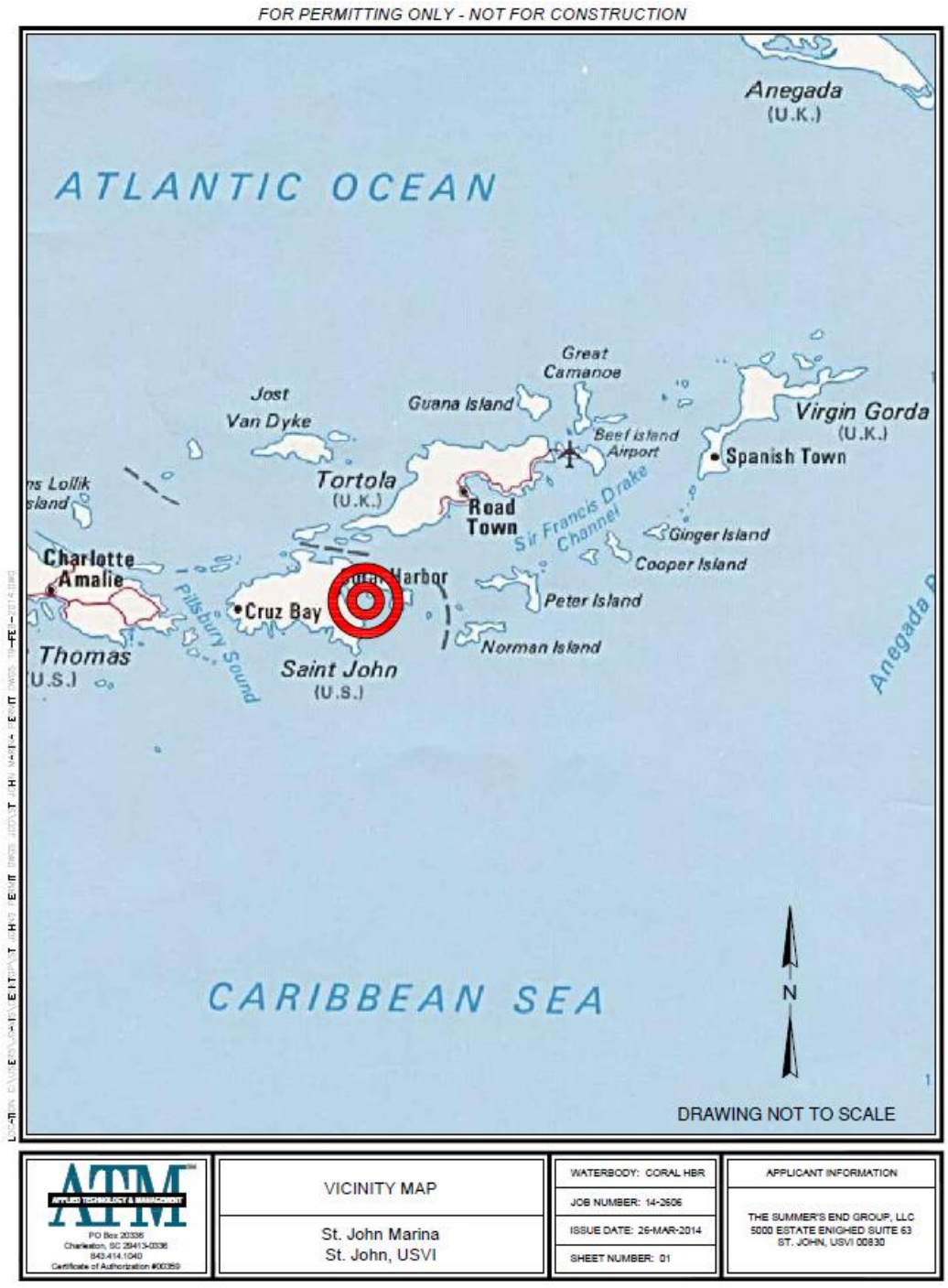


Figure 1B
Project Location Aerial Photo

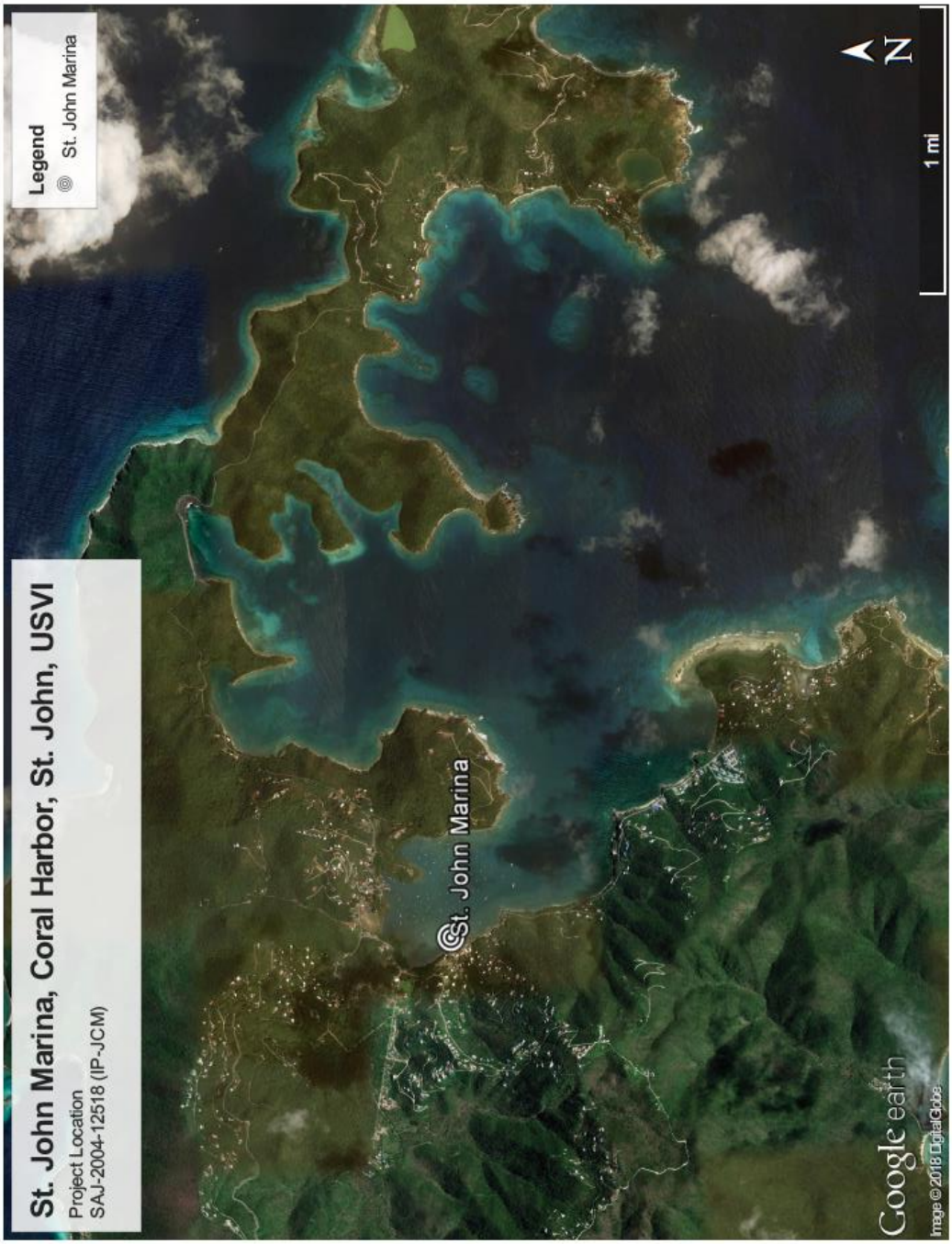


Figure 2A
Marina Components

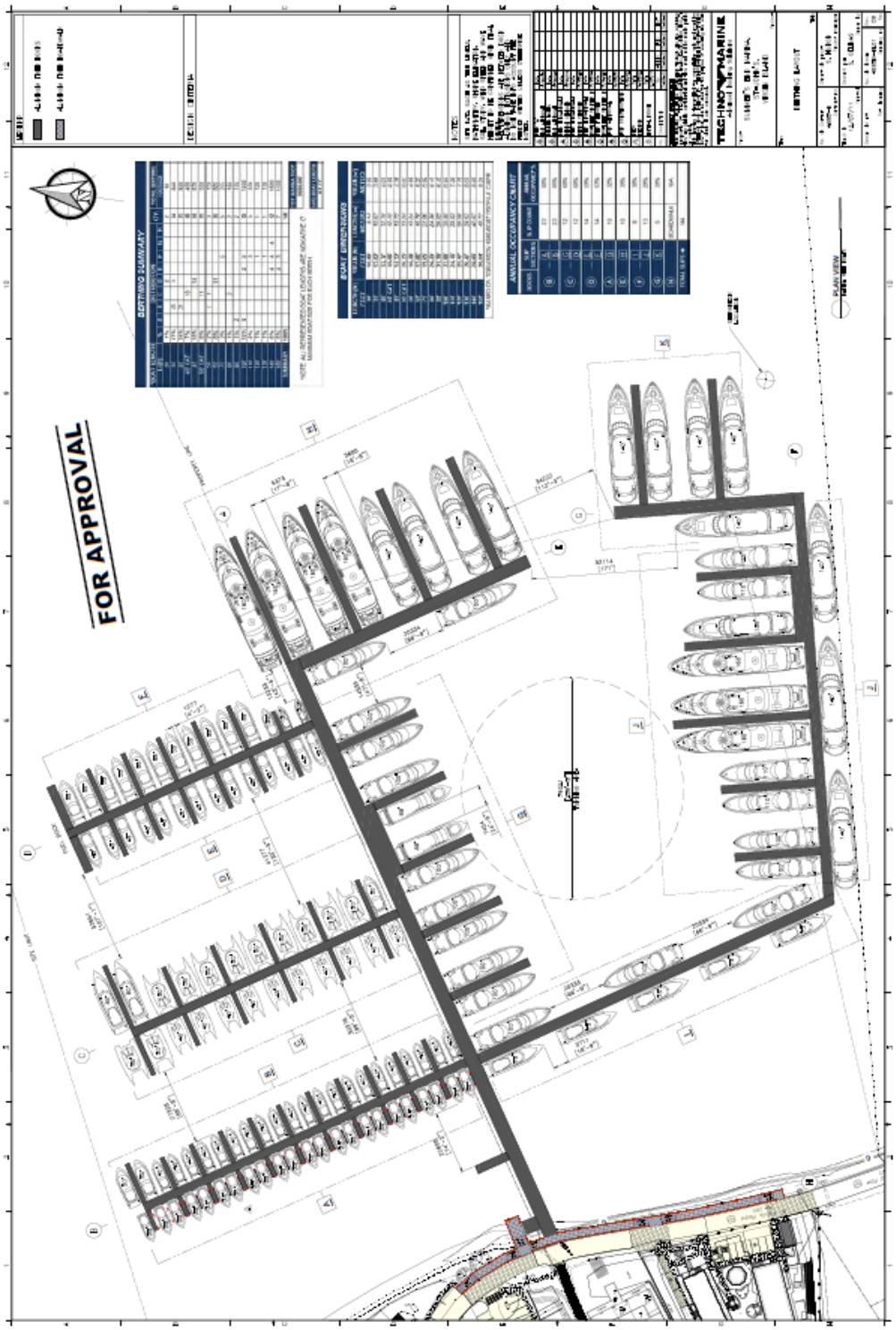
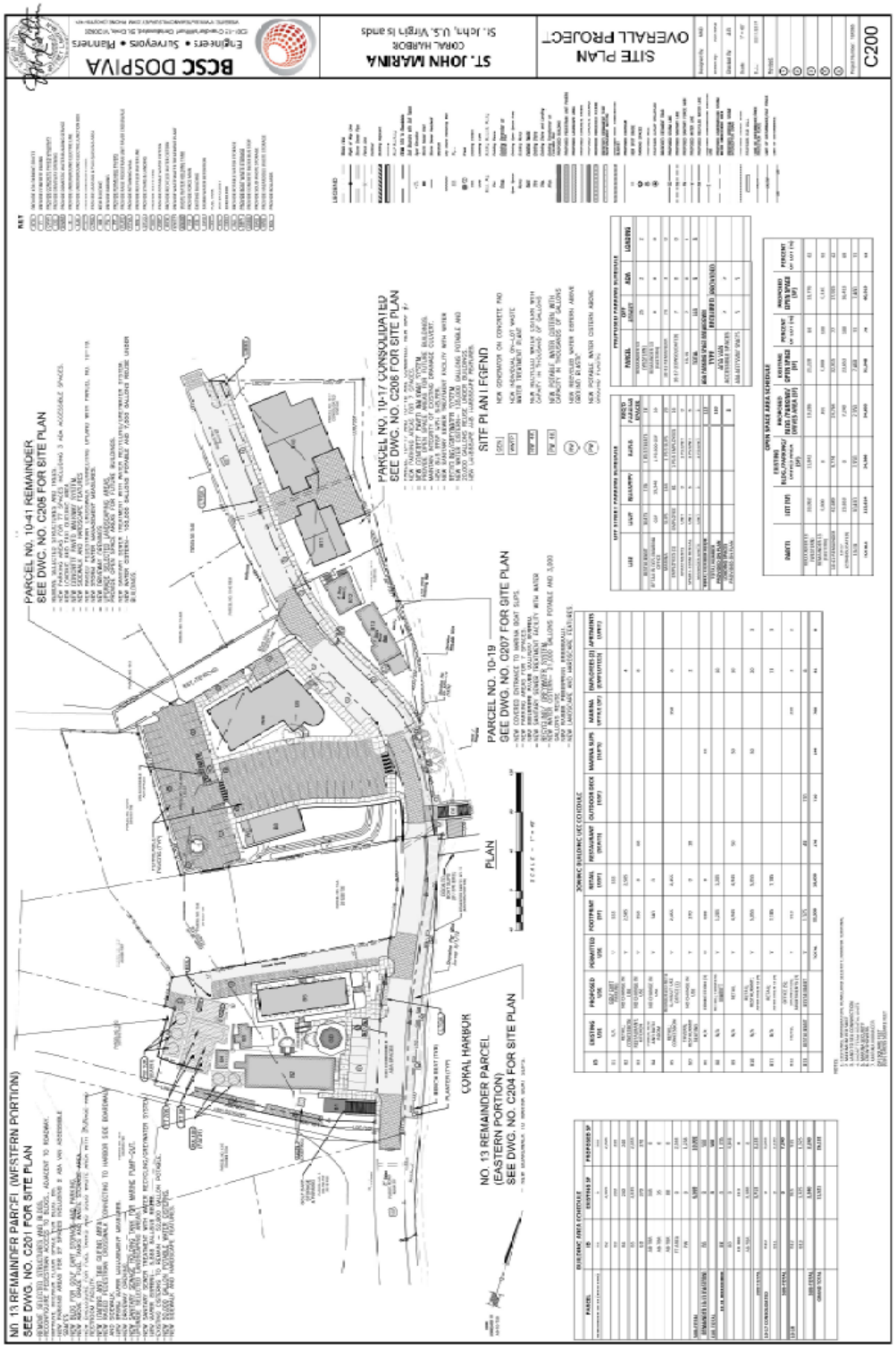


Figure 2B
Marina with Mooring Buoys

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.

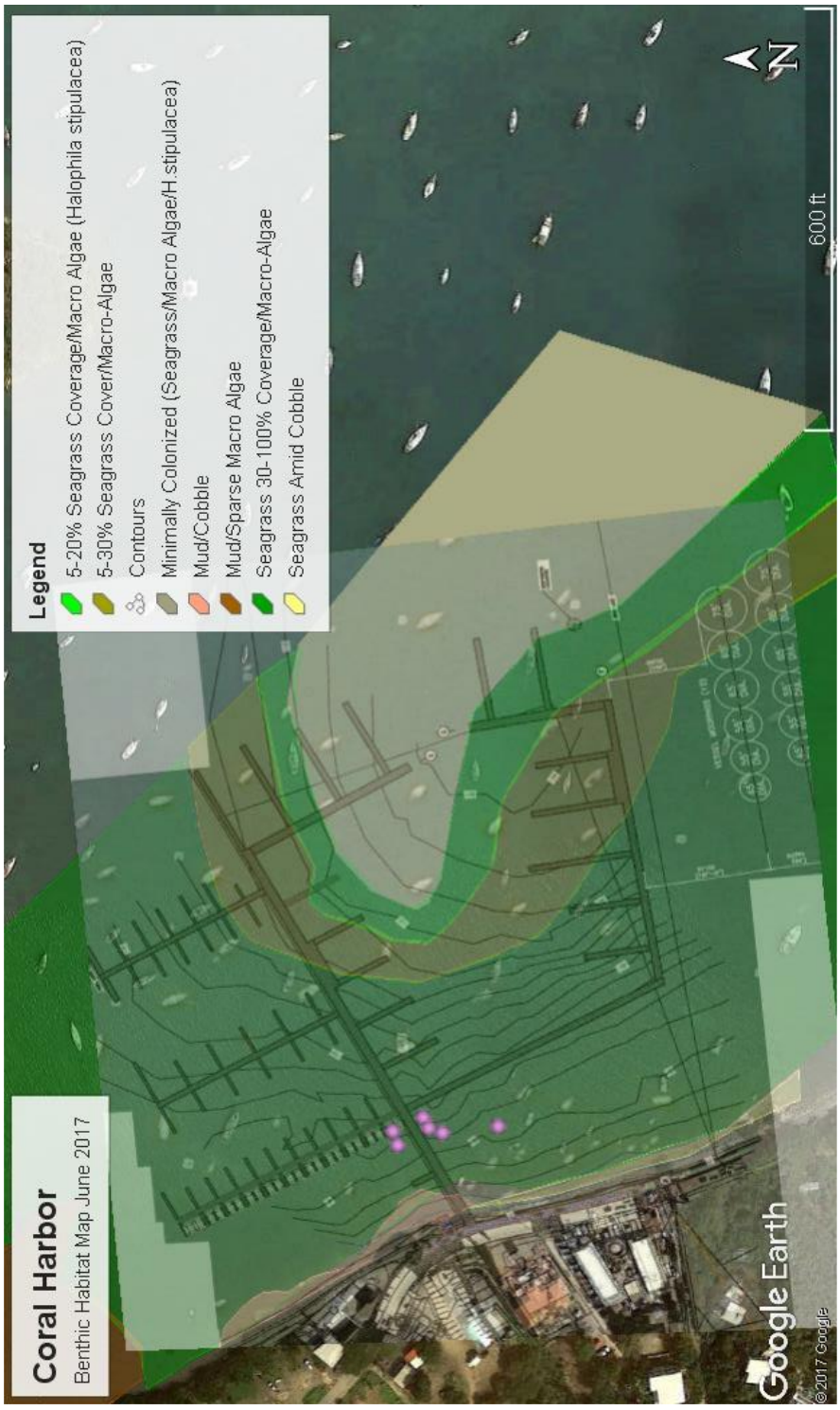
In addition, 17 mooring buoys and their corresponding moored vessels, which are presently located within the footprint of the proposed marina, would be relocated. The relocation of these moorings and vessels would be conducted in coordination with the USVI - Department of Planning and Natural Resources (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, particularly EFH and fishery resources:

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 corals, particularly 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

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 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

Figure 4
Action Area

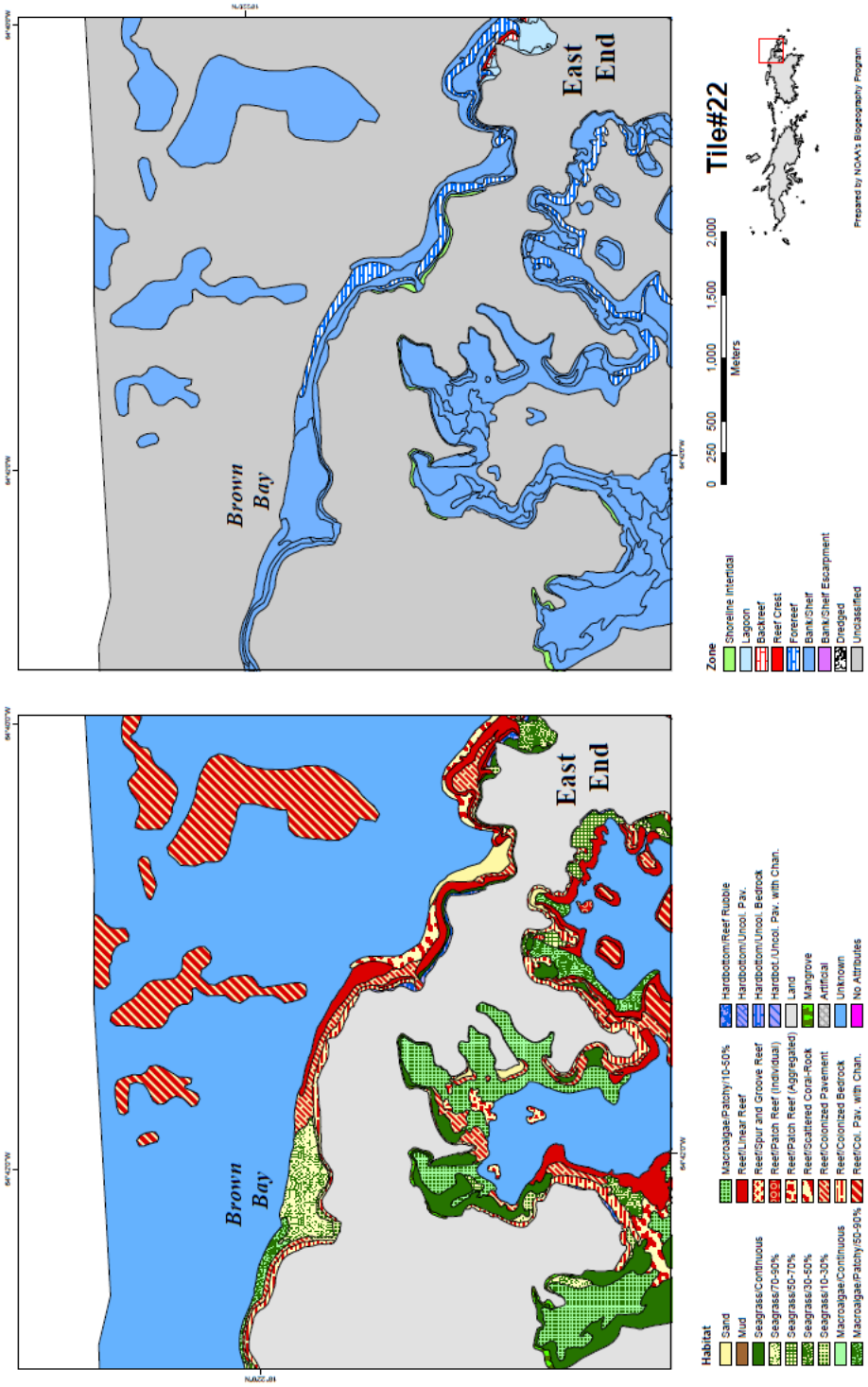
shoreline of Coral Harbor, covering approximately 67 % of the harbor's benthos; while patchy areas dominated by macroalgae with a 10-50% density are present in the central portions, covering approximately 33 % of the harbor's benthos (Figure 5).

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.

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.

Figure 5
NOAA NOS Benthic Map



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. POTENTIAL ROUTES OF EFFECT TO EFH:

The Caribbean Fishery Management Council (CFMC) has identified seagrass, algal flats, live/hardbottom, and sandy bottom as EFH under the fishery management plans for spiny lobster, queen conch, coral, and reef fish.

1. Seagrass

According to applicant estimates, the construction of the proposed marina 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 15C 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 seagrass. The Corps understands that additional practical alternative designs, which could further reduce the potential effects of the project on seagrass, 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 seagrass. 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 seagrass adjoining the project footprint during in-water construction work. Also, shading impacts to seagrass within the footprint of the marina would be minimized through the use of grated decking. In addition, approximately 0.03 acre of seagrass 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 seagrass, 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 seagrass beds 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 seagrass habitats. There are extensive seagrass beds in other portions of Coral Bay, which would continue to provide high quality EFH for fishery resources. However, the Corps believes that the potential loss of 3.365 to 7.8 acres of seagrass would be detrimental for federally managed fishery resources, which regularly utilize that EFH as nursery, foraging and refuge habitat. Based on the above, the Corps has determined that the temporary or permanent loss of use of seagrasses due to the installation of the pilings, spudding of working barges, and shading from the docking structures and vessels at the proposed marina is likely to adversely affect EFH.

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 nursery, foraging and refuge habitat available for federally managed fisheries within the Action Area. Estimates made by others (Enclosure 15C 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. 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 EFH.

Segrasses 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 seagrasses. Therefore, the Corps believes that the potential for adverse effects to EFH from potential fuel spills during the operation of the proposed marina would be discountable.

2. Hardbottom

According to information provided by the applicant, an area of approximately 0.08 acre of shallow coral 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.

Coral colonized hardbottom habitats 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. Coral colonized hardbottom habitats 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 this EFH 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 coral colonized hardbottom 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 coral colonized hardbottom 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 impacts to coral colonized hardbottom habitats 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 EFH.

In addition, coral colonized hardbottom habitats 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 this EFH from accidental groundings of work vessels associated with the construction of the proposed marina is discountable.

Furthermore, coral colonized hardbottom habitats 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 coral colonized hardbottom 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 shallow reef and hard bottom areas on the approach to 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 this EFH 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.

Coral colonized hardbottom habitats 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 coral colonized hardbottom habitats. Therefore, the Corps believes that the potential for adverse effects to this EFH from potential fuel spills during the operation of the proposed marina would be discountable.

D. DETERMINATIONS OF EFFECT

Based on the above, the Corps has determined that the proposed marina is likely to adversely affect seagrass and coral colonized hardbottom, which have been identified as EFH for federally managed fisheries in the Caribbean.

E. REFERENCES

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