

Appendix C-4

Response to Comments of the **Virgin Islands National Park, National Park Service**, August 17, 2015 Comments on SAJ-2004-12518 (SP-JCM), for the St. John Marina - Summer's End Marina in Coral Harbor on St. John

The Park Service is correct in stating that the mooring field requested has been removed from this application even though it was previously approved the Department of Planning and Natural Resources, Division of Coastal Zone Management. ("DPNR"). This idea, which was first suggested by National Marine Fisheries Service as a mitigation measure, would have helped abate on going impacts caused by poor mooring practices and unauthorized boating activities. While installation and management of a properly designed mooring field could greatly reduce the ongoing degradation currently occurring within Coral Harbor as a result of illegal moorings, there was strong public objection, especially by boaters within the bay. DPNR approval does not require construction of every component permitted and is contingent on receipt of all other required permits. By removing the mooring field from the ACOE permit application, Summer's End Group will not be seeking to obtain the remaining permits that would be necessary for the installation of the mooring field. Consequently, the mooring field does not need to be considered in the review of the pending application

The Park Service questioned the number of vessels being utilized in the impact analysis for the marina and suggests that the unrelated vessels currently harboring in Coral Bay should be added to the impact analysis. The applicant has no control over vessels that choose to harbor in Coral Bay illegally or on moorings controlled by others. As of the February 5, 2017 aerial photograph reproduced below, there are 140 vessels within the Coral Harbor either tied in the mangroves or on anchor or mooring, and many of these vessels have tenders (not including those vessels and dinghies located along the shoreline and on the dock at Skinny Legs). Most of these vessels do not have proper mooring registrations, most are on more than one anchor, even if they are on a mooring, and many are not able to move from their current location under their own power. This is an increase of 25 vessels from what was counted in 2015 by the Park Service. It is the applicant's belief that the availability of a marina will reduce illegal and improper mooring activities by offering a viable, safer and more convenient option for boaters. Consequently, the applicant has not increased the proposed numbers of vessels in the impact analysis to include current or future illegal moorings or vessels utilizing moorings controlled by unrelated third parties.

The Park Service has also noted that larger vessels will likely have tenders, and has suggested those tenders also be included in the impact analysis for the marina. The applicant agrees that it is reasonable to assume that many if not all of the larger vessels who will utilize the proposed marina will have tenders or other forms of water toys such as jet skis, Seadoos, or dinghies. It is probable that once a vessel arrives at the marina, it will use the smaller water crafts to explore the surrounding area including the park. While the vessel may have a tender out or even several jet skis out at one time, it is not practical to assume that the primary vessel and all the auxiliary vessels would be out at the same time. Consequently, the applicant has not increased the number of boats included in the impact analysis to include tenders of larger vessels.

The Park Service raised concerns that the benthic and other natural resources within the National Park were not addressed specifically in the original application. The original
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application did not separate the analysis of the potential impact on resources into those located in Park waters and those located outside of Park waters, but instead addressed all benthic/marine resources as a single topic. To respond to the Park Service's concern, the applicant has segregated the areas in the response to National Marine Fisheries (Appendix A) which specifically separates the impacts analysis and addresses Park specific marine resources directly in more detail. This analysis considers how the potential introduction of additional vessels/visitors to the Park may affect park infrastructure and how the applicant is suggesting to help offset the additional strain on the infrastructure and minimize and mitigate potential impacts to the park.

Project Area and the Park

The Park Service noted concerns related to the location of the proposed project in relation to the National Monument and Park boundaries and the potential for impacts to benthic resources by marina users. The proposed project is within Coral Harbor which is at the northwest extreme of Coral Bay. The marina site is just under a mile from the Park waters in Hurricane Hole (0.94miles). Coral Harbor, in contrast to most of Coral Bay which enjoys clear low turbidity waters and vast coral and seagrass resources, has been significantly impacted by man's poor practices. Upland runoff from development and unpaved roads has been well documented and has resulted in significant sediment and nutrient loading in the Coral Harbor's restricted embayment. Large numbers of vessels anchoring and mooring and live-a-boards dumping bilges and waste into the constricted waters has led to the continued degradation of water quality and the loss of seagrass which was once found in abundance within the bay. The proposed marina will be located in this area where impacts have already occurred. As noted by the Park Service, mangroves still line much of the bay and the bay still serves as significant habitat and nursery for a number of fish and invertebrate species. The Applicant is not proposing to remove or alter any mangroves, and as discussed in further detail in the shoreline mitigation plan, is proposing to plant mangroves along the existing rip rap and waterfront of the project (Mangrove Mitigation Plan Appendix D).

The Applicant is also proposing to minimize construction impacts. As detailed in Section 5 of the Environmental Assessment Report (EAR) previously delivered as part of the application, the construction methods do not include dredging. During the course of the studies and design of the marina, one of the main focuses has been on minimizing the environmental impact on both the benthic environment and on marine water quality. One of the first things that was determined was that no dredging would be undertaken. Due the very soft silty nature of much of the seafloor, and due to the constricted nature of Coral Harbor, any dredging would suspend sediments and keep finer particles in the water column for years. And as sediments finally did settle the heavy sediment would settle first leaving the lightest sediments to settle last leaving a fluff layer on the top which would be again suspended with the slightest water movement.

Much of the sediment in Coral Harbor is terrigenous in nature having eroded from the surrounding watershed and these sediments are finer than sands and most marine sediments. These very fine sediments would remain in suspension until the fluid velocity is insufficient for turbulent eddies to balance gravitational forces and the particles will settle out, depositing on the seabed (Masselink et al., 2014). In the inner harbor, tidal, surface wind effects, and even vessel movements will keep the finest sediments in suspension. One only has to look at Great Cruz Bay or Chocolate Hole in St. John, or Water Bay in St. Thomas to see the long-term effects SAJ-2004-12518 (SP-JCM) St. John Marina Yacht Club Rebuttal Response Appendix C

dredging has had on water quality compared to similar bays which have not been dredged. Dredging activities potentially effects not only the site itself, but also surrounding areas, through a large number of impact vectors (e.g. turbid plumes, sedimentation, resuspension, release of contaminants, and bathymetric changes) (Wolanski and Gibbs, 1992). And sediment deposition can occur at distance from the dredging site depending on sea conditions and currents (Miller 2016).

Therefore, the marina was sited farther offshore so that no dredging is required. Piles will be vibra-hammered when possible, however impact driving will be required to set the piles, pile driving will not create significant turbidity. Vibratory hammering will minimize acoustic impacts on marine mammals, sea turtles and fish species, and when impact hammering is required bubble curtains will be utilized to minimize esonification and sea turtle and marine mammal monitoring will occur, and driving will be shut down when animals enter the 500 meter safety zone. Seagrasses within piling footprints will be transplanted into an uncolonized area in the southwestern corner of the bay to accelerate recolonization of seagrass in Coral Harbor, and which once established, will stabilize the fine shallow sediments. The number of pilings have been reduced from 1333 to 960, which reduces the direct impact from 2500sf to 1350sf.

The marina will be using grated decking to minimize shading from the docks and minimize seagrass loss. Approximately 3.75 acres of seagrass loss is expected due to shading and prop wash, every effort will be made to minimize those impacts to the greatest degree possible. The estimated boat shading, boat movement and construction impacts are described in the updated benthic analysis included in the response to National Marine Fisheries (Appendix A).

Increased vessel movements will have the potential of re-suspending shallow sediments. The marina has been designed to keep the largest vessels with the deepest drafts in the deeper areas of the bay and the marina will be enforcing “No Wake” speeds within the marina. The marina will institute a strict no bilge pumping rule and will be providing pump out facilities for vessels both staying in the marina and for any other vessel wishing to pump out. Summers End will also prohibit any maintenance activities or work on vessels within the marina. These activities will help minimize potential impacts from marina operations on the harbor.

The Park Service questioned the overall impacts that will be caused by marina operations. The Applicant acknowledges that due to the number of vessels in the marina, it is probable that there will be some increase in turbidity and pollutants introduced into the harbor. In order to help compensate for this impact, Summers End is proposing to assume maintenance of the sediment and erosion control features which were installed by Coral Bay Community Council under a grant related to improvements in the Coral Bay water shed and will be installing new measures in two drainage ways which currently are introducing sediment and pollutants into the bay during rainfall events. The detail of the maintenance work and new sediment controls are found in Appendix D, Mitigation Plans. These mitigation measures should help reduce the terrestrial input of sediments and pollutants and should offset the resuspension of existing seafloor sediments during construction or by vessels later during operation.

The turbidity within Coral Harbor is visible in aerial photographs back to the 1990's and continues to be evident in aerial photographs up through this year (2017). The extent of the turbid water varies with sea conditions rainfall and winds. Available aerials from google and

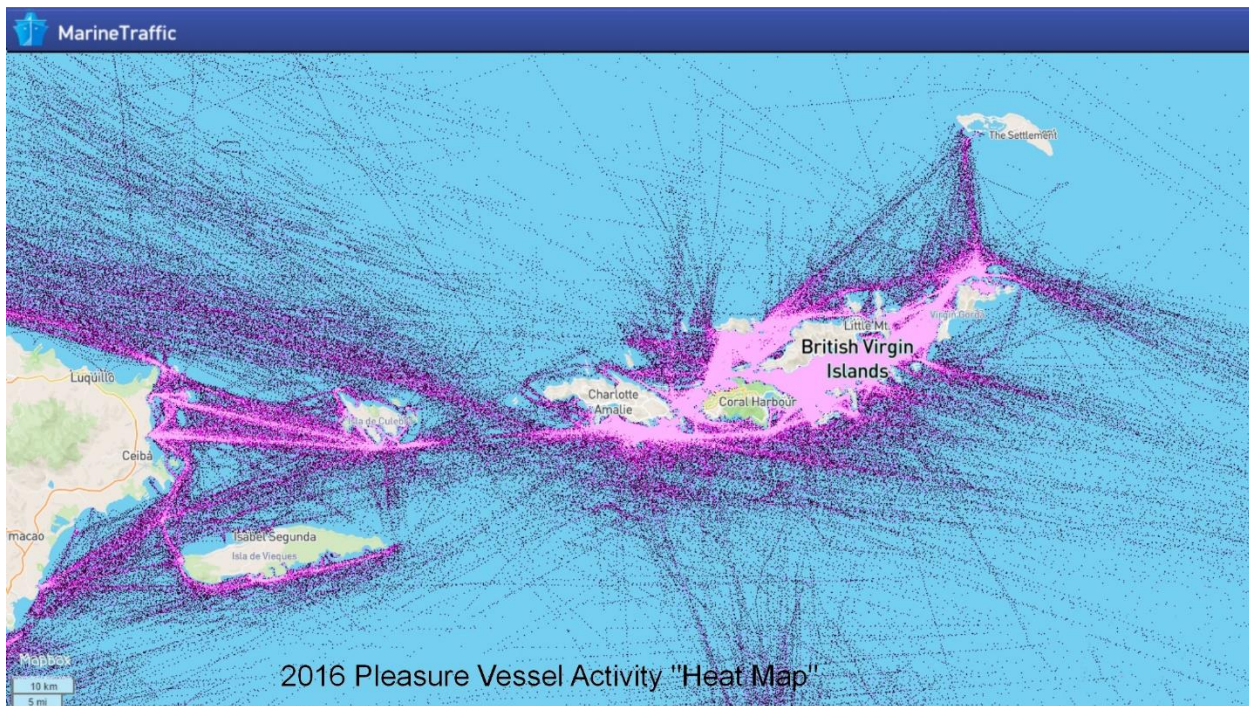
NOAA (a sample of which are reproduced below) indicate that even in periods of heavy impact, the visible turbidity does not extend far beyond the narrow constriction into Coral Harbor at Harbor Point. Due to the shape of the embayment and the constricted nature of Coral Harbor and the limited water exchanges which occur, increases in turbidity as a result of the construction of the marina and its later operations should not affect the Park waters because they are almost a mile away from impacted waters as shown on the aerials. If increases were to occur, they would first impact the shallow corals to the southeast of the project only 0.10 miles away or those near Fortsberg, Harbor Point 0.25 miles away. To monitor this potential impact, the applicant is proposing to monitor both locations as part of ongoing monitoring in association with marina operations. If impacts are noted the regulatory agencies will be contacted and methods will need to be developed to abate these impacts.

The project will result in the loss of seagrass through pile driving, shading by both the dock and the vessels and due to vessel movements. This will result in the loss of resources for animals reliant on seagrass for habitat and forage. To offset these losses Summer's End will be planting mangroves along the shoreline of the property restoring a portion of the mangrove fringe which was previously removed by unregulated development. Summer's End will also be placing 12 moorings within the project footprint to allow visiting vessels who do not wish to dock at the marina an opportunity to pick up a mooring rather than drop a hook in the dense seagrass found to the southeast of the project site.

As noted by the Park Service, the biggest potential environmental impact to the Park waters and to Coral Bay as a whole will be the increase in the number of vessels going into Coral Harbor. On the northern side of Coral Bay, Hurricane Hole and Round Bay enjoy the protection of being in Park waters. The limited development and protections offered by the park have protected these waters from the impacts of development. Hurricane Hole offers a very unique environment with both corals and mangroves in the same habitat, something rarely seen. In St. John, US Virgin Islands, over 30 species of scleractinian corals are growing on and under mangrove prop roots in small bays located along the perimeter of a large bay, Hurricane Hole, within the Virgin Islands Coral Reef National Monument. This has been proposed as a potential refuge for corals with the changes that are being brought on by climate change (Yates, 2014). On a whole, the limited development along the northern arm of St. John has protected the benthic resources in the area.

The introduction of the marina will bring more boats through the area, increase the chances of groundings, animal strikes by vessels and potentially increased anchoring and damage to corals and seagrasses if anchors are thrown indiscriminately. Because vessels will be in Coral Harbor, and therefore Coral Bay, guests who would not otherwise venture into the Coral Bay area may choose to explore Hurricane Hole and Round Bay. Greater vessel traffic and higher numbers of visitors swimming, snorkeling and diving can result in seagrass loss and coral damage. Additional visitors and vessels could exceed the number of moorings and services the park currently has available.

As shown below St. John and the park area already heavily used by recreational boaters and portions of Coral Bay are heavily trafficked and the presence of the marina will bring more vessels into the northern portions of Coral Bay.



The applicant is working with the Park Service and other resources to alleviate this increased strain and the potential increase in impacts. The Applicant is proposing the following measures to address impacts:

- 1) The applicant will add a fee to charges levied on each slip which will be dedicated to support of a third party independent research program on vessels strikes to sea turtles and marine mammals similar to the one NOAA is currently funding in St. Croix. Information gleaned from these studies and those in the future may one day help to minimize or alleviate strikes altogether.
- 2) The Applicant is proposing to install two informational buoys on the approach to Coral Bay as a means to help guide boaters and to prevent boaters from venturing into shallow waters and damaging seagrass and corals in park waters and within the National Monument.
- 3) The Applicant is proposing to fund, on an ongoing basis, a part time position within the Park Service for an interpretive park ranger to educate and provide programming for marina guests regarding park resources and visitor practices.
- 4) The Applicant is proposing to work with the Park Service to include a page on the Marina website, developed jointly with the Park Service to educate boaters in advance of visiting the marina about both the resources in the park and the rules and regulations governing activities in park waters.
- 5) The Applicant is proposing to work with the Park Service to develop and deploy a mobile application sharing information about park resources, and means visitors can utilize to protect those resources consistent with park rules and regulations. The goal of this application will be to provide boaters with real time access to park information while they are within parks waters.

G. Masselink, M. Hughes, J. Knight **Introduction to Coastal Processes and Geomorphology**
Routledge (2014)

Yates, K. K., Rogers, C. S., Herlan, J. J., Brooks, G. R., Smiley, N. A., and Larson, R. A.: Diverse coral communities in mangrove habitats suggest a novel refuge from climate change, *Biogeosciences*, 11, 4321-4337, doi:10.5194/bg-11-4321-2014, 2014.

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Detecting sedimentation impacts to coral reefs resulting from dredging the Port of Miami, Florida USA

Margaret W. Miller,#1 Jocelyn Karazsia,#2 Carolyn E. Groves,1,3 Sean Griffin,4,5 Tom Moore,4 Pace Wilber,6 and Kurtis Gregg2,5

Academic Editor: Robert Costanza