Mr. Jean Pierre Oriol
Acting Commissioner, Virgin Islands Department of Planning and Natural Resources
Coastal Zone Management Program
August 14, 2014

Thank you for your consideration of my letter concerning the environmental impacts of the proposed Summer's End Group Marina in Coral Harbor and the adjacent areas to be developed.

There are also economic impacts that will be felt by homeowners who count on income from short term vacation rentals above and with a view of the areas to be developed. Certainly the reviews for these homes will not be positive when major construction (for an undetermined period) is happening in the area. I will however, not discuss this as it is simply a cause effect situation that needs no further proof. We know tourists prefer to rent away from construction activity. These homeowners will speak up on their behalf I'm sure. There are socioeconomic issues as well concerning displacement of local small business and the general waterfront Coral Harbor Community. They too will no doubt be heard.

I will concentrate on that which was created by nature and must be preserved by man! Potential aquatic resource impacts associated with large marinas include::
o the release of eroded soils into the waterway and the destruction of wetlands and other important marine habitat features during facility construction,
o fuel spills from improper filling procedures and fuel fill system design flaws, ie, back-ups when filling faster than the fuel will run into the tank and discharge of fuel from vents as a result of over-filling.
o dredging and or pile driving/jetting related impacts,
o the release of toxic substances from boat hulls and wash down chemicals, piers and bulkheads,
o boat propeller induced sediment resuspension
o VOC (Volatile Organic Compounds) from propulsion and generator exhaust gases coupled with hot cooling water discharges,
o the inhibition of tidal exchange due to piers and other obstructions,
o the release of storm water pollutants from parking lots, rooftops and other impervious surfaces associated with marinas

There are significant negative impacts from the operations associated with large marinas on small embayments with low flushing rates due to small tidal range. Coral Harbor has an extremely small tidal range of approximately 12 inches and therefore a very low flushing rate coupled with a diurnal tide; one high and one low/day as compared with the usual semi-diurnal 2 highs and 2 lows/day. Flushing rates are the primary factor used in determining the suitability of a particular bay or harbor for large marinas. I have a degree in Marine Science (Marine Biology, Oceanography and Ocean Chemistry) and have lived on and around Coral Harbor since 1988. I have carefully observed runoff induced sediment clouds on countless occasions. It can

take weeks for the suspended matter to be circulated and or settled out of the bay as it is extremely fine particulate . Any of the local population will verify this observation. The general circulation of Coral Bay (the whole bay from Red Pt. to Ram's Head) is clockwise due to the wind driven long shore current moving along the western shores in a northwesterly direction. Once it reaches the outer part of Coral harbor it mixes to some degree with the outer waters of the harbor and continues across the harbor mouth to the east around the Fortsberg peninsula and out into the center of the bay carrying a portion of the harbor sediments. Once here the sediment in the upper marine layer moves north and west with the wind driven current back towards the harbor. The lower marine layer (below 10 feet) moves in a counter current to the east toward Hurricane Hole and them back SE towards the mouth of the bay. Generally most of the sediment that originates in Coral Harbor stays in Coral Bay. Reducing sediment disturbance is critical for the health of the entire bay, including the Hurricane Hole National Park Lagoons.

As with most human activities, the positive benefits associated with boating come with an environmental cost. Boating and related activities impact the aquatic environment through the disturbance of bottom sediments and Submerged Aquatic Vegetation (SAV) beds, the release of sewage and toxics, as well as habitat losses associated with the development of marinas and other support facilities.
Resuspension & Disturbance Of Bottom Sediments:

A number of studies have shown a substantial negative impact upon Submerged Aquatic Vegetation (SAV) and bottom dwelling communities when boat traffic from large vessels is concentrated in small bays with low flushing rates.
The primary disturbance of sediments is caused by boat propeller induced turbulence. This is exponentially invasive when you combine the maneuvering of large deep draft vessels in a relatively a shallow basin with a minimal Flushing Rate. As depth and sediment particle size decrease, resuspension increases. And as logic would indicate, increasing vessel propulsion horsepower and draft causes resuspension to increase while oxygen uptake by resuspended organic particles increases as well. An increase in nutrient levels also results from propeller induced sediment resuspension. This creates a suffocating asthma like environment for marine organisms resulting in a breakdown of the benthic layer, fish kills and algae blooms. (Stinking rotting biomass on the shore). We have the shore side rotting during the late spring and early summer when the Sargasso blows in, but it will be more offensive and year round if the harbor ecosystem is disrupted.

SAV beds will be harmed by sediment resuspension. Boat propeller turbulence produces a statistically significant increase in light attenuation and suspended sediment when water depth.is less than twice the vessel draft (many large yachts draw in excess of 12 feet which is more than most of the proposed dockage area. The benthic Community will be compromised at best and possibly destroyed by sediment disturbance from continuous large yacht maneuvering.

A viable benthic macroinvertebrate community is a crucial component of the estuarine food chain. Benthic destruction will result in a dead zone with no natural mitigating influence to counteract the impacts of the disruption of the marine ecosystem.

In summary, boating activity resuspends significant quantities of sediment when water depth is less than twice the vessel draft and the effect is particularly acute when the bottom is composed of fine sediments. The degree of sediment resuspension will be sufficient to impair bottom dwelling communities through the physical disturbance caused by boat propellers; submerged aquatic vegetation through the reduction in light transmission, and juvenile fish due to the effects of resuspended sediment upon gills. The turbidity generated by boats operating in shallow waters over a fine sediment bottom exceeds safe levels by up to 34-fold.

CONCLUSIONS

Coral Harbor and the inner lagoons including Hurricane Hole support an abundance of sensitive aquatic resources. These resources serve as a crucial component of the collective estuarine ecosystem. The Summers' End Group LLC Marina and support facilities will impact these resources through the resuspension of bottom sediments, vessel waste discharges, stormwater pollution, the release of toxics from treated surfaces, ablative antifouling coated hulls, engine exhaust VOC, the pollutional effects of soil erosion, fuel spills and habitat losses associated with dredging and marina construction.

Minimizing these effects by reducing project size will help with these impacts, but keeping large yachts and fuel filling out of Coral Harbor is critical to the health of the Coral Bay ecosystem. A small dock system for discharge of passengers and cargo, some small boat slips for island residents and possibly a fresh water supply will enhance the St John water connection. Vessel pump out could be accomplished at a small dock or with a "Lew Henley" type mobile vessel. A tightened mooring grid will allow more vessels in the bay and DPNR could charge more for moorings than the current $5.00/foot/year. With consistent enforcement revenue could be increased and additional monitoring will also benefit the ecosystem of St. John as a whole.
St John is a tiny tropical island with a magnificent National Park. It's beauty and unspoiled nature are the primary attraction drawing visitors from around the globe.

Please let it be just that and keep the toxic marine industry away from it's pristine waters. Development does not reverse itself and marine ecosystem destruction is extremely difficult to repair!

God Bless You and Thank You for Your Consideration of this Important Project Review.

Clark Beam and Catherine Noonan