

ASSESSMENT OF IMPACT OF FILL MATERIAL
PLACED OFF THE NORTHWESTERN POINT
OF THE ISLAND OF
LITTLE ST. JAMES

INTRODUCTION

Bioimpact, Inc. was contracted by LSJ, LLC. to conduct a detailed benthic survey of the area of impact on the northwestern point of the island. The Department of Planning and Natural Resources issued a Notice of Violation on March 8, 2012 in response to findings made by Fish and Wildlife on a December 2011 field visit. In the following report Bioimpact has delineated the area of impact, and documented the impacts which have occurred. The impacts were based on dive surveys and review of existing data and surveys of the shoreline. The changes found on the site are not a result of natural causes.

BACKGROUND

On March 8, 2012 the Department of Planning and Natural Resources issued a Notice of Violation to Nautilus Inc. The Notice of Violation (NOVA) was in response to findings of a December 8, 2011 site visit by the Division of Fish and Wildlife, the NOVA stated that Fish which found that material had been excavated and disposed of in the nearshore environment. The area in which the fill was placed habitat for *Acropora palmata* and *Acropora cervicornis* which are listed species on the Federal Endanger Species List.

In 2009 Brian Moseley and Associates conducted a survey comparing the 2009 shoreline to the 2003 shoreline. This survey showed changes in the shoreline between the 2003 and 2009, the 2009 conditions are what is now reflected in the August 18, 2009 Google aerial. An overlay of the aerial and the survey are provided below.



Figure 1. The August 18, 2009 survey conducted by Brian Moseley and Associates overlain the August 18, 2009. The blue arrow represents the 2009 shoreline the red arrow the 2003 shoreline as drawn from a 2003 aerial.

The 2009 Google aerial is the most recent aerial available on Google Earth and is what is utilized in the following assessment.

FINDINGS

A survey using a hand held Garmin GPS was utilized to determine the extent of the fill material which extends from the point out along the top of what was a shallow rock outcropping. The fill material consists of riprap boulders, smaller stones and a sandy core area which has been reworked by a backhoe or bulldozer that extends out into the riprap from the previously existing drive.



This photograph shows the extent of the fill extending offshore.



Sandy material extends part way out the created groin, which narrows to an all riprap. The northern slope of the riprap is much steeper than the southern and western slopes.



This sign is at the base of the slope and is approximately 10ft. from the base of the building. As shown in the large photograph above, the riprap now extends out 140ft. from the sign. GPS readings were taken with a Garmin Hand Held GPS at the sign and at the outer edge of the emergent riprap.



GPS readings taken at the site in May 2012. This places the outer edge of the riprap 80ft. from the 2009 shoreline. Because of the sea conditions and that the steepness of the northern riprap face the width of the groin was not accurately measured.

From the aerial showing the GPS points above it is apparent that additional material has been placed in the sea. It would appear that somewhere between 1000 and 1250 sq. ft. of benthic habitat was directly impacted by the placement of fill. It appears that the fill material impacted very shallow tidally areas out to a depth between 1' and 18" to the south and to the north the impacts go deeper to as much as a depth of 5ft. because of stones falling into the grotto which runs along the point along the point.

Dive surveys were conducted in May and June of 2012 to assess the impact of fill. It was fairly rough on all days surveyed but seas did calm sufficiently to allow for a thorough survey. The new fill material is visible different than the older natural and older fill material found farther to the south along the riprap.



The older material along the areas where the new material was not deposited have encrusting algae and many of the rocks are worn smooth due to movement in the wave.



The new material looks very different, and has not yet become as colonized and has sharper edges.



The fill material appears to have been carefully placed rather than dump, which limited the extent of the direct damages.

IMPACTS OF THE PLACEMENT OF FILL

On the southern side of the jetty there has always been less colonization and therefore impacts to the southern portion of the fill would be not as significant at the areas to the north.

Approaching the new point along the south side of the fill material there are areas where fire coral extended out from under boulders and in one case a *Porites astreoides* has survived in a crevice between two boulders. In the southern portion of the groin the new boulders were placed on top of areas with abundant boring urchins *Echinometra luncter* in the rocks, fire coral colonization and scattered small head corals.

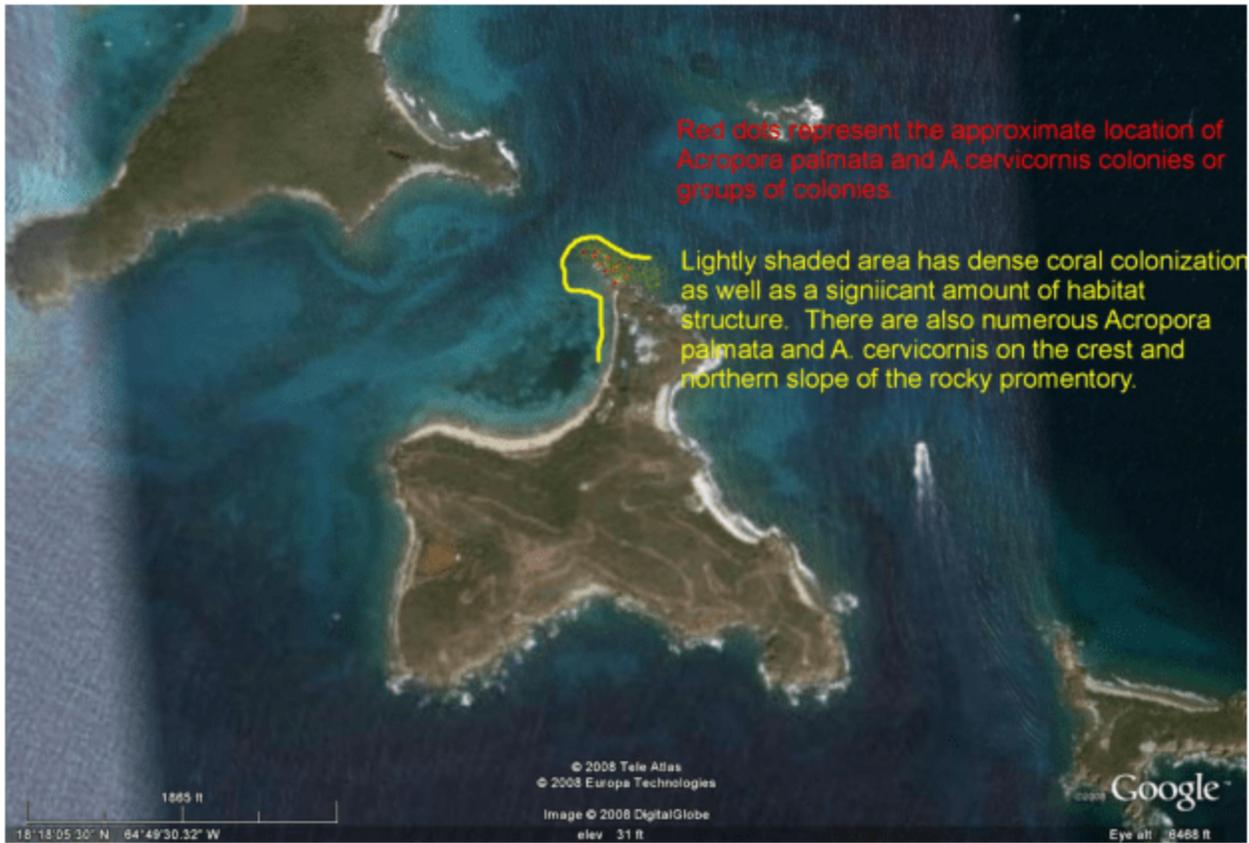


The *Porties* amid the boulder indicating that corals were present in this area of the hard bottom where the rocks and riprap were placed.



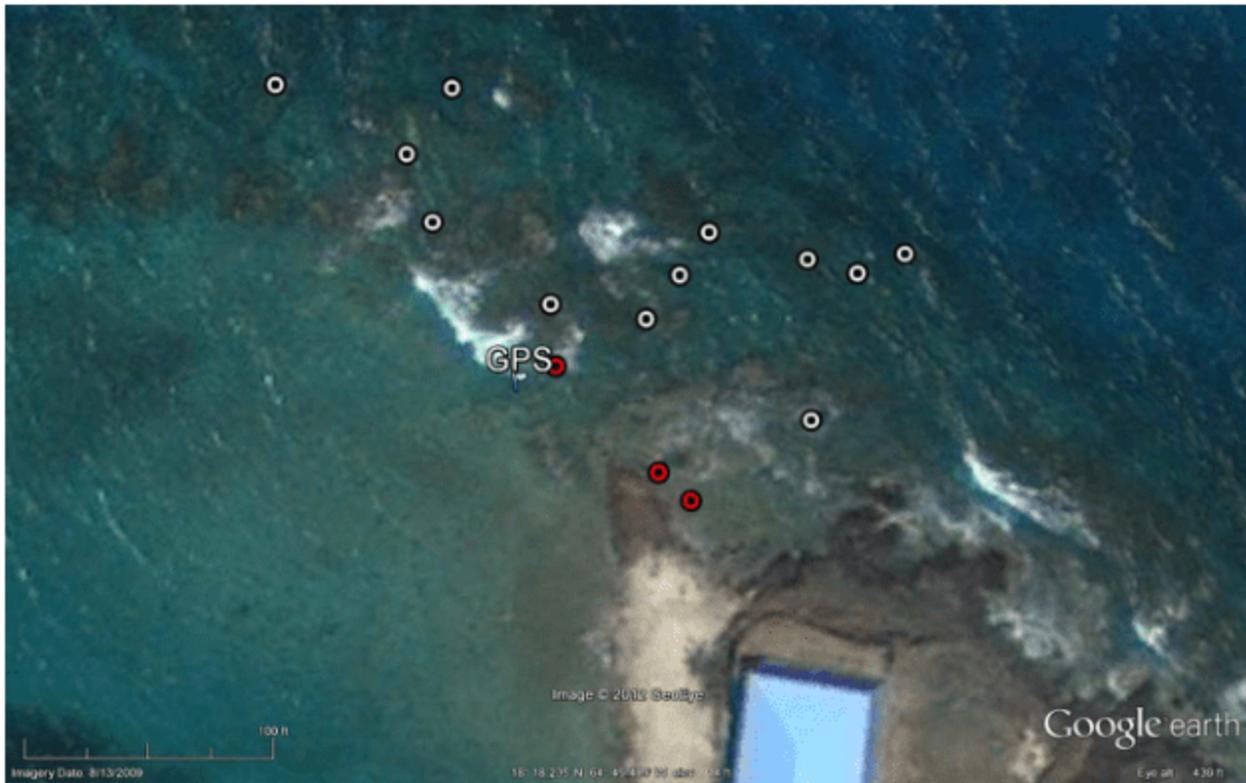
The hard bottom immediately off the end of the new riprap, the last piece of riprap is evident in the left hand corner of the picture. The area has urchins, fire coral and widely scattered corals. This is a good representation of the habitat that existed under the southern portion of the riprap.

The northern portion of the riprap extends into an area with much denser colonization. A study was conducted in 2009 and the habitat and *Acropora* in the area were mapped.



This figure shows the area of habitat as well as the approximate location of the *Acropora* colonies

The locations of the *Acropora* overlain the current aerial and are of impact shows that 3 *Acropora* were directly impacted by the filling activity.



The *Acropora* which were impacted by the placement of fill are shown in red.

The 2009 report stated that there numerous *Acropora* colonies on the northern side of the existing rocky outcropping but not on the southern side. The following photographs are from the 2009 surveys.



Acropora palmata off the point.



Acropora cervicornis on the northern side of the rocks



Acropora cervicornis on the northern side of the rocky outcropping

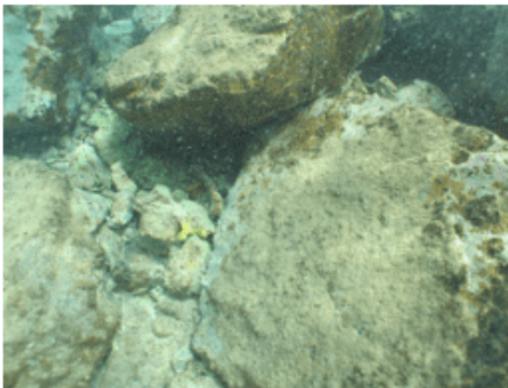


Acropora palmata on the shallow rocks

To the north appears that the new riprap was placed on top of areas with encrusting fire coral as well as encrusting gorgonians, and hard corals including at least 3 *Acropora*.



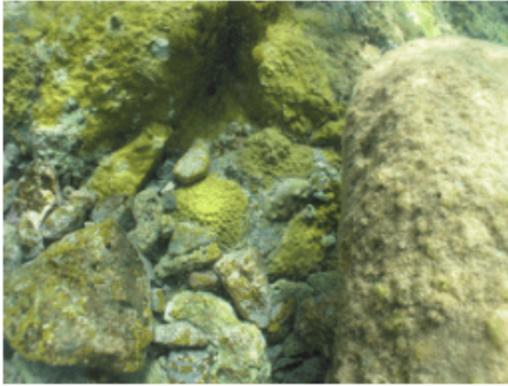
This broken branch of an *Acropora palmata* lies just off the end of the expanded groin. The branch is putting out new branches but is not attached to the seafloor and is subject to movement.



Another broken limb of *Acropora* at the edge of the new riprap, this fragment is not doing as well.



The boulders here are sitting on top of fire coral as well as a *Porites astreoides*.



Corals extending out from under boulders and small stones along the northern edge of the groin.

The fill material directly impacted between 1000 and 1250 sq.ft. of coral habitat, the southern portion was sparsely colonized while the crest and northern slope was more heavily colonized. At least 3 *Acropora palmata* were directly impacted and the entire area was critical habitat for these species. The hard bottom habitat was also colonized by *Porites astreoides*, *Porites porites*, *Diploria strigosa*, and *Millepora* spp. There was also some coverage by encrusting gorgonians (*Erythropodium caribaeorum*) and numerous boring urchins, *Echinometra* and black urchins, *Diadema* also colonized the shallow environment. These organisms were denser to the north of the crest than the south.

The filling probably also had indirect impacts through the introduction of fines from the riprap and from the sandy fill material which escaped through the rocks.

REMEDICATION

The removal of the material would most likely result in additional impacts to the surrounding environment through direct impacts to the corals at the edge of the fill material and through the re-suspension of fine sediments released into the water column as the material is removed.

We would recommend that mitigation be off site, yet in-kind by protecting additional *Acropora* habitat. We recommend the placement of XX public mooring buoys protecting a total of 1250 sq. ft. of coral habitat placed in locations selected by DPNR to protect coral habitat and through the cleanup debris from areas where wrecked vessels have impacted the shallow water environment and the presents of this debris continues to pose a threat to nearby corals as it is moved in the waves. The proposed sites of cleanup are as follows and would protect XXXX sq. ft. of coral habitat.

