



**Consolidated
Environmental
Engineering**



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Melbourne, Orlando and Key West**

Marine Habitat Survey

LATITUDE N24° 46' 31.4" (24.7754)
LONGITUDE W81° 54' 34.9" (-81.9097)
NORTH-NORTHWEST OF KEY WEST, FLORIDA

APRIL 8, 2011

OBJECTIVE OF WORK:

The objective of the survey is to gather data at the target location for depth and the presence of any natural resources and to survey a representative amount of the area within a five hundred foot radius of the target location for depth and the presence and location of any natural resources.

SITE DESCRIPTION:

The subject property is located at Latitude N24° 46' 31.4" (24.7754) Longitude W81° 54' 34.9" (-81.9097). This location can be found on the National Oceanic and Atmospheric Administration (NOAA) Chart Number 11434.

The target location is approximately 16 statute miles north-northwest of Key West, Florida. The site is approximately 3 statute miles north of the northern boundary of the Florida Keys National Marine Sanctuary. The site is within the 12-nautical mile Territorial Sea designation and beyond the 9-nautical mile Natural Resource Boundary off the Gulf of Mexico coast of the Florida Keys.

See Figure 1/ Location Map to identify the location of the subject property relative the major land masses

METHODOLOGY:

The survey area consisted of the target coordinates (center) and a 500 foot radius circle around the center point for an approximate area of 785,000 square feet or approximately 18 acres.

The survey area was broken down into five (5) sample areas within the project footprint. These areas were designated as the center, then four (4) sample areas at the compass points, five hundred feet from the center point. Each sample area was surveyed using a circle search of approximately 100 feet in diameter. This pattern resulted in coverage of approximately 157,000 square feet or approximately 3.6 acres or 20 % of the survey area.

The sample areas were surveyed in order to document depth and any occurrence of submerged aquatic vegetation or other significant submerged resources including but not limited to hardbottoms, coral, coral reef and unvegetated bottom.

The sample area was also surveyed for swimming sea turtles [Green Turtles (*Chelonia mydas*), Hawksbill Turtles (*Eretmochelys caratta*), Kemp's Reilly Turtles (*Lepidochelys kempii*), Leatherback Turtles (*Dermochelys coriacea*) and Loggerhead Turtles (*Caretta caratta*)].

The sample area was found using a Garmin 500 Series GPS with sonar capabilities. Underwater photographs were taken using a Xacti HD Camera Model Number VPC-HD 1000.

FINDINGS:

The marine habitat survey was conducted on April 8, 2011. The weather was mostly sunny with variable winds from the east-southeast.

The low tide event for the location was projected for 0646 hours of that day. This information was compiled from www.saltwatertides.com for Key West. The estimated tidal range for the day was approximately 1.3 feet.

The visibility at the time of the survey was approximately thirty (30) feet in the water column reducing to six (6) to ten (10) feet at the bottom. The reduced visibility along the bottom was due to the fine mud characteristic of the substrate in the survey area.

The bottom characteristics in all five (5) of the sampling areas were identical and consisted of fine, oozy mud. Using hand fanning techniques the mud was removed to a depth of -30 inches below the bottom level (the reach of the individual sampling). No coral or hard bottom was encountered in the survey area.

No seagrass was observed in any of the five (5) of the sampling areas. Species observed in the sampling areas included:

- Hermit crab (*Coenobita clypeatus*)
- Fighting conch (*Strombus alatus*)
- Small grouper known locally as a hamlet (*Hypoplectrus sp.*)

There was evidence of starfish in the form of a “footprints” left by a six-armed starfish. Multiple holes were observed in the survey area. These structures are typically inhabited by annelids (worms).

The depth around the survey area was measured using sonar. The depth in the survey area varied gently between 58 and 62 feet. No sharp variations in depth that would indicate structure (coral, coral reef or wreck) was identified in the survey area.

No swimming sea turtles were observed in the survey area.

Please review Table 1 for the detailed findings.

Table 1: Location of Significant Natural Resources and Percent Coverage

Sample Area	Water Depth (- feet)	Unvegetated Bottom	Coral/ Coral Reef	Hard Bottom
Center Area	59	Present	Absent	Absent
West Area	58	Present	Absent	Absent
East Area	60	Present	Absent	Absent
North Area	61	Present	Absent	Absent
South Area	62	Present	Absent	Absent

Please see Appendix I for On-site Photographs

CONCLUSION:

Based on the findings during the survey, the target area is a flat bottom composed of a mixture of silt and fine sand forming an oozy mud.

The area is free from coral, coral reefs, hard bottom and seagrass.

The fauna identified in the survey area were limited to the typical invertebrates inhabiting a mud bottom and a small fish scavenging the area.

The configuration of the bottom and the lack of significant resources in the survey area make this location a viable option for the siting of the Elevated Water Resorts, LLC Oceana resort.

Dr. Daniel C. Mestayer, III
Senior Scientist

Appendix I

On-site Photographs



Evidence of Invertebrates – Likely Sea Cucumbers (*Holothuroidea sp.*)



One of Several Fighting Conchs (*Strombus alatus*) Observed in the Survey Area



Evidence of Invertebrates – Likely Sea Stars (*Astroidea sp.*)



One of Several Fighting Conchs (*Strombus alatus*) Observed in the Survey Area

On-site Photographs

Date:
4-8-11

Location:
N 24° 46' 31.4"
W 81° 54' 34.9"

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