

APPENDIX E

JET PROBE INVESTIGATION



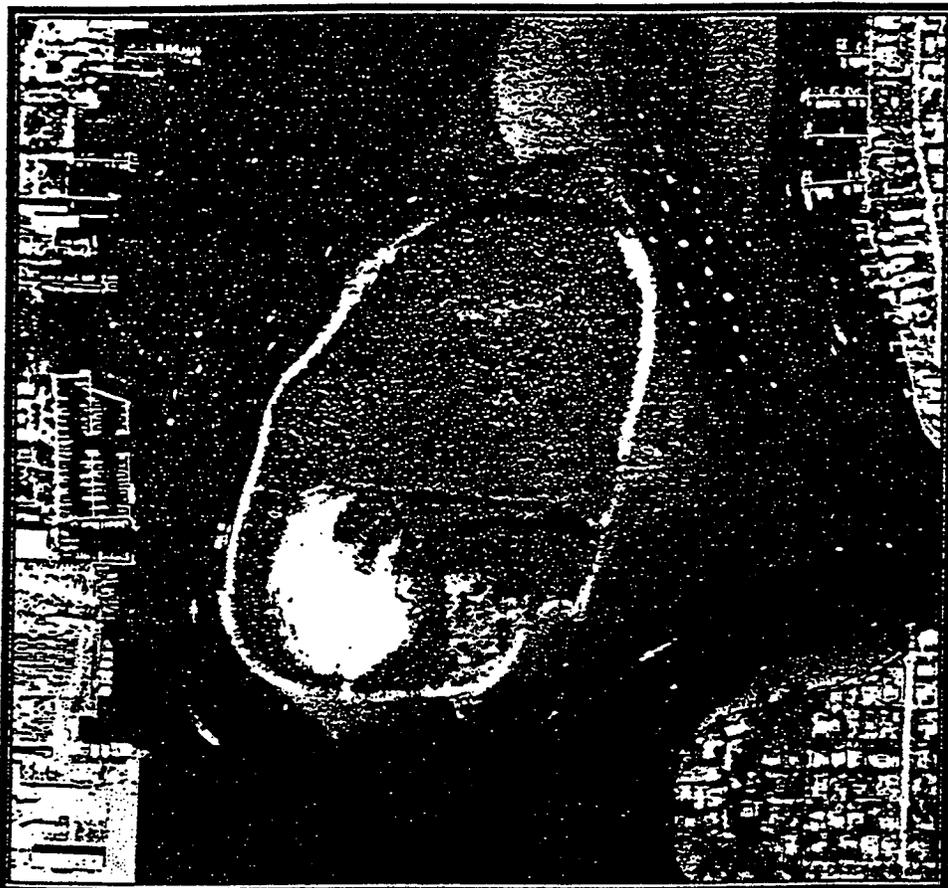
JET PROBE INVESTIGATION OF PEANUT ISLAND

Prepared For



Department of Environmental Resource Management

March 6 & 10, 1998



Prepared By



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JET PROBE INVESTIGATION OF PEANUT ISLAND
Riviera Beach, Florida

Prepared for



Department of Environmental Resources Management

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SEA SYSTEMS CORPORATION



Introduction

On February 24, 1998 Sea Systems Corporation was contracted by the Palm Beach County Department of Environmental Resource Management to conduct a jet probe investigation on portions of Peanut Island, Palm Beach County, Florida. The purpose of the investigation was to assess the apparent subsurface sediment characteristics of two (2) areas of Peanut Island that will be subject to future excavation operations.

The first area located on the southeast side of the island, has been designated to be a proposed shallow water reef with design water depths varying up to a maximum of ten (10) feet (re: NGVD). It is proposed to construct the reef over an area comprised of both uplands and submerged lands with vertical walls and/or sloped rock revetment to stabilize the new shoreline. It was the objective of the investigation to probe the sediments beyond the limits of the project design elevation (-10 feet NGVD) at locations designated by the County to assess whether rock strata may be encountered during the excavation operations. The sediment probe results would also provide valuable information required for the initial planning of shoreline stabilization features or other structures that may be required for the project.

The second area of the investigation, situated on the west side of the island, is the proposed location of a tidal pond to be constructed primarily from uplands with an entrance channel connecting it to the Intracoastal Waterway. The design elevation of the basin is (-) five (5) feet NGVD and, similar to the shallow water reef, the shoreline is to be stabilized with vertical walls or sloped rock revetment. As with the first area of the investigation, the objective of the sediment probes was to determine whether rock might be encountered during excavation activities.

Probes for both areas of the investigation consisted of a twenty (20) foot steel pipe forced into the sediment using a high-pressure stream of water. The steel pipe injected into the sediments in this fashion would detect layers of subsurface material changes (i.e. sand versus compacted sand and shell) and certainly rock stratifications or other impenetrable material interfaces. The probes provide general information regarding the apparent subsurface material characteristics that can be used for initial project planning efforts and/or determining where hardbottom may exist within a specific project area. The sediment probe information will be supplemented by sediment cores for actual design purposes to accurately classify the type of material present within the limits of the project.

The sediment, or jet probe investigation was conducted by Sea Systems Corporation on March 6 and 10, 1998. The following report summarizes the results of the investigation and provides a brief description of the methodologies that were employed.

SEA SYSTEMS CORPORATION

Methodologies

The jet probe investigation was conducted using a four-person survey team equipped with a hydraulic water pump with a twenty (20) foot steel jet pipe. The crew was able to draw water from the Intracoastal Waterway and pump it through to the jet pipe providing a high-pressure stream of water, allowing the probe to be injected into the sediment. As the pipe penetrated deeper into the ground, the discharge was noted for color, composition, and other characteristics that could provide information regarding the subsurface materials. Also noted were the depths, if any, at which there was resistance to the pipe and the point, if at all, of refusal. Samples were taken of the subsurface material at each probe location, and, when necessary, additional probes were conducted at each location.

Probe locations, relative to the shallow water reef project, were marked in the field using measured ranges (measuring tape) and compass bearings from an established baseline that was set via Differential Global Positioning System (DGPS). Coordinates (X,Y format, re: State Plane Coordinate System, NAD, 1927) used to set the baseline were provided by the County, as well as the required distance and bearing to each probe location. Coordinate data for each probe location, as described in the tabulation of results included in this report, are based upon a calculated value using the distances and ranges provided and the known coordinate values for the established baseline. It was not required, as part of the investigation, to accurately locate each probe using methodologies other than that described here. It is expected that the actual location of each probe be within two (2) to three (3) feet of the respective recorded coordinate value.

In addition to the horizontal layout / location of sediment probes pertaining to the shallow water reef project, ground elevations were acquired at each of the probe locations. Ground elevation shots were obtained following conventional leveling techniques using a vertical benchmark provided by the County. The vertical benchmark encompassed an iron railroad spike at the base of a painted palm tree within the Coast Guard compound and was described by the County as having an elevation of 7.30 feet (assumed datum: NGVD, 1929). Verification of the benchmark provided by the County was not included as part of the scope of work.

Sediment probes, relative to the proposed boat basin project (westerly side of the island), were conducted following a more random approach to that of the other described probes for the shallow water reef project. This included two (2) probes, one located towards the easterly edge and apparent center of the proposed basin excavation and one towards the proposed mouth of the basin. The easterlymost probe, located approximately one hundred fifty (150) feet landward of the existing shoreline, was conducted at the same point where the County had apparently conducted their own sediment studies. This was evident by an existing lath set by the County and an obvious disturbance of the surface sediments. The second probe was conducted approximately ten (10) to fifteen (15) feet landward of the existing shoreline at the edge of vegetation. The probe location was marked by Sea Systems Corporation for subsequent location via DGPS by the County, as required.

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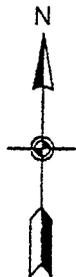
Results

Within the limits of the proposed shallow water reef area and to the limits of the project design elevation (-10 feet NGVD), the observed subsurface conditions appeared to be free from any hardbottom or consolidated rock stratifications. There did appear to be subsurface layers of compacted sand and shell and / or isolated rocks, evident by resistance that did occur at varying depths, but such layers were readily penetrated by the jet pipe. Apparent hardbottom was encountered at only one probe location (J1), however, the elevation (-21.6 feet) of this impenetrable material was well below the design elevation for the project. From observations and samples taken of the materials being expelled by the probes, the subsurface sediments appeared to be primarily sand and shell.

The two (2) sediment probes conducted within the area encompassing the proposed tidal pond encountered no resistance and no apparent hardbottom. The subsurface material composition appeared to consist only of sand and shell with no consolidated or compacted layers to offer resistance to the probe. Sediment material discharged as a result of the probe consisted of sand and shells fragments, similar to what was encountered on the southeasterly side of the island.

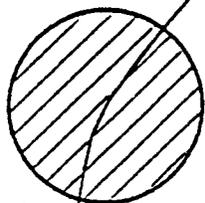
The following is a complete tabulation of the sediment probe results indicating for each probe an identification number, approximate northing, approximate easting, stationing, range, ground elevation, final probe elevation and an assessment of the probable subsurface conditions experienced during the probe. Also attached is a sketch depicting the two (2) probe areas of the investigation including a more detailed sketch of the probe layout for the proposed shallow water reef component of the project.

PROBE LOCATION MAP



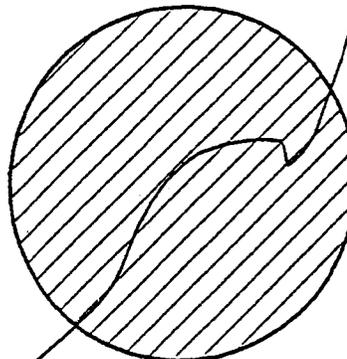
NOT TO SCALE

PEANUT ISLAND



PROPOSED TIDAL POND LOCATION
LOCATION OF JET PROBE
INVESTIGATION

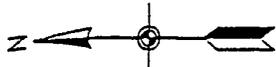
PROPOSED SHALLOW WATER REEF LOCATION
LOCATION OF JET PROBE
INVESTIGATION



Jet Probe Number	POSITION (values in feet)				Elevation (feet)		Jet Probe Description
	Easting, X	Northing, Y	Station	Range	Ground	Penetration	
J1	811,538	886,982	0+00	85 S	-1.6	-21.6	encountered slight resistance at 10 feet; penetrated to 20 feet; observed apparent hardbottom at 20 feet
J2	811,497	887,072	0+00	47 N	5.3	-14.7	encountered slight resistance at 12 feet; penetrated to 20 feet; no hardbottom observed
J3	811,468	887,136	0+00	140 N	5.7	-14.3	encountered isolated rock at 14 feet; penetrated to 20 feet; no hardbottom observed
J5	811,620	887,044	1+00	55 S	-2.0	-22.0	encountered slight resistance at 10 feet; penetrated to 20 feet; no hardbottom observed
J6	811,578	887,136	1+00	80 N	7.7	-12.3	possible organic debris at 15 feet; penetrated to 20 feet; no hardbottom observed
J7	811,555	887,186	1+00	153 N	7.6	-12.4	possible organic debris at 15 feet; penetrated to 20 feet; no hardbottom observed
J8	811,713	887,080	2+00	63 S	-2.5	-22.5	encountered slight resistance at 15 feet; penetrated to 20 feet; no hardbottom observed
J9	811,672	887,170	2+00	69 N	3.4	-16.6	no resistance found; penetrated to 20 feet; no hardbottom observed
J10	811,636	887,247	2+00	182 N	9.1	-10.9	no resistance found; penetrated to 20 feet; no hardbottom observed
STA. 3+00	811,784	887,165	3+00	0	2.2	-17.8	no resistance found; penetrated to 20 feet; no hardbottom observed
STA. 4+00	811,876	887,206	3+00	0	-4.6	-24.6	encountered resistance at 16 feet; did not appear to be hardbottom; was not able to penetrate
BASIN 1	County lath approx. 150' east of shoreline				n/a	n/a	no resistance found; penetrated to 20 feet; no hardbottom observed
BASIN 2	edge of vegetation approx. 15' east of shoreline				n/a	n/a	no resistance found; penetrated to 20 feet; no hardbottom observed

Note: Horizontal positions based upon the North American Datum of 1927 (NAD 27)
Elevations are assumed to be relative to the National Geodetic Vertical Datum of 1929 (NGVD)

JET PROBE INVESTIGATION OF PEANUT ISLAND, MARCH 6 AND 10, 1998.



APPROXIMATE SCALE: 1" = 100'

