

EXECUTIVE SUMMARY

Recommend approval of funding for the Cape Romano Shoal Sand Source Development by Coastal Planning and Engineering as outlined in the February 29, 2008 proposal titled “Proposal for the Offshore Design Phase Geotechnical and Geophysical Investigation off Cape Romano, Collier County, Florida” for a time and material not to exceed price of \$295,195.

OBJECTIVE: To approve funding for the Cape Romano Shoal Sand Source Development by Coastal Planning and Engineering for time and material not to exceed price of \$295,195.

CONSIDERATIONS:

Key position points are as follows:

1. Significant high quality sand exists at the T-1 location in federal waters off Sanibel Island in Lee County. However, mobilization costs at \$2,500,000 and unit prices of approximately \$25/CY make this sand very high priced.
2. An investigation by CE&E was undertaken to identify and quantify small sand source within a short distance of Collier County coasts that could be used for emergency renourishment at a significantly reduced price from the previous renourishment mobilization and unit prices.
3. The shoal off Cape Romano based on preliminary testing contain between 500,000 and 1,000,000 CY of beach quality sand course enough without fines, calcium and/or silt to perform effectively on our beaches.
4. The State will require additional design and development of this borrow location to confirm and permit this site. To date, Collier County has spent approximately \$155,000 with the preliminary site investigation. Design and permitting is proposed at \$295,185 for a total development cost of this site expected to be in the \$450,000 to \$500,000 range. Development of the T-1 site in federal water cost Collier County in excess of \$2,000,000.
5. The Cape Romano Shoals are located 10-12 miles from the center of Naples beaches. This location is relatively shallow in approximately 10 to 15 feet of water. Cutter head dredges and barges/scowls will be required to dredge and transport this sand. While this location and method will certainly be less expensive than \$2,500,000 mobilization and \$25/CY unit price, it will not necessarily be inexpensive either.
6. An alternate source of sand will provide contracting options that will undoubtedly improve our contracting position/option/pricing in the future.

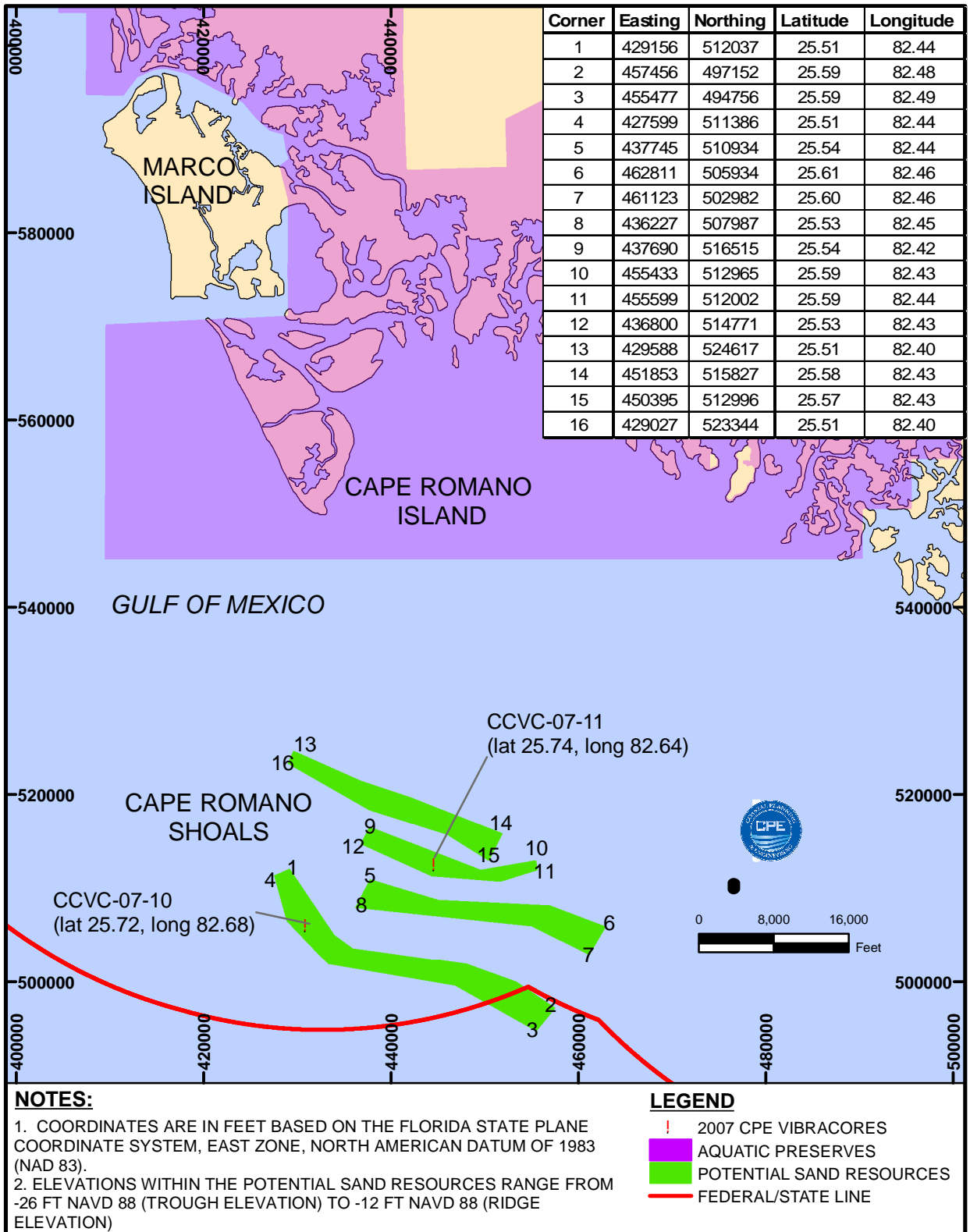
ADVISORY COMMITTEE RECOMMENDATIONS: The CAC unanimously (8 to 0) approved this item at their March 13, 2008 meeting.

FISCAL IMPACT: The Source of funds is from Category “A” Tourist Development Tax.

GROWTH MANAGEMENT IMPACT: There is no impact to the Growth Management Plan related to this action.

RECOMMENDATION: Approve funding for the Cape Romano Shoal Sand Source Development by Coastal Planning and Engineering for a time and material not to exceed price of \$295,195.

PREPARED BY: Gail Hambright, Tourist Tax Coordinator





COASTAL PLANNING & ENGINEERING, INC.

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February 29, 2008

J. Gary McAlpin,
Director
Coastal Zone Management
3300 Santa Barbara Blvd.
Naples, Florida 34116

Re: Proposal for the offshore Design Phase Geotechnical and Geophysical Investigation off Cape Romano, Collier County, Florida

Gary:

The following scope of work for the design phase sand search investigation is provided for review and approval by Collier County. Design level field investigations will be conducted at an area previously identified as a potential sand resource in the reconnaissance level sand search. This area is located offshore of Cape Romano, in the vicinity of the Cape Romano Shoals. The goal is to find a sufficient volume of beach compatible sand to repair the beach in case of a major emergency.

The borrow area development will include planning and mobilization, a geophysical survey involving the collection of seismic, sidescan sonar, bathymetric and magnetometer data, the collection of offshore vibracores and a cultural resources survey. Post field operations will include sediment analyses of the vibracores; borrow area design and development of a geotechnical report which will be provided to the regulatory agencies. A compatibility analysis will be conducted to match sand sources and beach areas for optimal performance.

The sand search investigation will be conducted to the geotechnical standards currently acceptable to the Florida Department of Environmental Protection (FDEP). CPE will work closely with Collier County and FDEP during the field and design phases of the investigation.

If you have any questions, please call me.
Sincerely,

COASTAL PLANNING & ENGINEERING, INC

Stephen Keehn, PE
Senior Coastal Engineer

cc: Jeffrey L. Andrews, PSM, CIH, CPE

SCOPE OF CONSULTANT SERVICES FOR THE DESIGN PHASE CAPE ROMANO, COLLIER COUNTY, FLORIDA SAND SEARCH INVESTIGATION

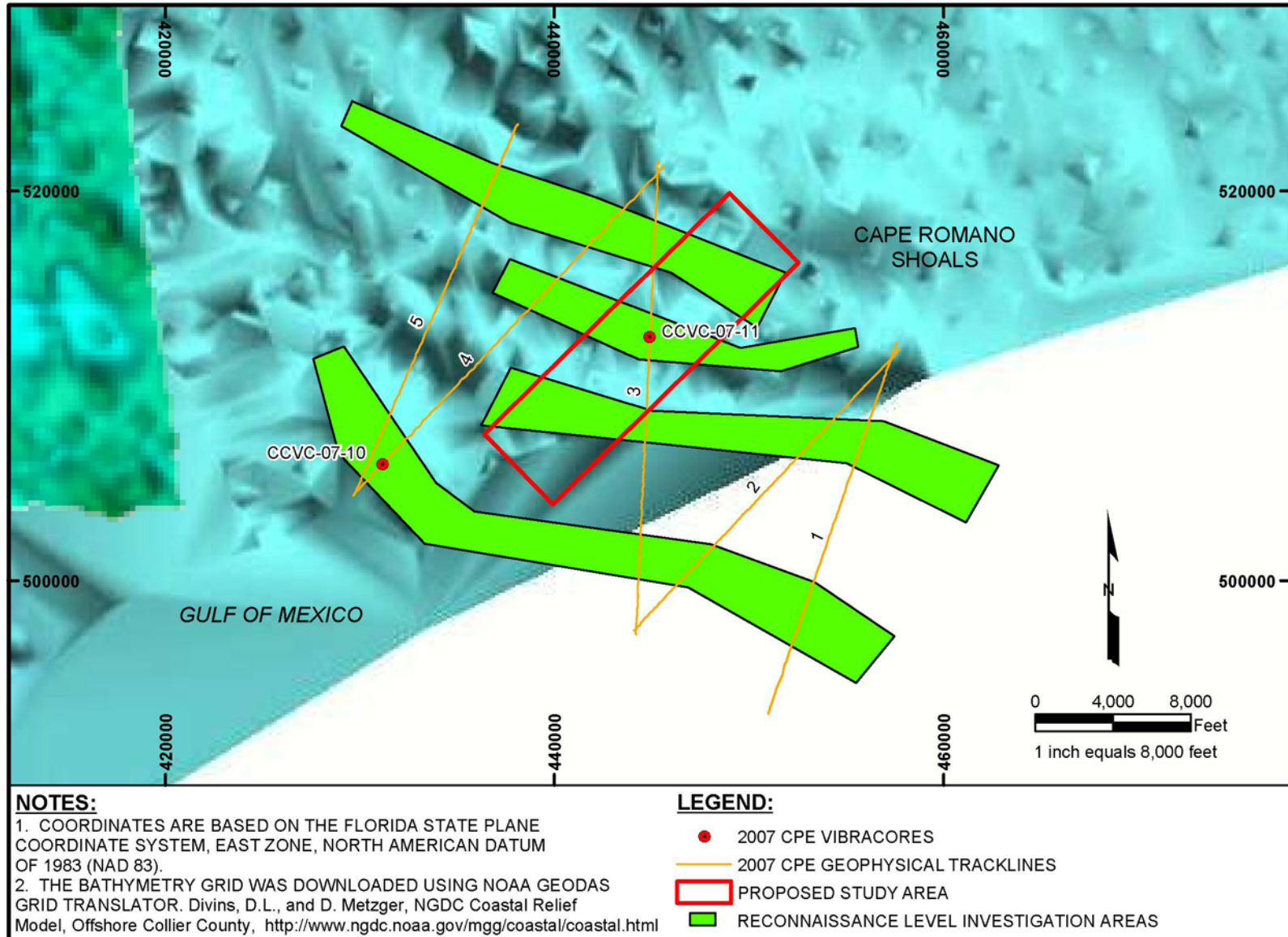
PURPOSE

The purpose of this work is to continue the field investigation necessary for the design and permitting of sand sources offshore of Cape Romano required for future emergency beach nourishment projects along the Collier County coastline.

To meet the needs of future emergency beach nourishment projects, Collier County authorized Coastal Planning & Engineering, Inc. (CPE) to conduct reconnaissance level marine sand search investigations. During Phase I, a comprehensive review of the sediment resources offshore of Collier County was conducted to identify potential beach compatible sand sources for use in small emergency nourishment projects along the County's coast. Five (5) main areas including the Gordon Pass Ebb Tidal Shoal, the 1996 CEC Ridge Deposit, the 2002 CPE Ridge Deposits, the Big Marco Pass Ebb Tidal Shoal and the Cape Romano Shoals were recommended for further investigation. The northern portion of the 2002 CPE Ridge Deposits and the Big Marco Pass Ebb Shoal were recommended for further review of existing data. The areas recommended for reconnaissance level investigations include the southern portion of the 2002 CPE Ridge Deposits, the Gordon Pass Ebb Tidal Shoal, the 1996 CEC Ridge Deposit and the sand ridges located off Cape Romano. Phase II investigations consisted of geophysical and vibracore surveys. The reconnaissance level investigation resulted in the identification of one (1) area that is suitable for further detailed investigation for development as an emergency borrow area.

The following is a scope of work for design-level sand search investigations offshore Cape Romano, Collier County. These detailed field investigations will be conducted in and around the areas that have been previously identified as potential sand resources (Figure 1). The borrow area development will include planning and mobilization, Eighty (80) line miles of geophysical survey involving the collection of seismic, sidescan sonar, bathymetric and magnetometer data at 60 meter spacing across the proposed study area (figure 1), the collection of twenty (20) vibracores and a cultural resources survey. Post field operations will include sediment analyses of the vibracores, borrow area design, development of a geotechnical report and cultural resources report, which will be provided to the regulatory agencies. The proposed geotechnical investigation and cultural resources survey will be conducted to the geotechnical standards currently acceptable to the Florida Department of Environmental Protection (FDEP). CPE will work closely with Collier County and FDEP during the design and field components of the surveys. This scope of work is provided for review and approval by Collier County.

Figure 1. Cape Romano proposed area of investigation.



SCOPE OF SERVICES

The technical procedures, operational methodologies, analytical tools and equipment that will be used during this investigation are described below.

To ensure that survey control and accuracy standards shall be consistent with FDEP specifications, a report from the surveyor will be submitted certifying that the survey meets Bureau of Beaches and Coastal Systems (BBCS) Technical Standards established in Part II.A of the *BBCS Monitoring Standard for Beach Erosion Control Projects* and minimum technical standards of Chapter 61G17-6, Florida Administrative Code.

Investigation Methods

Task 1: Geophysical Data Collection

1.1 *Navigation System*

A Trimble Real Time Kinematic Global Positioning (RTK GPS) system with dual frequency receivers will be used on board the survey vessel to provide high-precision navigation and instantaneous tide corrections. In order to maintain the vessel navigation along the profile lines the Hypack Inc.'s hydrographic system Hypack 6.2a® will be used. This software merges RTK GPS vertical and horizontal positioning with the sounding data, allowing real time review of the profile data in plan view or cross section format. It also provides navigation to the helm to control the deviation from the online azimuth.

1.2 *Seismic Reflection Profile Surveys*

An EdgeTech X-STAR 512i seismic sub-bottom system will be used to conduct the seismic reflection profile surveys. The X-STAR SB-512i Full Spectrum Sonar is a versatile wideband FM sub-bottom profiler that collects digital normal incidence reflection data over many frequency ranges. This instrumentation generates cross-sectional images of the seabed (to a depth of up to 50 ft). The X-STAR SB-512i transmits an FM pulse that is linearly swept over a full spectrum frequency range (also called a "chirp pulse"). The tapered waveform spectrum results in images that have virtually constant resolution with depth.

Throughout the offshore seismic reflection survey, selection of the chirp pulse will be modified in real time to obtain the best possible resolution of geological features and the sequence stratigraphy (*i.e.* vertical sequence and lateral distribution of sediment bodies comprised by different grain sizes and sediment composition) that in turn optimizes data quality and enhances subsequent interpretation. High frequency and/or short duration pulses are, for example, used to obtain highest resolution (clearest reflector image) in near surface situations; low frequency or longer duration pulses are used where deeper penetration is required.

1.3 ***Bathymetric Survey***

The Odom Hydrographic Systems, Inc.'s Hydrotrac, a single frequency portable hydrographic echo sounder, will be used to perform the bathymetric survey. The Hydrotrac operates a frequency of 210 kHz and is a digital, survey-grade sounder. The sounder will be calibrated using an Odom Hydrographic Systems, Inc.'s Digital Pro® speed-of-sound velocity meter. Speed of sound through water and other selected parameters will be adjusted to accurately reflect physical water conditions in the survey area.

1.4 ***Sidescan Sonar Survey***

An EdgeTech 4200-HFL sidescan sonar system will be used to collect sidescan sonar data over the entire area of investigation. The 4200-HFL uses full-spectrum chirp technology to deliver wide-band, high-energy pulses coupled with high resolution and superb signal to noise ratio echo data. The portable sidescan package includes a laptop computer running the Discover® acquisition software and a 300/600 kHz dual frequency towfish running in high definition mode.

1.5 ***Magnetometer Survey***

A Geometrics G-882 Digital Cesium Marine Magnetometer will be used to perform a cursory investigation of magnetic anomalies within the potential sediment sources. The purpose of the magnetometer survey is to establish the presence, and subsequent exclusion zones around any potential underwater wrecks, submerged hazards, or any other features that would affect borrow area delineation and dredging activities. The Hypack 6.2a® software will record magnetic anomalies directly from the Geometrics magnetometer.

Task 2: Geotechnical Data Collection

2.1 ***Vibracores***

Prior to collecting vibracores for this investigation, CPE is required to apply for a vibracore permit/de minimus exemption. In order to do this, a Joint Environmental Resource Permit Application (ERP) application will be submitted to the FDEP BBSC for review. This application requires a general project description and a map outlining the area of investigation within which the proposed vibracoring will take place. The Agency has ninety (90) days to review the permit application. The application is also forwarded to the Bureau of Survey and Mapping, Division of State Lands for title determination. Existing easements must be avoided during vibracore collection or title holders must be notified of the proposed activity. The ERP application is also forwarded to the United States Army Corps of Engineers (USACE), Florida Division of Historical Resources (SHPO) and to Fish and Wildlife Services (FWS) for review and comment. FWS generally requires mitigation for manatees. SHPO requires a joint seismic, sidescan sonar, and magnetometer investigation be conducted prior to vibracoring. As a condition of the permit, this data must be reviewed by a qualified marine archaeologist. Typically vibracores collected under the ERP must be obtained within 50 ft of the as-run survey lines and must avoid any potential cultural resources identified as potentially significant by the marine archaeologist.

A maximum of 20 vibracores will be collected over 3 days within the area of investigation. A Rossfelder P3 Vibracore, or equivalent, configured to collect undisturbed sediment cores up to 20 feet in length, will be used for this project. This self-contained, freestanding electronic vibracore unit contains a vibratory hammer assembly, an aluminum beam which acts as the vertical beam upright on the seafloor, an aluminum coring pipe, and a cutting edge. If recovery is less than 80% of the expected total penetration, the sampled portion of the pipe will be removed, a new core pipe attached, and a jet pump hose will be attached just below the vibracore head. After lowering the rig to the bottom and jetting to one (1) or two (2) feet above the refusal depth, the jet will be turned off and the vibrator turned on in order to attempt to collect the remaining core.

After retrieval, each core will be split in half and each core will be field logged to verify the most promising areas for continued vibracoring. Splitting the vibracores during field investigations provides an opportunity for immediate visual evaluation of the core and real time optimization of the vibracoring plan (the sampling program may be modified based on what is observed in the recovered materials). This flexibility in the field is important to allow the geologist to focus on potential sand resources. Other advantages of core splitting and logging in the field are realized when it can be immediately determined whether shorter than expected cores are due to loss of sediment or compaction, or whether there are other abnormalities such as coarse materials plugging the core causing gaps in sediment retrieval, etc.

Upon completion of field operations, the vibracores will be transported to CPE's office in Boca Raton. There, the vibracores will be re-logged in greater detail by describing sedimentary properties by layer in terms of layer thickness, color, texture (grain size), composition and presence of clay, silt, gravel, or shells and any other identifying features. The vibracores will be photographed in 2.0 ft intervals. Sediment samples will be extracted from the vibracores at irregular intervals based on distinct stratigraphic layers in the sediment sequence. The vibracores will then be wrapped and archived. Cores will be stored for a period of up to one (1) year. After this time, cores will either be relinquished to the client or stored for an additional annual cost of \$25 per core.

Data Analysis Techniques

Task 3: Geophysical Data Analysis

The EdgeTech Discover data acquisition system collects and stores geophysical survey data in a digital format. EdgeTech's Discover is a modular acquisition and processing software package that is compatible with all of EdgeTech's systems. It serves as the digital image processing, display, storage, and surface control station for the EdgeTech 512i sub-bottom profiler (chirp sonar system). This data acquisition system digitizes, stores, and processes seismic signals and combines the seismic imagery with navigational inputs to georeference data in real-time. Hardcopy records will be produced during data acquisition.

The digital sidescan data will be merged with positioning data (RTK GPS via HYPACK MAX®), video displayed, and recorded to the acquisition computer's hard disk for post processing and/or replay. The position of the sensor relative to the RTK GPS antenna will be documented to ensure proper positioning of the data.

All sidescan sonar and seismic reflection data will be processed using the SonarWiz.MAP software package developed by Chesapeake Technologies Inc. This software package allows for advanced processing, interpretation, and digital mosaic output and can produce georeferenced HTML's viewable in generic web-browser software programs. SonarWiz.MAP also produces digital geographic information for both sub-bottom and sidescan data that are exportable for incorporation into a GIS database. All sidescan sonar, sub-bottom profile, magnetometer and bathymetric data will be processed and interpreted by CPE personnel. After processing, the magnetometer data will be reviewed by a qualified archaeologist for cultural resource interpretation.

Task 4: Sediment Sample Analysis

4.1 *Mechanical Sieve Analysis*

The sediment samples will be analyzed to determine color and grain size distribution. Prior to sieve analysis, any obvious uncharacteristically large fragments (such as whole shell or large shell fragments) will be removed and the description (weight and size) of the material will be noted. The total visually estimated shell content (bulk shell estimate); roundness of sand and shell; and the wet, dry and washed Munsell colors will be noted. Sieve analysis of the sediment samples will be performed in accordance with the American Society for Testing and Materials (ASTM) Standard Methods Designation D 422-63 for particle size analysis of soils. This method covers the quantitative determination of the distribution of sand size particles. For sediment finer than the No. 230 sieve (4.0 phi) the ASTM Standard Test Method, Designation D 1140-00 will be followed. The sieve stack used for mechanical analysis will conform to the BBCS guidelines provided in Table 1.

Weights retained on each sieve will be recorded cumulatively. During sieve analysis the visually estimated percentage of shell retained on the ¾" sieve through the #7 sieves will be noted. Grain size results will be entered into the gINT® software program, which computes the mean and median grain size, sorting, silt/clay percentages for each sample using the moment method.

Table 1. *Mesh sizes to be used for granulometric analysis.*

Sieve No.	Size (phi)	Size (mm)
3/4	-4.25	19.00
5/8	-4.0	16.00
7/16	-3.5	11.20
5/16	-3.0	8.00
3 1/2	-2.5	5.60
4	-2.25	4.75
5	-2.0	4.00
7	-1.5	2.80
10	-1.0	2.00
14	-0.5	1.40
18	0.0	1.00
25	0.5	0.71
35	1.0	0.50
45	1.5	0.36
60	2.0	0.25
80	2.5	0.18
120	3.0	0.13
170	3.5	0.09
200	3.75	0.08
230	4.0	0.06

4.2 *Carbonate Testing*

It is estimated that approximately one third of the samples falling within the horizontal and vertical bounds of the proposed borrow area(s) will be tested for carbonate content. Carbonate content will be determined by percent weight using the acid leaching methodology described in Twenhofel, W.H. and Tyler, S.A., 1941. *Methods of Study of Sediments*. New York: McGraw-Hill, 183p.

Task 5: Preliminary Borrow Area Engineering

A preliminary borrow area design and implementation plan will be developed using the borrow area(s) and beach sand characteristics developed during the investigation. A compatibility analysis will be conducted to match the borrow area(s) and beach segments for optimum project performance. The existing beach varies in mean grain size alongshore, since each segment was built using different sand sources. The nearshore borrow areas and backfill areas will be designed for the quantity of sand needed for back fill. This design will entail determining equilibrium slopes for the nearshore borrow area (before and after back filling), sand compatible, overfill calculation, settlement, sand color changes, and side slope adjustment during construction. This study's results will be the basis for the modeling phase. The final borrow area design will be based on the results of the modeling phase in addition to this design work. A project schedule will be developed to lay out the engineering, geology, ecology, and design needed to acquire a project permit and prepare the county for an emergency response to the next major storm.

Deliverables

The draft Geotechnical report will be submitted to Collier County in both digital and hardcopy format for review and comment. Collier County will identify any revisions that may be necessary and provide recommendations for the final report.

A final report summarizing the results of the geotechnical investigation will be prepared and submitted to the FDEP and Collier County. This report will include all project results, including bathymetric and isopach maps, sub-bottom (seismic) survey profiles, vibracore logs, granulometric reports and grain size distribution curves.

CPE will provide all geotechnical information in an electronic format suitable for input to the FDEP Reconnaissance Offshore Sand Search (ROSS) database. The data will be submitted in Access or gINT files. The submission will include shapefiles (with the associated FGDC compliant metadata) of borrow area boundaries and seismic tracklines. Seismic data will be provided in HTML format. Seismic timestamps and shot points are not recorded as HTML formatting embeds all navigation data, making timestamps and shot points obsolete.

CPE proposes to perform the Cape Romano Sand Search Investigation to the industry standard of care and will coordinate the investigations with FDEP as required. Even though the FDEP may agree with the scope of the investigations, beach compatible sand may not be located, FDEP may not approve the sand source(s) we locate, or FDEP may impose a sand placement QA/QC requirement that would be difficult to meet. If any of these events occur, it may be necessary to locate additional beach compatible sand sources at additional cost. CPE will also make reasonable attempts to determine if other entities are exploring the same sand sources or have a permit to use the same sand we intend to investigate. Despite these efforts, it is possible that others may claim the sand that we find, and negotiations and/or further exploration may be required if that occurs. Lastly, cultural or environmental resources may exist in or near the investigated borrow area that would limit or preclude a portion or all of its use.

CPE will attempt to avoid these problems and restrictions, but there may be adverse circumstances that cannot be avoided or mitigated. All of the listed potential outcomes may be beyond the control of CPE and may result in the need for additional services. The client herein recognizes the above referenced risks and agrees to work with CPE to complete the work, which may include contracting for additional services for sand investigations as needed. CPE is working exclusively on your behalf and will attempt to limit the risks as described above to the greatest extent practicable.

Cost Estimates

A four (4) day joint seismic reflection profiling, sidescan sonar, bathymetric and magnetometer survey will be conducted over the 3.2 square mile area of investigation. The survey layout will consist of twenty – six (26) lines, each approximately 3.0 nautical miles long with a line spacing of 60 meters. A total of 80 miles of seismic profile data will be collected. Twenty (20) vibracores will be collected over a three (3) day period within the 3.2 square mile area of investigation. After the collection and analysis of vibracores, a cultural resource investigation

will be conducted. The cultural resource investigation will be comprised of joint seismic, sidescan sonar, magnetometer and bathymetric survey carried out over a two (2) day period. The cultural resource investigation will focus on the area(s) identified for borrow area development. This investigation will supplement the data acquired during the reconnaissance geophysical investigation in order to obtain the 30 meter line spacing required to perform the cultural resource assessment.

The total fee to provide the services, detailed in the attached cost spreadsheet, is \$295,185.

COLLIER COUNTY
FEE PROPOSAL FOR
2008 OFFSHORE DESIGN PHASE GEOTECHNICAL AND GEOPHYSICAL INVESTIGATION OFF
CAPE ROMANO, COLLIER COUNTY, FLORIDA

February 29, 2008

PREPARED BY:




COLLIER COUNTY

FEE PROPOSAL FOR

**2008 OFFSHORE DESIGN PHASE GEOTECHNICAL AND GEOPHYSICAL INVESTIGATION OFF CAPE ROMANO,
COLLIER COUNTY, FLORIDA**

PROJECT PROPOSAL SUMMARY

PREPARED BY: COASTAL PLANNING & ENGINEERING, INC.

PAGE	DESCRIPTION	LABOR COSTS	EQUIPMENT COSTS	DIRECT COSTS
3-5	COLLIER COUNTY OFFSHORE GEOTECHNICAL and GEOPHYSICAL DETAILED SURVEY	\$161,770.00	\$37,361.00	\$96,054.00
		TOTAL PROJECT COST = \$295,185		

**COLLIER COUNTY
 FEE PROPOSAL FOR
 2008 OFFSHORE DESIGN PHASE GEOTECHNICAL AND GEOPHYSICAL
 INVESTIGATION OFF CAPE ROMANO, COLLIER COUNTY, FLORIDA**

LABOR, EQUIPMENT & DIRECT COST RATES

PREPARED BY: COASTAL PLANNING & ENGINEERING, INC.

LABOR RATES (HOURLY)	2008 Rates
Principle / President	\$185
Senior Project Manager / Project Manager VP	\$170
Senior GIS Consultant / Senior CAD Operator	\$160
Project Manager / Senior Coastal Engineer	\$150
Project Director / Professional Surveyor	\$145
Senior Scientist / Senior Geologist	\$125
Engineer III / Coastal Engineer	\$115
Ecologist / Marine Archaeologist	\$100
Ecologist / Geologist	\$100
Senior Technician / Junior Geologist	\$85
Senior Technician / CAD Operator	\$85
Senior Technician / Survey Technician	\$85
GIS Technician	\$65
Admin. Assistant / Secretary	\$55
EQUIPMENT RATES (DAILY)	
Truck (Road Use)	\$0.50
RTK GPS	\$495
Fathometer w/ Digitizer	\$165
Heave Compensator	\$215
Speed of Sound Velocity Meter	\$63
Hypack Navigation System	\$260
X-STAR CHIRP 512i Seismic	\$1,150
Seismic Profiler Thermal Printer	\$130
4200 FS Side Scan Sonar	\$695
Side Scan Sonar Expendables	\$60
Geometric G-882	\$215
Sonar Web Seismic Data Processing Package	\$155
Sonar Web Sidescan Data Processing Package	\$155
Enclosed 18 ft Trailer	\$78
Digital Land Camera	\$10
Sieve Analysis	\$75
Carbonate Analysis	\$65
DIRECT COSTS	
Meals	\$36
Lodging	\$125
Airline Flights	\$450
Car Rental	\$75
Seismic Vessel (Chartering)	\$2,800
Vibracores Cost	\$2,500
Cultural Resources Subconsultant (TARA)	\$12,000
Misc. Expenses	1.00



**COLLIER COUNTY
 FEE PROPOSAL FOR
 2008 OFFSHORE DESIGN PHASE GEOTECHNICAL AND GEOPHYSICAL INVESTIGATION OFF CAPE ROMANO, COLLIER COUNTY, FLORIDA**

PREPARED BY: COASTAL PLANNING & ENGINEERING, INC.

COLLIER COUNTY OFFSHORE GEOTECHNICAL and GEOPHYSICAL DETAILED SURVEY	Total Cost Per Section	LABOR COSTS																		
		Principle / President (Hours)	Senior Project Manager / Project (Hours)	Senior GIS Consultant / Senior CAD (Hours)	Project Manager / Senior Coastal Engineer (Hours)	Project Director / Professional Surveyor (Hours)	Senior Scientist / Senior Geologist (Hours)	Engineer III / Coastal Engineer (Hours)	Ecologist / Marine Archaeologist (Hours)	Ecologist / Geologist (Hours)	Ecologist / Geologist (Hours)	Senior Technician / Junior Geologist (Hours)	Senior Technician / Junior Geologist (Hours)	Senior Technician / CAD Operator (Hours)	Senior Technician / Survey Technician (Hours)	Senior Technician / Survey Technician (Hours)	GIS Technician (Hours)	Admin. Assistant / Secretary (Hours)		
1. ADMINISTRATION	\$3,130	\$3,130				2		2												
a. REVIEW PREVIOUS REPORTS						2		2												
b. REVIEW EXISTING GEOTECHNICAL & GEOPHYSICAL DATA			2				2											2		
c. DEVELOP SURVEY PLAN				2		2	4		2		4				2					
2. GEOPHYSICAL SURVEY (4 Days)	\$48,430	\$84,278																		
a. PLANNING			2	2		2	2	2	2		4		2		2				4	
b. TRAVEL										16	12	12								
c. MOBILIZATION / DEMOBILIZATION											8	4	16	8			16	12		
d. SETUP RTK											8	8	8							
e. GEOPHYSICAL INVESTIGATION										56	56	56	56							
f. DATA REDUCTION & EVALUATION / DRAFTING / GIS											40	40	40							
3. GEOTECHNICAL SURVEY (3 Days)	\$57,210	\$71,542																		
a. PLANNING / PERMITTING			2	2		2	8	32	4		24	4	16	8	8				16	
b. TRAVEL										16	12	12								
c. MOBILIZATION / DEMOBILIZATION													8	8			16	16		
d. VIBRACORES										42	42	42								
e. DATA REDUCTION & EVALUATION / DRAFTING / GIS											56	56	56	56	24				16	
4. CULTURAL REOURCES SURVEY (2 Days)	\$27,670	\$60,905																		
a. PLANNING			2	2		2	2	2	2		8	4	8		8				8	
b. TRAVEL											12	12	12							
c. MOBILIZATION / DEMOBILIZATION											4	4	8		8				8	
d. SETUP RTK											8	8	8							
e. CULTURAL RESOURCES INVESTIGATION											28	28	28							
f. DATA REDUCTION & EVALUATION / DRAFTING / GIS											24	24	8		8				8	
5. REPORT AND PRODUCT DEVELOPMENT	\$23,950	\$23,950																		
a. DRAFT GEOTECHNICAL REPORT					2	4		24			16	24			16				16	24
b. FINAL GEOTECHNICAL REPORT			2	2	4	2	4	32	2		24	16			8				8	16
TOTAL LABOR COST =		\$161,770																		
			10	10	6	16	22	94	12	130	390	354	286	80	84	32	28	86	40	
Total =			\$185.00	\$170.00	\$160.00	\$150.00	\$145.00	\$125.00	\$115.00	\$100.00	\$100.00	\$100.00	\$85.00	\$85.00	\$85.00	\$85.00	\$85.00	\$65.00	\$55.00	
Rate =			\$1,850	\$1,700	\$960	\$2,400	\$3,190	\$11,750	\$1,380	\$13,000	\$39,000	\$35,400	\$24,310	\$6,800	\$7,140	\$2,720	\$2,380	\$5,590	\$2,200	
Cost =																				



COLLIER COUNTY

FEE PROPOSAL FOR

2008 OFFSHORE DESIGN PHASE GEOTECHNICAL AND GEOPHYSICAL INVESTIGATION OFF CAPE ROMANO, COLLIER COUNTY, FLORIDA

PREPARED BY: COASTAL PLANNING & ENGINEERING, INC.

COLLIER COUNTY OFFSHORE GEOTECHNICAL and GEOPHYSICAL DETAILED SURVEY		EQUIPMENT COST															
		Truck (Road Use) (Miles)	RTK GPS (Days)	Fathometer w/ Digitizer (Days)	Heave Compensator (Days)	Speed of Sound Velocity Meter (Days)	Hypack Navigation System (Days)	X-STAR CHIRP 512i Seismic (Days)	Seismic Profiler Thermal Printer (Days)	4200 FS Side Scan Sonar (Days)	Side Scan Sonar Expendables (Days)	Sonar Web Seismic Data Processing Package (Days)	Sonar Web Sidescan Data Processing Package (Days)	Enclosed 18 ft Trailer (Days)	Digital Land Camera (Days)	Sieve Analysis (Per Sample)	Carbonate Analysis (Per Sample)
1. ADMINISTRATION	\$0																
a. REVIEW PREVIOUS REPORTS																	
b. REVIEW EXISTING GEOTECHNICAL & GEOPHYSICAL DATA																	
c. DEVELOP SURVEY PLAN																	
2. GEOPHYSICAL SURVEY (4 Days)	\$16,564																
a. PLANNING																	
b. TRAVEL		240															
c. MOBILIZATION / DEMOBILIZATION		40															
d. SETUP RTK		80	4	4	4	4	4	4	4	4	4		4	4			
e. GEOPHYSICAL INVESTIGATION																	
f. DATA REDUCTION & EVALUATION / DRAFTING / GIS											8	12					
3. GEOTECHNICAL SURVEY (3 Days)	\$11,950																
a. PLANNING												4					
b. TRAVEL		240															
c. MOBILIZATION / DEMOBILIZATION																	
d. VIBRACORES		60	3	3		3	3						2		80	20	
e. DATA REDUCTION & EVALUATION / DRAFTING / GIS											5						
4. CULTURAL REOURCES SURVEY (2 Days)	\$8,847																
a. PLANNING																	
b. TRAVEL		240															
c. MOBILIZATION / DEMOBILIZATION																	
d. SETUP RTK		40	1														
e. CULTURAL RESOURCES INVESTIGATION		40	2	2	2	2	2	2	2	2	2	4	6	2	2		
f. DATA REDUCTION & EVALUATION / DRAFTING / GIS																	
5. REPORT AND PRODUCT DEVELOPMENT	\$0																
a. DRAFT GEOTECHNICAL REPORT																	
b. FINAL GEOTECHNICAL REPORT																	
Total =		980	10	9	6	9	9	6	6	6	6	21	18	8	6	80	20
Rate =		\$0.50	\$495	\$165	\$215	\$63	\$260	\$1,150	\$130	\$695	\$60	\$155	\$155	\$78	\$10	\$75	\$65
Cost =		\$490	\$4,950	\$1,485	\$1,290	\$567	\$2,340	\$6,900	\$780	\$4,170	\$360	\$3,255	\$2,790	\$624	\$60	\$6,000	\$1,300
TOTAL EQUIPMENT COST =		\$37,361															



COLLIER COUNTY

FEE PROPOSAL FOR

2008 OFFSHORE DESIGN PHASE GEOTECHNICAL AND GEOPHYSICAL INVESTIGATION OFF CAPE ROMANO, COLLIER COUNTY, FLORIDA

PREPARED BY: COASTAL PLANNING & ENGINEERING, INC.

COLLIER COUNTY OFFSHORE GEOTECHNICAL and GEOPHYSICAL DETAILED SURVEY		Meals (Days/ Person)	Lodging (Days)	Airline Flights (Days)	Car Rental (Days)	Seismic Vessel (Chartering) (Days)	Vibracores Cost (Per Core)	Cultural Resources Subconsultant (TARA)	Misc. Expenses
1. ADMINISTRATION	\$0								
a. REVIEW PREVIOUS REPORTS									
b. REVIEW EXISTING GEOTECHNICAL & GEOPHYSICAL DATA									
c. DEVELOP SURVEY PLAN									
2. GEOPHYSICAL SURVEY (4 Days)	\$19,284								
a. PLANNING									
b. TRAVEL		3		2		2			
c. MOBILIZATION / DEMOBILIZATION									
d. SETUP RTK									
e. GEOPHYSICAL INVESTIGATION		16	3		5	4			\$150
f. DATA REDUCTION & EVALUATION / DRAFTING / GIS									
3. GEOTECHNICAL SURVEY (3 Days)	\$2,382								
a. PLANNING									
b. TRAVEL		3	2	1					
c. MOBILIZATION / DEMOBILIZATION									
d. VIBRACORES		9	6		4		20		\$200
e. DATA REDUCTION & EVALUATION / DRAFTING / GIS									
4. CULTURAL REOURCES SURVEY (2 Days)	\$24,388								
a. PLANNING									
b. TRAVEL		2	2			2			
c. MOBILIZATION / DEMOBILIZATION									
d. SETUP RTK									
e. CULTURAL RESOURCES INVESTIGATION		6	4			2		1	\$150
f. DATA REDUCTION & EVALUATION / DRAFTING / GIS									
4. REPORT AND PRODUCT DEVELOPMENT	\$0								
a. DRAFT GEOTECHNICAL REPORT									
b. FINAL GEOTECHNICAL REPORT									
Total =		39	17	3	9	10	20	1	\$500
Rate =		\$36	\$125	\$450	\$75	\$2,800	\$2,500	\$12,000	1.0
Cost =		\$1,404	\$2,125	\$1,350	\$675	\$28,000	\$50,000	\$12,000	\$500
TOTAL DIRECT COST =	\$96,054								

