

## **EXECUTIVE SUMMARY**

**Recommendation to approval Work Order under Contract 06-3902 for additional tasks for the Wiggins Pass project for time and material not to exceed \$125,178 and any necessary budget amendments.**

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**OBJECTIVE:** To proceed with revised scope of work for Wiggins Pass project.

**CONSIDERATIONS:** Additional task are necessary to complete the permitting process for a new 10 year permit for Wiggins Pass. These tasks were not included in the initial Engineering and Permitting scope of work for Wiggins Pass and required by RAI comments.

**ADVISORY COMMITTEE RECOMMENDATIONS:** At the CAC April 8, 2010 meeting this item was recommended for approval 6-1.

**FISCAL IMPACT:** The Source of funds is from Category "A" Tourist Development Tax Fund 195.

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

**LEGAL CONSIDERATIONS:** This item has been reviewed and approved by the County Attorney's Office and is legally sufficient for Board action. - CMG

**RECOMMENDATION:** That the TDC recommend approval Work Order under Contract 06-902 for additional tasks for the Wiggins Pass project for time and material not to exceed \$125,178 and any necessary budget amendments.

**PREPARED BY: Gail Hambright, CZM**



## COASTAL PLANNING & ENGINEERING, INC.

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March 26, 2010

Gary McAlpin  
Collier County Government  
W. Harmon Turner Bldg., Suite 103  
3301 E. Tamiami Trail  
Naples, FL 34112

**Subject: Revised Collier County, Florida, Preparation of Inlet Management Plan and County Environmental Impact Statement for Design and Permitting for Wiggins Pass Improvements via Contract No. 06-3902**

Dear Gary:

Enclosed is a revised scope of work and fee proposal for additional tasks for the Wiggins Pass project. The additional tasks include preparation of an Inlet Management Plan (IMP) and a Collier County Environmental Impact Statement (EIS). Modeling of ebb shoal growth and behavior is described as a contingency item, should the work become a requirement for acceptance and approval of the IMP or the JCP permit. The fees are summarized on the attached scope of work and detailed on the attached spreadsheet.

If you have any questions regarding this scope of work, please call me.

Sincerely,

COASTAL PLANNING & ENGINEERING, INC.

Stephen Keehn, P.E.  
Senior Coastal Engineer

cc: Sheri Dindial, CPE

f:marketing/proposals/fl counties/collier/2010/wiggins pass additional work/cover letter cc wiggins pass addn.....

**PREPARATION OF INLET MANAGEMENT PLAN AND COUNTY  
ENVIRONMENTAL IMPACT STATEMENT FOR  
DESIGN AND PERMITTING FOR WIGGINS PASS IMPROVEMENTS  
ADDITIONAL WORK  
SCOPE OF WORK  
Contract No. 06-3902  
March 22, 2010  
Revised March 26, 2010**

The enclosed scope of work describes additional tasks necessary to complete the permitting process for a new 10 year permit for Wiggins Pass. These tasks were not included in the initial Engineering and Permitting scope of work for Wiggins Pass, since they were identified following its approval. The fee for the three (3) primary tasks is \$82,604. The cost of the contingency task is listed separately below. Total for all tasks is \$125,178. The tasks include:

Task 1. Preparation of an Inlet Management Plan (IMP)	T&M NTE \$54,980
Task 2. Preparation of Environmental Impact Statement (EIS)	T&M NTE \$22,717
Task 3. Preparation and Attendance at Meetings	T&M NTE <u>\$4,907</u>
	Subtotal \$82,604
Task 4. Contingency Modeling of Ebb Shoal	T&M NTE <u>\$42,574</u>
	Total \$125,178

This work will be based on the 1995 Inlet Management Plan prepared for Collier County (County), the recently completed Joint Coastal Permit Application (February 2010), and the Wiggins Pass Modeling Report (January 2009) for Navigation Improvements and Erosion Reduction Project for Wiggins Pass, Florida. These tasks will be incorporated into the new report and EIS.

**I. INLET MANAGEMENT PLAN PREPARATION**

The Florida Department of Environmental Protection (FDEP) is requiring the preparation of a new inlet management plan as part of the permitting process as described below from Chapter 62B-41 Rules and Procedures for Application of Coastal Permits:

*(m) Demonstration of consistency with adopted statewide strategic management plan, an inlet management plan or a proposed draft inlet management plan in accordance with Rule 62B-41.005(16). If not included in the inlet management plan the applicant will provide the following:*

- 1. A description of the physical characteristics of the inlet;*
- 2. A sediment budget for the inlet;*
- 3. An analysis of the stability and hydraulic characteristics of the inlet including current velocities, tidal prism and current patterns of the flood and ebb tides;*
- 4. A description of the wind and wave climate in the area of inlet influence;*
- 5. A description of the sediment characteristics of the inlet and its related shoals;*

6. *The influence of existing manmade structures;*
7. *The current and historic shoreline erosion and accretion trends;*
8. *A statement of performance objectives and an analysis of the expected effect of proposed coastal construction on the coastal system and marine turtles within the inlet area of influence;*
9. *An analysis of available alternatives to the proposed coastal construction, including the no action alternative, on meeting the stated performance objective and any related effects on the coastal system or marine turtles; and*
10. *A demonstration of the anticipated public benefits of the coastal construction.*

The inlet management plan should also consider the intent in the new legislation that modifies how sediments are managed at navigation inlets, which may be directive in nature as it pertains to Wiggins Pass. Specific guidance from FDEP will be provided during the report preparation process. The new legislation changes Section 161.142 and 161.143 F.S.

The completed inlet modeling report, Joint Coastal Permit (JCP) application and field data collection for Wiggins Pass improvements will provide the basis for addressing the 10 requirements listed above, and will be incorporated in the final plan. The plan will also address comments received from FDEP during their site visit on March 10, 2010 and their initial request for additional information (RAI). A committee appointed by the County will review progress of the plan preparation and their decisions will be incorporated into the plan. The initial draft plan will be submitted to the County and FDEP for their comments. The FDEP's adopted plan may differ from the County's based on the State's procedures.

The goals for the Wiggins Pass navigation improvement study as developed by Collier County and the Wiggins Pass Modeling Evaluation Work Group are:

1. To provide a safe channel for boating;
2. To address erosion at Barefoot Beach;
3. To lengthen the dredge cycle and accomplish it with the least effect on the environment; and
4. To provide a solution that is economically effective.

#### TASK I-A. COASTAL ENGINEERING ANALYSIS

1. Data Collection & Review. This task was largely completed with the initial permit and modeling work, but a comprehensive search will be conducted to locate recent literature and data to supplement the previously developed history of recent natural and manmade modifications to the inlet and adjacent areas. Recent topographic and bathymetric data of the navigation channel and ebb and flood shoals will also be compiled. Potential data sources include FDEP and County beach and inlet profile surveys, high density LiDAR data, or other local entities including previous data collection and compilation by other local consultants. Available aerial photography may be utilized to provide supplemental shoreline position information.

2. Shoreline Position Mapping & Change Analysis. The analysis of shoreline positions will provide the basis for assessing short-term and long-term shoreline change. CPE will consider episodic sediment transport trends resulting from hurricanes, inlet modifications and beach nourishment. We will analyze and document inlet activities that have occurred since dredging began in 1984 and evaluate if those activities may have had impacts to the inlet shoreline or adjacent areas.

CPE will use a geographic information system (GIS) approach to compile and analyze the temporal shoreline position change analyses. The GIS analysis will enable temporal and spatial comparison of FDEP historical shorelines and historical aerial photography.

For time periods where survey data are not available, shoreline changes will be estimated from the interpretation of aerial photographs. An effort will be made to collect photos in digital format. If only hard copies are available, they will be scanned and geo-rectified using GIS so that shorelines can be mapped. Special considerations will be given to short-term changes so natural and man-made responses are not minimized by averaging data.

Inlet ebb and flood shoal configurations, channel orientation and dimensions will be illustrated with available aerial photography sets. The inlet change data will be compared to beach shoreline changes to identify correlations and shoal configurations.

3. Volumetric Changes and Sediment Budget Update. A post-dredge sediment budget analysis will be used to describe the sediment transport pathways in the vicinity of Wiggins Pass and adjacent beaches. It will be compared to the sediment budget from the 1995 study. The sediment budget will be expanded beyond the 1-mi monitoring area north and south of the inlet.

Available wind, wave, and tidal data will be reviewed. The wave climate will be assessed in the vicinity of the project to determine the representative range of incident wave angles, wave heights, and wave periods. The intent is simply to help confirm the influences of storms and of changes in inlet and nearshore morphology on the sediment transport patterns.

The inlet area of influence will be defined and inlet impacts and solutions will be determined based on these zones. An odd-even analysis will be based on this defined region.

4. Development of Inlet Management Alternatives. CPE will identify and describe various non-structural alternatives to improve sediment management within Wiggins Pass. No structural alternative will be considered. The alternatives will address methods to control inlet channel migration, channel modifications, dredge management options for the navigation channel entrance, and sand distribution and bypassing to re-establish near-historic levels of sediment transport. Quantity and costs will be developed for the

selected alternative that is shown to be viable. The performance of viable management options will be evaluated in Task B.

Alternatives will consist of various channel dimensions, orientations, and on-and-offshore disposal plans compared to the existing conditions.

#### TASK I-B. WAVE & CURRENT MEASUREMENTS, MODELING AND STABILITY CURVE

CPE has previously deployed two acoustic Doppler current profilers (ADCPs) in the study area for a period of one month. The tide height, current and wave information collected from this deployment was used to calibrate the Delft-3D model determining effects such as wave damping and wave transformation as waves approach the nearshore. The results of field data collection and modeling will be described and illustrated in the plan per items 1 and 4 above. The measured wave, current and water level data will also be delivered in raw and processed (time series) formats on a CD-ROM. Survey data was collected during the wave measurement programs, and will be used to develop an updated stability curve for the inlet which will be compared to the historic curve developed in the 1995 plan. The results of the modeling will be summarized and illustrated in the modeling section.

#### TASK I-C. IMP COORDINATION AND MEETING

1. Project Administration. CPE will attend meetings with FDEP, the Coastal Advisory Committee (CAC) and its Sub-committee on Wiggins Pass, and assist with formulating a plan acceptable to a broad range of local and state interests. Coordination with FDEP Bureau of Beaches and Coastal Systems (BBCS) will be maintained throughout the process in order to solicit their comments if they do not attend the meetings.

It is assumed that CPE will attend up to three (3) Committee and Sub-committee meetings of the CAC, to be held in Naples. CPE will prepare meeting exhibits and other project documentation. CPE will attend the meetings and assist the County with communications with key stakeholders and development of the County's plan.

#### TASK I-D. ENVIRONMENTAL EFFECTS OF PROPOSED CONSTRUCTION

1. Environmental Section. Previously obtained information will be incorporated into an environmental section describing the effects of the proposed construction on the coastal system and sea turtles.

2. Natural Resources Map. A map of natural resources in the project area compared to the project layout will be updated for inclusion in the report.

#### TASK I-E. PREPARATION OF UPDATED INLET MANAGEMENT PLAN

1. Preparation of Draft Report. CPE will prepare a draft IMP based on the coastal engineering analysis, updated sediment budget and numerical modeling results of

management alternatives. The report will summarize the construction quantities and estimated costs as well as the impact on adjacent beaches, channel shoaling and maintenance requirements. CPE will also summarize potential environmental issues that may affect the permitting of inlet modifications. Based on the results of the investigations, CPE will recommend a modified inlet and beach sediment management approach. The draft of the IMP will be submitted to the County and the FDEP for review and comment.

2. Preparation of Final Report. Based on County, State, Federal and public comments, a final updated Inlet Management Plan will be prepared. Five (5) printed copies and digital CD-ROM copies of the final report will be provided to the County and FDEP. Pertinent comments provided during the permit process will be integrated into the plan.

## **II. COUNTY ENVIRONMENTAL IMPACT STATEMENT**

According to Collier County Land Development Code (LDC) 10.02.02A, an Environmental Impact Statement (EIS) must be prepared in support of a Special Treatment Permit approval. Special Treatment (ST) Overlays (LDC 02.03.07) are areas within the County which, “because of their unique assemblages of flora and/or fauna, their aesthetic appeal, historic or archeological significance, rarity in the County, or their contribution to their own and adjacent ecosystems, make them worthy of special regulations.” Such areas include mangrove and freshwater swamps, barrier islands, hardwood hammocks, and coastal beaches, all of which fall within the Wiggins Pass project vicinity. The purpose of the ST is to assure the preservation and maintenance of these resources. An EIS provides a method to objectively evaluate the impact of a proposed project upon these resources and environmental quality of the project area. An EIS will be prepared for this project according to the requirements listed in LDC 10.02.02A. The EIS will require the preparation of special maps, ecological analysis and engineering calculations to supplement information already prepared for the JCP permit application. The EIS will incorporate the new and existing information into the County EIS format. CPE will attend up to two (2) meetings to discuss and present the result of the EIS.

## **III. PREPARATION FOR AND ATTENDANCE AT MEETINGS**

The anticipated meeting budget under the initial Wiggins Pass contract has been exhausted. There is a need to attend a meeting at FDEP, with the Sub-committee of the CAC and meet with agency representatives for NMFS to kick off the next phase of the project.

## **IV. CONTINGENCY MODELING**

Based on guidance from Mr. Robert Brantley (FDEP) during his field visit on March 10, 2010, a fully developed ebb shoal may be required under the new Florida Statute regarding inlets, which would have to be built by direct placement of sand. There is a concern that the inlet will not perform acceptably without a fully developed ebb shoal

with the initial construction. This alternative can have a significant cost for the County over the selected alternative, since it may contribute to costly and frequent dredging to implement the project. This concern can be evaluated by additional long-term model runs (8-10 years) comparing four (4) alternatives using the same matrix comparison method developed in the January 2009 modeling report. This task is recommended for contingency approval as a Notice to Proceed item, if it proves necessary, and includes an analysis of the following:

1. The 1970's pre-dredge inlet conditions without channel;
2. 1970's pre-dredge inlet conditions with channel;
3. The selected alternative with dredging at 4-year intervals; and
4. An alternative that rebuilds the ebb shoal in one construction project.

RAI #1 from FDEP mandated that all alternatives must avoid or minimize the potential for adverse impact on the coastal system. This concern will be evaluated by additional medium-term model runs (4 years) comparing three (3) requested alternatives using the same matrix comparison methods developed in the January 2009 modeling report. The alternatives include an analysis of the following:

1. Avoid dredging limestone, peat, or clay substrata;
2. Avoid deflation of the ebb shoal; and
3. Avoid loss of shorebird habitat on Wiggins Pass State Park.





Exhibit 1-A

Revised Schedule B - Effective May 9, 2008

Collier County Fee Schedule

Contract No. 06-3902

"Fixed Term Professional Engineering Services for Coastal Zone Management Projects"

Professional Position	Hourly Rate
Principal/President	\$185.00/hr
Principal/VP Engineering/Senior Project Manager	\$170.00/hr
Project Manager/Senior Engineer/Senior Consultant	\$150.00/hr
Project Director	\$145.00/hr
Project Engineer/architect	\$140.00/hr
Project Construction Manager	\$130.00/hr
Senior Designer	\$120.00/hr
Senior Hydrogeologist	\$127.00/hr
Junior Hydrogeologist	\$ 90.00/hr
Coastal Modeler	\$110.00/hr
Principle Ecologist	\$160.00/hr
Senior Ecologist	\$120.00/hr
Ecologist	\$100.00/hr
Field Ecologist	\$ 95.00/hr
Engineer III	\$115.00/hr
Engineer II/Field Representative /Sr. Landscape Architect/Sr. Scientist	\$125.00/hr
Senior Technician	\$ 85.00/hr
Junior Technician	\$ 65.00/hr
Expert Witness	\$250.00/hr

**Survey & Mapping**

Surveyor and Mapper Senior	\$145.00/hr.
Surveyor and Mapper Junior	\$110.00/hr
Two Man Field Party	\$125.00/hr
Three Man Field Party	\$150.00/hr
Four Man Field Party	\$170.00/hr
GPS Mapping Grade: One Man Party	\$ 95.00/hr
GPS Mapping Grade: Two Man Party	\$125.00/hr
GPS Mapping Grade: Three Man Party	\$165.00/hr
GPS Survey Grade: One or Two Man Party	\$160.00/hr
GPS Survey Grade: Three Man Party	\$165.00/hr

**GIS**

Principle GIS Consultant	\$170.00/hr
Senior GIS Consultant/Analyst	\$160.00/hr
GIS Technician	\$ 65.00/hr.

**Administrative**

Administrative Assistant/Secretary	\$ 55.00/hr.
Clerical, other support	\$ 40.00/hr.

This list is not intended to be all-inclusive. Hourly rate fees for other categories of professional, support and other services shall be mutually negotiated by the County and firm on a project by project basis as needed.

## Wiggins Pass Policy and Planning Guidelines

### Discussion Points

#### FDEP State Strategic Management Plan for Wiggins Pass

Strategy: Place beach quality maintenance dredged material on adjacent beaches north and south of Wiggins Pass within areas of greatest need; monitoring and analysis of inlet effects.

#### General Policy

1. Make any major adjacent for mitigation or contingency during major dredging events.
2. Bypass sand so that the average annual volumetric erosion rate is the sand north and south of the inlet since a base year of 2001.

#### Initial Inlet Management Plan recommendation –Feb 2010

1. Straight alignment through the flood and ebb shoals.
2. Cut subsurface rock ledge – no impact on positional stability
3. Maintain navigation for 3 foot draft vessel & extend dredging interval (no structures)
4. Mitigate for inlet impacts by bypassing 2.65 times to North
5. Establish monitoring program and adjust disposal practices accordingly
6. Repair beach scarps and the south point of Barefoot Beach Park.
7. Use sand dredged from the flood shoal to create new shoal flats
8. Allow moderate design channel migration to reduce dredging.
9. Use intermediate (small) dredging to reestablish navigation thru the bar
10. Summer maintenance dredging to reduce cost and complexity.

**1995 Plan:** The plan presented in this section is the best combination of alternatives able to achieve a cost effective inlet management plan. The recommended plan mitigates for the impact of Wiggins Pass on adjacent shorelines and improves the navigability of the inlet. The major components of the plan include:

1. Widen and deepen the existing navigation channel to a dredged depth and width of 250 feet and - 12 feet MLW, respectively. Straighten and shift the channel's boundaries. The existing subsurface rock ledge, if encountered, shall be left in place.

2. Maintain a minimum operating depth in the channel of -8 feet MLW (-9 feet NGVD) with a maintenance dredging program scheduled at two-year intervals.
3. Establish beach disposal sites outside the zone of inlet influence. Mitigate for inlet impacts by bypassing to the south a minimum of 6,500 c.y.lyr.
4. Establish navigable depths for three-foot draft boats in the interior channels of Wiggins Pass. Implement improvements as needed.
5. Establish a program of beach, inlet shoal, interior channel and environmental monitoring.
6. Adopt a three-foot draft boat as the planning and design standard for the Wiggins Pass basin.