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BEACON - Coastal Regional Sediment Management Plan  
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## INTRODUCTION

Noble Consultants, Inc. is pleased to present this fee proposal for professional engineering services connected with the preparation of BEACON's Coastal Regional Sediment Management Plan. Our services shall consist of the following tasks:

1. Data collection and integration
2. Problems and opportunities report
3. Plan formulation
4. Public outreach support
5. Select a priority project for implementation
6. CEQA review
7. Project management

These services are enumerated below.

## SCOPE of SERVICES

### Task 1 Data Collection and Integration

*Purpose: This task will collect and extract all available and existing data and information from BEACON, CSMW, USGS, UC Santa Cruz, Corps of Engineers, and other agency files. The information will be summarized in georeferenced ArcGIS, Microsoft Access database, or narrative formats.*

- 1.1 We shall collect all available existing relevant data, studies, and information from BEACON, CSMW database and files, USGS, UC Santa Cruz, UCLA, UC Santa Barbara, Corps of Engineers and other local agencies (including the Local Coastal Plans for the member agencies of BEACON). Specific data sets of interest shall be limited to relevant coastal references and sediment information including (Item 1 of BEACON Study Scope) coastal processes, available sediment quality information from potential receiver sites and potential source areas (Item 4 of the BEACON Study Scope), coastal structures and facilities, offshore, fluvial, and inland sediment resources and characteristics, critical species and habitat (Item 9 of the BEACON Study Scope), socio-economic data pertaining to beach use, shoreline land use plans, and permit and policy protocol.
- 1.2 The data shall be culled to extract information relevant to the BEACON shoreline.
- 1.3 We shall visit the USGS and UC Santa Cruz research centers to extract pertinent data and research information specifically being conducted along the BEACON shoreline.
- 1.4 Data Deliverables

- 1.4.1 Existing georeferenced data that are available and recovered shall be compiled into a digital BEACON ArcGIS database. The ArcGIS data shall be supplemented with a Microsoft Access geodatabase where appropriate. ArcGIS layers may include physical characteristics, beach change information, sediment source data, critical habitat areas, shoreline facilities and structures, and land use information. The digital database shall be limited to existing shape files that have been prepared by the various CSMW studies that have been completed or are in progress, other agency data products, and other research center data georeferenced digital products. No original digitizing of published maps, report figures, or other data shall be performed to prepare new and original GIS shapefiles. If non-digitized data is uncovered, it will be made available to CSMW in either hard copy or PDF format at the discretion of the Project Manager and CSMW. No new field studies or mapping of original data shall be performed.
- 1.4.2 A bibliography of existing data, reports, and information shall be prepared to list and categorize the information gathered.
- 1.4.3 A list of critical data gaps and unknowns shall be compiled and recommendations on how to address gaps shall be presented (Item 10 of the BEACON Study Scope).

## Task 2 Problems and Opportunities Report

*Purpose: The results of Task 1 shall be reviewed to update BEACON's existing Plan documents to refine the understanding of the regional shoreline and amend the description of shoreline needs and the list of potential beach nourishment sites.*

- 2.1 The results of Task 1 shall be summarized with preparation of a narrative state-of-knowledge report of the BEACON shoreline. The report shall provide an update to the existing BEACON Coastal Sand Management Plan and SCCBEP documents to summarize the current understanding of the region's coastal processes (Item 14 of the BEACON Study Scope), sediment resources, and key data gaps and unknowns. The report shall conclude with an update of local areas of critical coastal erosion/ sediment deficit within the Central Coast region (Item 2 of the BEACON Study Scope), the needs assessment for the BEACON shoreline and list of potential beach nourishment sites, including viable nearshore disposal locations. The report shall provide an update of the potential sediment sources that can be used to address the need for sediment at the areas of critical erosion/ sediment deficit (Item 3 of BEACON Study Scope). Existing biological assessment shall be reviewed (Item 14 of the BEACON Study Scope).

### Task 3 Plan Formulation

*Purpose: A draft Coastal Regional Sediment Master Plan (CRSMP) shall be prepared to outline a project implementation plan, strategy, and policy to promote beach preservation and enhancement, manage and maintain the natural sediment processes, emphasize beneficial use and reuse of sediments from the various sources, and identify funding opportunities that may be considered over the long term to fund an integrated program.*

The CRSMP shall consist of the following components:

#### 3.1 Beach component

This component shall embrace the fundamental goal and objective of BEACON which is to preserve and enhance its beaches. The section will review the 1989 Coastal Sand Management Plan, the more recent SCCBEP documentation, Goleta Beach planning efforts, the federal Carpinteria beach studies, and other sources to refine a long term nourishment and preservation plan for the hot spot areas and sediment deficient reaches. Given the resources available for this regional sediment master plan grant, this portion of the Plan will receive the priority emphasis. NCI will utilize the SCOUP receiver site evaluation matrix developed by CSMW during this task, and include consideration of nearshore disposal locations for site-specific or feeder beach purposes. The viability of establishing nearshore disposal sites in the vicinity of critical areas of sediment deficit shall be assessed (Item 11 of the BEACON Study Scope.) The component shall also review physical and chemical compatibility between sediment sources and receiver sites, stockpiling feasibility, transportation routes, placement options, and generalized protocols (Item 8 of the BEACON Study Scope.)

#### 3.2 Harbor component

The four harbors within BEACON's jurisdiction extend from Santa Barbara to Port Hueneme. This component shall review plans and strategies to derive the optimum beneficial reuse of trapped sediment. Some of this study has been initiated by the Corps of Engineers for Ventura Harbor. NCI will obtain and use the Coastal Sediment Benefits Analysis Tool (CSBAT) from USACE LA District as part of this effort, if the tool is available in a timely manner.

#### 3.3 Fluvial component

Understanding of the natural supply of sediment to the coast is important from the standpoint of knowing the status of the entire littoral sediment budget at any time and anticipating where and when deficiencies may occur to the detriment of the nearby beaches. The component is intended to recognize the critical role that BEACON's watersheds play in coastal sediment management. Our efforts at this time shall be limited to updating information compiled by the Corps of Engineers, USGS, UC Santa Cruz, and

the CSMW. The plan component shall outline strategies that may be considered for collaboration with local watershed districts and other federal, state, and local agencies to maintain and hopefully enhance the important sediment source.

#### 3.4 Sand of opportunity component

This component shall integrate BEACON's SCCBEP program within the regional CRSMP. To date BEACON has obtained permits to import sand of opportunity from unanticipated sources on a voluntary basis. Efforts are continuing to refine the receiver beach constraints and encourage use of the existing permits. However the probable volumes of sand that may be available during any given year will likely be relatively small. The program is further hampered by the fact that it relies upon sources that are unknown until volunteered. This strategy has made it difficult for the Resource Agencies to permit the program in a reasonable manner. The recent experience suggests that the program may benefit from a consolidation and focus toward priority beaches, and identifying sources to better definition so that permits can be negotiated to more reasonable conditions. Concepts such as development of a regional stockpile and processing center may also be considered as a means to better promote the program, capture more material, and be in a position to divert sand to priority beaches where most needed.

#### 3.5 Innovative structures review

This component shall re-introduce the concept of sand retention methods to BEACON. The 1989 Coastal Sand Management Plan incorporated conventional structures as ways to stabilize sections of the shoreline. Since then, several non-conventional concepts have been developed and implemented worldwide. Among these, the use of artificial reefs for the dual purpose of shoreline protection and recreational amenity may be of particular interest to BEACON given the fact that it is sponsoring the Section 227 Project at Oil Piers.

We shall summarize the current start-of-the-art in sand retention methodology from an international perspective and briefly discuss the conventional, hybrid, and theoretical concepts that have been proposed or could be promising (Item 6 of the BEACON Study Scope). This task shall be conducted by NCI staff with special advisory technical support and guidance from the internationally recognized coastal engineering expert, Orville Magoon. Mr. Magoon shall serve as a special advisor to NCI staff to provide critical thinking input, international perspective on the subject, facilitate contact with other coastal scientists and researchers, and provide referrals to noteworthy techniques and sediment retention concepts that have been considered, proposed, or demonstrated throughout the world. The expected output for this task will be discussion of noteworthy sand retention concepts that have been demonstrated, proposed, or considered throughout the world. NCI staff will prepare the contract deliverable with guidance from Mr. Magoon.

### 3.6 Policy component

This task shall be completed in close collaboration with our subconsultant Larry Paul. We shall provide a wide-range of policy suggestions focused on the development and management of sustainable projects. Some of the policy suggestions may include combining smaller projects into large project areas in order to attract federal/ state funding and suggest financial opportunities for ongoing beach nourishment costs. As part of the study effort we shall also recommend collaborative efforts necessary for project support in terms of combined financial strategies and recommended direction for upland sediment management and interim beach nourishment projects. We shall also evaluate and recommend improved opportunities for regulatory and resource agency acceptance for the comprehensive BEACON program, including recommendations for changes/enhancements to the Local Coastal Plans of the BEACON member agencies in order to enhance beach nourishment.

Existing protocols and guidelines developed by completed and ongoing CSMW studies shall be consulted, including the Beach Restoration Regulatory Guide and SCOUP guidance for use of optimum and non-optimum opportunistic materials. In general the permits process can be improved by clearly defining the project parameters and associated alternatives. This also involves a program of continued dialog and collaboration where BEACON can share its significant technical contributions to foster more collaborative and supportive participation from the regulatory agencies.

Permitting requirements shall be reviewed from existing BEACON project experience and consultation to the existing CSMP Policies Procedures and Regulations Analysis study findings (Item 12 of the BEACON Study Scope).

### 3.7 Benefits assessment and funding component

This assessment shall be performed by Dr. Philip King. The economics portion of this study will focus on two critical issues: (a) estimating economic benefits at selected beaches in Santa Barbara and Ventura County with an initial screening and then a more intensive second round, (b) an analysis of financing options at the State and local level for future beach nourishment (Item 13 of the BEACON Study Scope).

Specifically, for each site, Dr. King will estimate the following:

1. The increase in recreational value from widening specific beach sites—this increase can be broken down into two parts—the increase in recreational value per visitor and the increase in visitors.
2. The increase in direct economic and tax revenue impact for the state, city and county.

The analysis will use all available data and will rely on engineering studies for estimates of time-varying increases in beach width. A more detailed outline of the economics study plan is provided in the attachment at the end of this fee proposal.

### 3.8 Deliverable

This task will culminate with a Draft Coastal Regional Sediment Master Plan report. The plan will summarize the following:

- Summarize and update the state of the BEACON shoreline.
- Affirm the BEACON goals and objectives of beach preservation and enhancement and the regional sediment management goals of CSMW.
- Introduce candidate beach nourishment plans.
- Outline sediment source and management opportunities.
- Outline policy and that may be considered to foster collaborative management with other federal, state, and local agencies.
- Update the economic benefits of beach nourishment projects in Santa Barbara and Ventura Counties to position BEACON for priority award of upcoming State implementation grants.
- Review the economic feasibility of removal, transport and placement of potential source materials (Item 7 of the BEACON Study Scope.)
- And introduce BEACON to conceptual long range funding strategies that may be studied further to support sustainable beach preservation and enhancement plans.

The draft report shall be delivered at the conclusion of the Task 4 in order to incorporate staff and public comment. Following this review a Final Draft Report will be submitted to CSMW for review. Upon accommodation of CSMW comments, a Final Report will be developed.

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#### Task 4 Public Outreach

*Purpose: This task is intended to provide support to BEACON staff to conduct two public meetings to solicit comment and suggestions from the constituent population. At the conclusion of the outreach, the input shall be incorporated into the final draft of the Coastal Regional Sediment Master Plan.*

BEACON has indicated that it will be responsible for the planning and conduct of the entire public outreach program during the course of this study. Our services for this task shall be limited to providing technical support and assistance to BEACON staff to prepare presentation materials and talking points for public dialogue for two public meetings. The public meetings will occur after development of the draft report under task 4. One meeting will be hosted in Ventura County and one in Santa Barbara County. NCI will also be available to present project update reports before the BEACON Board.

#### Task 5 Select a Priority Plan for Implementation

*Purpose: To select optimum and preferred beach nourishment projects from a number of alternatives to advance for CEQA fatal-flaw assessments and eventual implementation.*

At the conclusion of Tasks 3 and 4 we shall select priority projects in close consultation with BEACON staff to advance for implementation. Ideally, these initial projects shall possess sustainable beach nourishment plans that consist of an initial construction effort and a long term maintenance program.

This task shall conclude with detailed project descriptions for each recommended project that would be used for the CEQA fatal-flaw assessment as described in Task 6.

#### Task 6 CEQA Review

*Purpose: Prepare a CEQA fatal-flaw assessment of the recommended preferred beach nourishment projects to initiate its implementation process. A constraints analysis shall be conducted to review the proposed projects, and a draft initial study checklist shall be prepared. The preferred projects shall then be assessed for viability based on the fatal-flaw assessments.*

The CEQA Review shall be performed by our subconsultant Padre Associates. Once the conceptual project components have been developed to an acceptable level of detail in Task 5, the Padre team will review of the recommended projects to identify the key environmental issues that could affect the permitting of them. Particular attention will be focused on the following issue areas:

- Marine Geological Hazards
  - Littoral sediment movement

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- Marine sediments
  - Marine landslides
- Marine Water Quality/Oceanography
  - Currents and wave conditions
  - Water quality degradation
- Marine Biology Resources
  - Hard bottom and other sensitive resources
  - Marine mammals
  - Bird nesting and foraging
- Marine Cultural Resources
  - Ship wrecks and artifacts
- Marine Transportation
  - Commercial vessel corridors and moorings
- Commercial and Recreational Fishing
  - Preclusion areas
- Air Quality
  - Installation impacts

Item 15 of the BEACON Study Scope shall be modified as follows. For each recommended project, Padre will determine if there are any potential environmental fatal-flaw issues. The NCI team in concert with the BEACON management team will then determine the viability of the recommended projects from an environmental perspective. The determination of a fatal-flaw issue shall be developed with consideration to the local jurisdictional requirements. This review shall be limited to no more than five separate projects.

#### Task 7 Project Management

*Purpose: Conduct routine communications and attend meeting with staff throughout the study.*

We shall attend four meetings with staff to review study progress, discuss issues, and have collaborative dialogue at appropriate milestones. Telephone and email correspondence shall be ongoing and continuous throughout the study's duration. CSMW shall be included in email correspondence related to project issues.



### Attachment 1 - Dr. Philip King Benefits and Funding Study Plan

#### 1. Review BEACON Projects and Reports.

Dr. King will examine previous reports in order to inform our analysis. Much of this task has already been completed for CSMW.

#### 2. Data Collection

Dr. King's data from several studies conducted for the State, CSMW and for the City of Carpinteria shall be used. This existing data includes surveys from most (not all) of the sites and estimates of attendance at most sites. All other available data will also be collected for both high and low season. Dr. King will also perform on-site visits to estimate attendance for both high and low season (keeping in mind that the final report is due in July). These estimates will look at high and low season and breakdown attendance by type of recreation (e.g., surfing, swimming, walking, etc.).

- a. Accurate attendance data is essential to estimate economic benefits since all economic benefits are ultimately derived from attendance figures.
- b. The existing attendance data for Santa Barbara and Ventura County beaches is spotty at best and non-existent at worst. Where attendance numbers exist, they are not always accurate (as Dr. King's study for the cities of Carlsbad and Encinitas demonstrated). Dr. King has data for a number of beaches from various projects and will, as part of this project, estimate the attendance at each beach, broken down by type of activity (e.g., surfing, swimming, etc.). Any analysis of recreational value must have accurate attendance numbers to be valid—and since official statistics are unavailable or unreliable, assessing attendance at each site is critical and difficult unless one already has experience and data.

#### 3. Data Analysis

This task will include both the engineering analysis and the economic analysis. Fortunately, these models have been partially developed already through work with CSMW. The work here will represent a refinement of these models (e.g., improving attendance estimates, improving parking model, analyzing substitution effects, etc.) and will add extra sites.

- a. Estimate time-varying increases in beach width at each nourishment site. From this increased beach width (which will change over time as the site erodes), one can derive increased recreational value, attendance and local economic and tax revenue impact as a function of the increased width. The modeling used will incorporate improvements on previous efforts with respect to: base value of an average beach day; "weights" assigned to various attributes; an improved measurement of attributes; and separation of wave and water quality data.

- b. The economic model will extend an existing model already created by Dr. King for the State of California (through the CSMW) and Corps. The model is unique since it allows one to value the *incremental* value of beach width, as opposed to looking at the total value. Since beach nourishment involves increasing beach width incrementally, it is imperative that any model examine recreational value from this perspective. Dr. King will utilize CSBAT as appropriate.
- c. The economic analysis is based on survey data already collected from Santa Barbara and Ventura County (and other California) beaches. Dr. King has two years experience working with this model for the CSMW and ten years experience working in Santa Barbara and Ventura County.
- d. The analysis generated will use criteria developed for the State of California, which differs substantially from the Corps' methodologies—the Corps' methodology tends to underestimate recreational value, which is critical for this project. Dr. King's work will utilize consistency in numbers/sources used and be mathematically correct.

#### 4. Model Development

The model will use the data from task 2 and the analysis from task 3 above and incorporate this data/analysis into an Excel Sheet which can be used by BEACON. It will allow an analysis of different amounts of beach fill at the different sites and, for each amount of beach fill it will estimate (as a function of time, since beach width will diminish due to erosion): increased recreational value, increased attendance, increased tax revenues for city, county and State governments. In addition to the analysis in task 3, the following must also be incorporated into the final model:

a. *Analyze the impact of parking on attendance.*

Parking is a constraint at some sites. For each site, Dr. King will examine parking access and constraints and add this factor into the model. Adding sand will increase attendance, but this impact is mitigated to some extent when availability of parking is a constraint. The model developed for this project will include, as a parameter, the number of parking places at each beach (with separate categories for beach parking and street parking, paid and unpaid). At some beaches (e.g., Mission beach) attendance is constrained during peak times by availability of parking. An accurate model must also distinguish between demand at peak times (e.g. weekends) and non-peak times since parking will be a more serious constraint during peak hours.

b. *Analyze substitution effects.*

One needs to analyze the substitution effects between these sites to obtain an accurate estimate. A proper analysis must account for the fact that people can substitute one beach for another, so an increase at one site represents a decrease at another site. Increasing beach width at a number of locations simultaneously will have a different impact than increasing beach width at one site. Existing survey data contains some information on substitution effects and allows one to model these effects.

c. *Construct a model of recreational benefits and economic impact for each site.*

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This model will estimate the present value of these benefits and impacts over the life of the project (which will be determined by erosion rates). The model (in Excel) will allow one to vary the amount of beach fill at each site and hence will be flexible and useful for BEACON regardless of the final project.

d. The model will allow BEACON to look at different scenarios based on different amounts of sand at each receiver site. The model will generate an overall economic benefit for each site in terms of increased recreational value, increased economic and tax revenue impact (at the City, County and State level), and increased attendance.

#### 5. Examine Financing Possibilities for Beach Nourishment.

A number of different options will be analyzed at the State and local level to finance projects. A brief discussion of USACE projects in the area will also be included.

- a. Dr. King will analyze funding sources at the State level, focusing on dedicated funds for beach nourishment such as Prop. 84 bond funds as well as existing funds.
- b. Dr. King will examine options for local funding. The analysis will begin with a discussion of the use of dedicated funds in other cities and counties as well as cities in other states such as Florida.
- c. Dr. King will estimate how much money could potentially be raised for various sources, with the proviso that these sources be deemed reasonably feasible by BEACON.