State of California
Coastal Impact Assistance Program

FINAL PLAN 2009

APPENDIX B
Proposed Project Descriptions

State of California Projects

San Francisco Bay Conservation and Development Commission
Department of Boating and Waterways
Department of Fish and Game
Coastal Commission
State Coastal Conservancy
Ocean Protection Council
Natural Resources Agency
State Lands Commission
Department of Parks and Recreation (State Parks)

Coastal Political Subdivision Projects

Alameda County
Contra Costa County
Los Angeles County
Marin County
Monterey County
Napa County
Orange County
San Diego County
City and County of San Francisco
San Luis Obispo County
San Mateo County
Santa Barbara County
Santa Clara County
Santa Cruz County
Solano County
Sonoma County
Ventura County

State of California
Coastal Impact Assistance Program
Project Descriptions Proposed by

STATE OF CALIFORNIA

San Francisco Bay Conservation and Development Commission (BCDC)

1. BCDC Climate Change Program
2. Regional Sediment Management

Department of Boating and Waterways

3. Coastal Regional Sediment Management Plans

Department of Fish and Game

4. Ecosystem-based Monitoring and Research in Support of the MLPA and MLMA
5. Marine Law Enforcement Enhancement

Coastal Commission

6. Coastal Access and Resouce Maps and Associated Publications and Products
7. Coastal Water Quality Technical Transfer
8. Climate Change and the California Coastal Act – Rising to the Challenge -A Guide to Addressing Coastal Act Issues
9. Energy and Ocean-Based Projects and the California Coastal Act

State Coastal Conservancy

10. Invasive Spartina Control Program
11. San Clemente Dam Removal Project
12. Surfer's Point Managed Retreat

Ocean Protection Council

13. California Seafloor Mapping Program, Product Development
14. Science Services for the Ocean Protection Council
15. Thank You Ocean Public Awareness Campaign
16. Santa Cruz Marine Debris Program

Natural Resources Agency

17. Development and Implementation of California's Wetland Monitoring Tool Kit to Support State Regulatory and Non-regulatory Wetland Programs
18. Implementation of the Action Plan for the West Coast Governors' Agreement on Ocean Health
19. California and the World Ocean Conference 2010
20. CIAP Administration and Support

State Lands Commission

21. Santa Barbara Channel Hazards Removal Program

Department of Parks and Recreation (State Parks)

22. Treatment and Management of Unpaved Roads in Coastal Watersheds
23. Marine Life Protection Act Implementation
24. Coastal Dune Restoration at Morro Dunes Natural Preserve
25. Glass Beach Coastal Trail and Perched Dune Restoration Project

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

PROJECT TITLE: BCDC Climate Change Program

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Project Location:	San Francisco Bay and Shoreline
Project Duration:	2009—2011 (3 years)
Total Estimated Project Cost	$847,000
Total CIAP Funds Requested	$770,000
Amount and Source of Non-Federal Match:	$77,000 (state general funds, Project Supervision, administrative overhead)

CIAP Spending Estimate Per Year					
	LIDAR	Permit Database	Head of Tide	Local Assistance	Total
2009	$35,000	$50,000	$70,000	$195,000	$350,000
2010	$15,000	$50,000	$80,000	$195,000	$340,000
2011		$50,000	$30,000		$80,000
TOTAL	$50,000	$150,000	$180,000	$390,000	$770,000

Project Description

The Commission's climate change planning efforts include a number of specific actions that derive from three overarching goals. The goals are to: (1) employ the full range of BCDC's planning, regulatory and administrative authorities to address climate change issues; (2) facilitate broad Bay Area interest and participation in addressing the Bay-related impacts of climate change to produce a sustainable, regional response that includes specific adaptation measures; and (3) maximize BCDC's effectiveness and efficiency in addressing climate change issues through partnerships and collaboration with other organizations.

The Commission is researching the Bay-related impacts of climate change and updating the pertinent policy sections of the *San Francisco Bay Plan.* The Commission has formed successful partnerships with federal, state and regional agencies to address the impacts of climate change comprehensively. Furthermore, the Commission has already developed preliminary tools to identify

shoreline areas that are vulnerable to sea level rise. This Climate Change Program will advance the Commission's ability to develop the information it needs to provide vital assistance to local governments' efforts to develop effective adaptation strategies to address sea level rise. The Program consists of three elements: (1) developing essential data sources; (2) conducting a head of tide/tidal surge study to expand our flooding vulnerability knowledge; and (3) developing a vulnerability assessment framework and assisting local governments to conduct vulnerability assessments. BCDC will also be conducting a CIAP project on Regional Sediment Management, which will be focused on Bay sediments, rather than on the shoreline. However, any pertinent information obtained from that project will be used to complement this project.

Dates shown in timetables are based upon a January 1, 2009 notice to proceed and funding. Delays in approval and funding of the projects will result in a day-to-day slip of the schedule.

High Resolution Elevation Data and Historic Permit Data

Digital Elevation Data. The overarching goal of this effort is to increase coordination of regional LIDAR data collection and create an accurate, high-resolution regional digital surface model (DSM). A regional, high-resolution digital elevation dataset covering the entire Bay and shoreline is needed to accurately predict the potential impacts of climate change driven sea level rise. The integration of GIS technology and high-resolution digital elevation data is critical in increasing our understanding of the potential flooding impacts of climate change. BCDC has a high-resolution DSM dataset for a significant portion of San Francisco Bay and shoreline. BCDC needs the same quality of data for the northern sections of San Pablo Bay because the data available for these areas are of lower resolution and provide an inaccurate picture of vulnerabilities due to sea level rise. In order to prepare reliable long-term regional analyses of flooding vulnerabilities, sediment dynamics, erosion and coastal resilience, a regional LIDAR (Light Detection and Ranging) DSM is critical. LIDAR data have been collected for the South Bay Salt Pond Restoration Project and by a small number of Bay Area counties. Generally, these high-resolution data sets have been collected in a piecemeal fashion and thus the existing coverage is not sufficient to create a data set that enables BCDC and its partners to conduct broader regional inquiries related to the impacts of sea level rise. This information will be particularly useful to the Coastal Conservancy's Bay shoreline erosion study.

BCDC proposes a phased approach to the project that advances the region as far as possible towards the goal of a complete regional DSM as is possible, given the limited available resources. Reliable estimates of creating a new regional LIDAR data set for the Bay put the cost at well over $1 million. Since several agencies are developing LIDAR data on an ongoing basis, and the Ocean Protection Council (OPC) is considering a coastal LIDAR acquisition, it is unnecessary to start from scratch. Instead, BCDC will evaluate existing data, identify gaps, if any, and work with the OPC and other partners towards a comprehensive regional LIDAR data set that covers the entire Bay. LIDAR data will be packaged and made available to BCDC's federal, state and local agency partners, and for public information efforts.

Measurable Goals and Objectives

The main goal of this effort aims to increase coordination of regional LIDAR data collection and improve the accuracy and resolution of the regional DSM for the Bay. Potential partner agencies include USGS, the OPC, the U.S. Army Corps of Engineers as well as other state and local government agencies.

Objective 1 Work with partner agencies to identify and compile existing LIDAR data for San Francisco Bay region. Consult with federal, state and local agencies to identify and

categorize all LIDAR data sets. Assess data for compatibility and geographic coverage, ownership, processing status and resolution and identify any data gaps.

Objective 2 Contribute to a multiple-agency effort to process and combine existing LIDAR data into a regional DSM and with partner agencies to prioritize additional data for acquisition as funding allows. Leverage the limited funding from this grant with funds of partner agencies to fill existing gaps by acquiring new LIDAR data for the region; or, work with partner agencies to combine the various existing data sets into a more complete high-resolution DSM for use in conducting regional analyses.

Objective 3 Manage, maintain and integrate new data as it is acquired and coordinate with partners to disseminate the completed data to interested parties.

Objective 4 Work with partner agencies to establish a logical repository for data that allows for maintenance and dissemination of data.

Timetable and Deliverables

Completed By	Deliverable
December 2009	Data list with identified data gaps
March 2010	Documented plan to acquire needed data
October 2010	Revised regional DSM that includes available high-resolution LIDAR data
December 2010	Documentation of data sharing arrangements

Shoreline Development Data Base

The goal of this project is to create a comprehensive information management and retrieval system (using a centralized database) linked to a web-based GIS (Geographic Information Systems) application to provide staff with a powerful tool that will improve information retrieval regarding shoreline development and, thus, decision-making capabilities regarding climate change adaptation.

BCDC has been issuing permits for development projects in and along San Francisco Bay since 1965. The Commission's permit files, taken together as a whole, represent the most complete and authoritative record of over 40 years of Bay and shoreline development around the San Francisco Bay. These data, which exist nowhere else, are an important resource that the Commission should digitize and enter into a centralized database. This archived data could be used by the Commission and its partner agencies to support project analyses and planning studies to address the impacts of sea level rise, if the information could be accessed and manipulated effectively. Currently, BCDC tracks its permits using a card catalog system organized alphabetically by permittee. This system is cumbersome, inefficient, and relies heavily on the memory of long-term staffers to answer fundamental questions about past permits.

In 2001, BCDC developed a pilot permit-tracking database using Filemaker Pro software. At the same time, BCDC also developed a pilot web-based GIS to provide staff with access to geospatial data on their desktop computers. Both pilot projects were developed to be compatible data systems, one text based and the other based on spatial data, with the intention of linking the two systems in the future. A comprehensive information management and retrieval system would provide staff with the ability to access permit information as well as natural resource and land use

data through a geographic interface. This system would enable staff to better accomplish their day-to-day work reviewing permit applications, resolving enforcement investigations and undertaking research for important policy update projects.

Currently, the existing permit tracking system database is only populated with permit data from 2003-2005, and technical problems have led to the discontinued use of the database. While the pilot desktop GIS project is still accessible and used on a day-to-day basis, due to lack of staff time and resources, the system has not been maintained or improved. The planned integration of the permit database with the web-based GIS was never accomplished. Furthermore, as a result of changes in database and GIS software, it is now clear that integration of the two systems requires the development of a new permit database using software that is compatible with GIS.

Measurable Goals and Objectives

The goal is to provide access to and a method to analyze the Commission's permit actions in order to assess Bay shoreline development and climate change vulnerability.

Objective 1 Develop and refine a new database structure for permit and enforcement (i.e., regulatory) information, using database software already purchased by BCDC (SEQL Server) that is compatible with GIS. This objective will be managed and undertaken by a consultant with assistance from permanent BCDC staff.

Objective 2 Digitally capture critical information from BCDC permits that documents shoreline development, and populate the new database with the permit information. This objective will be managed by a BCDC staff person and the data entry will be undertaken by hired interns and/or consultants, guided by either a supervising consultant or BCDC staff.

Timetable and Deliverables

Completed By	Deliverable
March 2010	New Database
December 2011	Populated Database

Head of Tide/Tidal Surge Study

The goal of the Head of Tide study is to assess shifts in head of tide in Bay tributaries due to sea level rise, in order to assess potential flooding and habitat impacts.

The possible effect of accelerated sea level rise on tidal marshes and tidal flats is being examined by a number of research groups in this estuary and elsewhere along the west coast. But the risks to life and property represented by tidal surge during extreme events and transgression of the heads-of-tide are getting much less attention. This is due in part to the less obvious nature of these estuarine boundaries. They are, quite literally, fluid and are not distinct lines but inexact zones. There is no regional map of the heads-of-tide, or regional assessment of the risks to life and property that their transgression represents. A particular concern stemming from climate-change induced sea level rise is the impact of tidal surges during storms and El Nino/La Nina events that could induce flooding in areas not previously at risk.

Five elevation contours or shorelines define the boundary between an estuary and its adjacent uplands. The lowermost contour is at Mean Lower Low Water. The next landward contour is the foreshore. If there is tidal marsh, the foreshore is defined as the line between the marsh and the

lower, non-vegetated tidal flat. If there is no marsh, such as along a beach or rocky shore, the foreshore is located at Mean High Water. The next higher shoreline is the backshore, which corresponds to the maximum high tide contour. The upstream limits of the effects of the tide on water salinity and water level, respectively, are the fourth and fifth contours, usually referred to as "heads of tide." They exist across rivers and streams that enter the estuary. Since the effects of tides and salinity can extend far up rivers and tributaries, the heads-of-tide exist further inland than the other estuary boundaries. Tidal effects on in-stream water level usually extend the farthest and establish the inland boundary of the estuary.

The uncertainty about the existing and possible future locations of the heads-of-tide belies their ecological, economical, and cultural importance. Heads-of tide, or the zone between them, create an ecotone between the big three major ecosystems: terrestrial, tidal, and freshwater. Native biological diversity is greater here than anywhere else in the region. It represents the margins of the distributions of many species endemic to these ecosystems, and therefore it represents the front line in their evolution. It provides habitat for many rare and endangered species, such as tide water goby, yellow-throat, tule pea, and delta smelt. Many of these species have evolved in the zone between the heads-of-tide and will depend on this zone persisting as it moves upstream during estuarine transgression. The economic value of this zone has not been quantified, but must be great. Whole towns, including San Jose, Ross, Hayward, Redwood City, Petaluma, Napa, and Suisun City were founded at the head of tide and their downtown centers, with historic buildings and settings, are still located there. Since there are no maps of the heads-of-tide, and no standard approach to forecast their transgression due to sea level rise, there can be no assessment of the risks to life, property and natural communities from their transgression. Increases in tidal flooding in these areas could have dramatic impacts.

Storm surges along the coast are caused by a combination of the low pressure of a storm literally lifting up the surface of the ocean, and onshore winds pushing water against the land. Sea level rise models indicate that a 30 cm (11.8 inch) rise in sea level would shift the 100-year storm surge-induced flood event to once every 10 years. With each flood event, the Bay Area stands to lose valuable real estate, critical public infrastructure, and natural resources. During the 1997–1998 El Niño, very high seas and storm surge caused hundreds of millions of dollars in storm and flood damage in the San Francisco Bay area. Highways were flooded as six-foot waves splashed over waterfront bulkheads, and valuable coastal real estate was destroyed. The frequency of high sea level extremes also may be increased if storms become more frequent or severe as a result of climate change. Increases in the duration of storm surges increases the likelihood that they will occur during high tides. The combination of severe winter storms with SLR and high tides would result in extreme sea levels that could expose the Bay to severe flooding and erosion, damage to structures and real estate, and salinity intrusion aquifers. Storm surge impacts from sea level rise will likely be exacerbated by flood-waters from the Sacramento/San Joaquin Delta and other Bay tributaries.

A regional map of the heads-of-tide will be produced for perennial streams entering the estuary in the nine-county Bay Area. The map will rely on input from local agencies and special districts, such as flood or mosquito control districts, water agencies, resource conservation districts, and municipalities with first-hand knowledge of conditions within and along the local rivers and streams. The draft map will be verified with field reconnaissance at a select number of sites. The primary indicators of the upstream extent of estuarine effects on salinity (i.e., the downstream head-of tide) will be intertidal or streambank vegetation, sediment texture, and benthic infauna. The primary indicators of the upstream extent of estuarine effects on water level (i.e., the upstream head-of

tide) will be the bank and bed profiles, and stream gauge records as available. The map will be incorporated into BCDC's sea level rise maps, the Wetland Tracker of the EcoAtlas Information System at SFEI, and distributed as paper copy and digital file to all local interests, as well as pertinent federal and state agencies. This effort will be closely coordinated with the Conservancies shoreline erosion study. The relative accuracy of the map will be quantified and clearly represented in the map. The completeness of the map will be determined by the willingness of local agencies to provide the requisite data and information.

Additionally, a standard approach will be developed for assessing the risks represented by tidal surges and/or head-of-tide transgression as a guidance document to local agencies. Potential case studies will be identified for future application of the methodology. Hydrologists, ecologists, sociologist, and economists will be consulted with to outline the appropriate kinds and applications of modeling, the essential empirical data, the analytical and educational steps, the timeframe and approximate costs, and suggested report formats for local risk assessments. There are many such experts already at work on local and regional plans for climate change in the context of estuarine and watershed management.

BCDC, with consultant assistance, would co-lead the effort to create a regional map of the heads-of-tide. The consultant would further provide science and technical support to BCDC to develop a tidal surge/head of tide risk assessment methodology, using a panel of expert advisors.

Measurable Goals and Objectives

The goal of the study is to define heads of tide in Bay tributaries and a protocol for assessing potential impacts of storm surges under climate change.

Objective 1 Prepare a detailed workplan for carrying out the project.

Objective 2 Assemble a technical advisory committee (TAC) including hydrologists, ecologists, and a sociologist, or economist to provide input into project development and review draft results.

Objective 3 Establish a standard protocol for determining head of tide that can be used by local governments and agencies, such as flood control districts, using a combination of field research and local knowledge as appropriate.

Objective 4 Develop a digital base map for the project and to show the identified head of tide for the Bay tributaries

Objective 5 Perform field verification of the protocol on pilot tributaries at several scales, from small creeks, to major tributaries.

Objective 6 Establish local contacts willing to help map heads of tide for tributaries in their area.

Objective 7 Compile on digital map the determination of heads of tide provided by the willing local agencies.

Objective 8 Perform field verifications to verify and assess the accuracy of the local determinations. Document issues and lessons learned.

Objective 9 Define protocol for assessing transgression of head of tide in tributaries.

Objective 10 Identify potential pilot projects based on interest of local contacts and including small, medium and large size tributary streams and rivers.

Objective 11 Document study results in both digital map form and a written document that includes the methodologies, study results, lessons learned and recommendations for future actions.

Timetable and Deliverables

Completed by	Deliverable
March 2009	Detailed work-plan
May 2009	Regional TAC
October 2009	Written protocol for determining head of tide
October 2009	Digital base map
January 2010	Documented field verification of several sites
January 2010	List of local contacts
September 2010	Draft map with local data provided by local governments
January 2011	Verified final map
February 2011	Draft protocol for predicting transgression
May 2011	Devised protocol
July 2011	Description of study of head of tide transgression
August 2011	Draft guidance report
December 2011	Final guidance report

Assistance to Local Governments

This project will provide assistance to local governments to plan for the impact of Bay-related climate change, particularly sea level rise. While it is important to study and plan for climate change to the Bay at the regional level, much of the response and adaptation will occur at the local level. BCDC recognizes that local governments will need assistance in assessing their vulnerabilities and preparing adaptation plans to sea level rise and other climate change impacts. The first step in this was a workshop held by BCDC in April of 2008 for local governments that presented the potential impacts of climate change on the Bay and introduced the concept and process of preparing vulnerability assessments. The workshop was oversubscribed and reaction from attendees was highly favorable. This demonstrated the need for tools that are tailored to the Bay and its shoreline to allow local governments to prepare vulnerability assessments and scope adaptation plans. Appropriate information obtained from BCDC's CIAP plan on Regional Sediment Management may be used to complement the information in this section.

Measurable Goals and Objectives

The goal of this project is to provide tools and assistance to local jurisdictions in developing and implementing strategies to adapt to Bay-related impacts of climate change by: (1) providing information, such as a vulnerability analysis framework in an easy-to-use format; (2) technical

assistance in conducting vulnerability analyses; and (3) facilitating partnerships between local jurisdictions to address shoreline management issues that cross jurisdictional boundaries.

Objective 1 Develop a regional protocol for vulnerability assessments for use by local governments to identify areas and assets at risk from projected sea level rise and specifications for adaptation plans.

Objective 2 Provide a series of educational workshops for local jurisdictions on the state of science and options for shoreline adaptation.

Objective 3 Refine the protocol based on feedback from local governments and provide the information to local governments, through (1) the workshops, (2) written documentation, and (3) information provided on BCDC's web-site site, to help local jurisdictions identify vulnerable shoreline areas and act as a centralized location for information on the Bay-related impacts of climate change.

Objective 4 Provide staff to manage the climate change program and provide local government support.

Timetable and Deliverables

Completed By	Deliverable
July 2009	First draft vulnerability assessment template
September 2009	Public forum
April 2010	Revised vulnerability assessment template
May 2010	Public forum
October 2010	Final vulnerability assessment template
December 2010	Final report with documented template, lessons learned and recommendations for future actions

Coordination with Other Federal Resources and Programs

BCDC has sought grant funding from NOAA for all of the elements included in this Climate Change Program by submitting a grant application in response to a NOAA Broad Agency Announcement (BAA) in April, 2007. NOAA did not approve our grant request. BCDC will coordinate with the USGS, NOAA, US Army Corps, California Ocean Protection Council, State Coastal Conservancy, California State Parks, and California Department of Fish and Game on the head of tide study proposed above, as well as drawing on these experts to participate in BCDC's outreach to local governments, to assist them in developing sea level rise vulnerability assessments. BCDC will continue its partnership with USGS on LIDAR data development, sharing and analysis to advance the understanding of regional vulnerabilities due to climate change. This information will be useful to the US Army Corps for its ongoing shoreline study of South San Francisco Bay and flooding vulnerabilities there and to the Coastal Conservancies study of shoreline erosion in the Bay.

Consistency with California Ocean Protection Council Strategic Plan

The proposed BCDC Climate Change Program will advance the state towards meeting the goals and objectives of the California Ocean Protection Council's (OPC) Strategic Plan under multiple themes. Under the Physical Processes and Habitat Structure theme, the project directly furthers Objective 1: Understanding Impacts of Climate Change. The proposed data collection and studies will support efforts to detect and understand impacts of climate change in the Bay. Furthermore, the local government assistance component of the program will help local jurisdictions develop strategies to respond to these impacts.

The proposed ecosystem and sediment dynamics studies will also support the Strategic Plan's Research and Monitoring theme by improving our understanding of our ocean and coastal ecosystems (Objective 1: Research). The results of these studies will directly inform the development of climate change adaptation strategies for the Bay region and thus help close gaps between knowledge about climate change impacts and policy decisions.

The proposed project will advance the state toward meeting the goals and objectives of the California Ocean Protection Council's Strategic Plan in the area of Governance. Objective 2 under Governance is to "Maximize the effectiveness of state agency efforts to protect and conserve ocean resources." Objective 2b specifically states, in part, "Identify and promote administrative, regulatory, and legislative measures that will enhance the effectiveness of state coastal and ocean programs by reducing gaps and conflicts in policies and programs." The project will improve the effectiveness of BCDC's program by providing easy access to important data, and will expedite dissemination of information to state and federal agencies, local governments, decision makers, the regulated community, and the general public. By providing the ability to analyze granted and proposed permits with geographically-based natural resource and land use data, the project will provide essential links between permit development, permit compliance, and natural resource conservation and protection. Ultimately, these linkages will result in better information and lead to better decisions. The proposed project will capture important institutional memory, maximize the utility of existing data for improved current decision-making, and improve the ability to assess future trends.

Consistency with CIAP Authorized Uses

The proposed project is consistent with CIAP authorized uses 1 and 4. However, the primary CIAP authorized use is Use 4 "implementation of a federally-approved marine, coastal, or comprehensive conservation management plan." BCDC is the federally-designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. BCDC's approved coastal management program includes the laws and policies that govern BCDC's ability to require permits for proposed projects in the Bay and along the shoreline. BCDC's laws and polices require BCDC to protect the natural resources of the Bay. Effective analyses of proposed projects require an understanding of the existing natural resources and land uses, as well as past approved projects in the area. The multiple levels of analysis available from the resulting project will foster the integration of the two major functions of BCDC's Coastal Zone Management Program – the short term, calendar-driven permit work and the long term, long range planning efforts. This integration is key as long term planning efforts are based on the outcomes of past permit work and in turn should guide future permit-related work. Better integration of these functions will help synthesize BCDC's functions, goals and mandates, and will similarly improve our ability to broaden the scale at which we work, and increase our capacity to adapt to change. The project will also result in an invaluable tool in the periodic and necessary assessment of BCDC's Coastal Zone Management Program. Finally, the project will provide the means in the future for more accurate

and standardized permit applications (submitted in digital format) and, thus, more consistent permit decisions.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

PROJECT TITLE: Regional Sediment Management

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Project Location:	San Francisco Bay and Shoreline
Project Duration:	2009 – 2011 (3 years)
Total Estimated Cost of Project	$193,000
Total CIAP Funds Requested	$175,000
Amount and Source of Non-Federal Match:	$18,000 (State general funds)

CIAP Spending Estimate Per Year	
2009	$80,000
2010	$60,000
2011	$35,000
TOTAL	$175,000

Project Background and Description

The purpose of the project is to prepare an integrated, regional sediment management strategy (RSM) for studying, understanding, and managing Bay sediment processes, in order to maximize the health of the Bay, minimize management costs, and help address climate change impacts and other system stressors. Secondary purposes are to coordinate and focus research efforts that address management goals, harmonize management policies by federal, state and local agencies affecting sediment processes, and educate managers regarding RSM.

Bay sediment dynamics control many estuarine processes, such as locations of tidal flats and marshes, habitat variability, and the productivity of Bay waters. The net flux of sediments into and out of discrete portions of the Bay determines whether erosion or accretion occurs, and creates features such as shoals and channels, and specific habitat environments such as fine-grained or sandy bottoms. High concentrations of suspended sediment can reduce light penetration and lower biological productivity, but can also help prevent harmful blooms of algae. An adequate supply of sediment is needed to maintain the dynamic equilibrium of wetlands and tidal flats within the Bay

system, while excessive volumes of sediments can silt in channels and reduce open-water habitats.

An understanding of sediment dynamics is particularly important to predicting the impact of sea level rise and global climate change on the Bay. Sediments can feed tidal flats and wetlands to maintain their elevation in the tidal frame while minimizing erosion and inundation. Decreases in local or regional sediment supply can exacerbate erosion and inundation. While the work on this project does not duplicate BCDC's CIAP climate project, which focuses on the shoreline, there may be complementary information obtained from the climate project that will inform the study of Bay sediments.

Regional sediment management seeks to manage sediments within the context of the entire system, including sediment sources, movement and sinks within the system, and exchange with the ocean. Application of RSM to the Bay will allow the Commission and other coastal managers to better understand both the impacts of individual permit decisions on the entire system (e.g., dredging and disposal), and also the impacts of systemic processes such as climate change and sea level rise on permitted projects (e.g., success of wetland restoration projects). In order to apply RSM, adequate data must be available on Bay sediment processes to understand how the system functions, and geomorphic or numerical models must be sufficiently accurate to predict how the system will react to changes in forcing processes, such as sea level rise or reduced sediment inflow from the Delta.

Better information is needed on Bay sediment dynamics to develop a regional sediment management strategy. For example, while suspended sediment levels are being measured by the U.S. Geological Survey (USGS) at several Bay stations, the stations do not measure current flow and thus cannot be used to determine sediment flux. There is insufficient data on nearshore sediment processes to understand sediment exchange between tidal flats and wetlands. The impacts of wind-wave energy in tidal restoration projects are poorly understood and controversial. Adequate measurements are not available for the sediment supply from Bay tributaries. An up-to-date and accurate map of the stratigraphy of the Bay floor is not available. The exchange of sediment with the ocean has not been directly measured. While numerical models of water circulation and currents have become increasingly sophisticated and accurate, application of these models to make reliable and validated estimates of sediment transport within the Bay has not been accomplished.

The Commission will work collaboratively with other Bay management and research agencies, organizations and interested parties to prepare a RSM strategy for the Bay. This RSM strategy would have a strong focus on identifying sediment management needs and research needed to support RSM for the Bay. Potential partners who have expressed interest include the Coastal Conservancy, San Francisco Bay Regional Water Quality Control Board, San Francisco Estuary Institute (SFEI), and the U.S. Army Corps of Engineers (Corps). It is likely that additional funds and in-kind services will be available from these and other partners to expand the project. The project will also be closely coordinated with the California Coastal Sediment Management Workgroup (CCSMW). Much of the early focus of the strategy will be identifying research needs that are most directly related to Bay sediment management.

The first year of the project would consist of (1) identifying, gathering and cataloging existing data on sediment distribution and processes; (2) working with researchers and Bay managers to identify data gaps and key management questions. Past and ongoing research has provided important information on Bay sediment processes. However, this information has not been gathered and analyzed in any comprehensive fashion. Many of the data sets are not generally available. The

predicate for a RSM strategy is to understand the research done to date, provide a synthesis of the known information and compare the information to the information needs identified by resource managers. Input by resource managers is a key component to focus on those aspects that are most critical to management of Bay resources, particularly for adaptation to sea level rise.

The second year would involve (1) preparing a research agenda that is coordinated with other Bay management and research entities; and (2) completing a framework document that outlines a regional sediment management strategy for the Commission. Staff would also coordinate and help identify funds for potential demonstration projects with the USGS, SFEI, and/or other research groups to gather key sediment dynamics data and work to refine and flesh out the framework. The third year would involve: (1) evaluating where serious erosion can be expected (particularly in light of climate change) and potential sediment sources and mitigating strategies to address it (focus will be given to assessing potential sources of sediment from Bay tributaries and to beneficial reuse of dredged material); and (2) analysis and synthesis of the data and lessons learned into a regional sediment management strategy. This work would be closely coordinated with and complementary to other work on Bay sediment dynamics, particularly the Coastal Conservancy's shoreline erosion study and the South Bay Salt Pond Restoration Project, and the Stanford Unstructured Non-hydrostatic Terrain-following Adaptive Navier-Stokes Simulator (SUNTANS) modeling initiative for the Bay. It also would be closely coordinated with and complementary to the CCSMW that is focusing on RSM for California's ocean coastline.

The project has a high level of feasibility. The Commission has conducted and participated in numerous collaborative regional planning processes, such as the Long Term Management Strategy for Dredging (LTMS) and the subtidal goals process. No regulatory approvals will be needed for this initiative.

Measurable Goals and Objectives

The goal of the project is to prepare a written strategy for implementing management of the Bay that addresses regional sediment dynamics.

Objective 1 Identify and gather existing information on Bay sediment dynamics for use in scoping and to inform development of RSM strategy.

Objective 2 Sponsor a workshop with scientists and technical experts to present and discuss the state of knowledge regarding sediment dynamics, existing research and field studies, and to identify potential research priorities.

Objective 3 Establish a workgroup of state and federal managers that will oversee preparation of the strategy and potentially oversee implementation of the completed strategy.

Objective 4 Based on guidance of the workgroup and input from other local, state and federal managers, identify management needs regarding RSM.

Objective 5 Use the management needs, and existing and proposed research to identify key data gaps needed for successful RSM in the region.

Objective 6 Prepare draft strategy that includes research priorities, potential management strategies and options for implementation, which is coordinated with related efforts, such as the Long Term Management Strategy for dredging in the San Francisco Bay Region, the CCSMW and state climate adaptation strategy.

Objective 7 Circulate the draft strategy for review and comment by key managers and technical experts.

Objective 8 Use the comments to revise and finalize the strategy.

Objective 9 Distribute the RSM strategy to interested parties and present to the BCDC and other applicable agencies.

Timetable and Deliverables

Completed By	Deliverable
February 2009	Detailed work plan
June 2009	An annotated database of literature, experts, and other pertinent information
August 2009	Completed workshop with documentation of key points and identified research priorities
September 2009	Establishment of a management workgroup with regular meeting schedule
January 2010	Written documentation and analysis of management needs and priorities, including dredging and disposal, wetlands restoration, sea level rise adaptation and flood control
April 2010	Document that lists and analyzes data gaps and potential studies and field research to address them
November 2010	Draft strategy that addresses data needs and management options and proposes one or more strategies for implementing a RSM approach for SF Bay
March 2011	Revised draft, based on internal review
April 2011	Final draft strategy circulated for comment
October 2011	Revised strategy
December 2011	Staff report and presentation to BCDC

Coordination with Other Federal Resources and Programs

BCDC has sought grant funding from NOAA for sediment research as part of a grant application in response to a NOAA Broad Agency Announcement (BAA) in April 2007. NOAA did not approve our grant request. BCDC staff has met with staff of USGS and the Corps regarding joint efforts to implement sediment research and RSM in the Bay Area. BCDC works closely with these and other federal agencies as part of the Long Term Management Strategy for Dredging program and intends to partner with these agencies as part of the CIAP project.

Consistency with California Ocean Protection Council Strategic Plan

The proposed project will advance the state toward meeting the goals and objectives of the California Ocean Protection Council's Strategic Plan in several areas:

Governance. Objective 2 under Governance is to "Maximize the effectiveness of state agency efforts to protect and conserve ocean resources." Preparation of a RSM plan will greatly improve the Commission's coastal management program for the Bay and will further its climate change

action plan, thus improving governance. The preparation of the RSM strategy will be closely coordinated with other state and federal research, resource and regulatory agencies which will further interagency collaboration. RSM is also a key part of ecosystem management and thus will help support improved ecosystem management of the Bay.

Research and Monitoring. The sediment data acquisition and analysis component of this project will "[i]mprove scientific understanding of our ocean and coastal ecosystems." It will also help "[m]onitor and map the [bay] environment to provide data about conditions and trends." The pilot project will involve bay observing systems.

Physical Processes and Habitat Structure. This project will directly support Objective 2: Regional Sediment Management. The RSM strategy prepared for the Bay will be closely coordinated with and complementary to the California Coastal Sediment Master Plan being prepared by the California Coastal Sediment Management Workgroup. It will also support Objective 3: Understand Impacts of Climate Change, through a better understanding of Bay sediment dynamics that will drive the response of Bay wetlands and tidal flats to sea level rise.

Consistency with CIAP Authorized Uses

The proposed project is consistent with several CIAP authorized uses 1, 2, and 4. However, the primary CIAP authorized use is **Use 4. Implementation of a federally-approved marine, coastal, or comprehensive conservation management plan.** BCDC is the federally-designated state coastal management agency for the San Francisco Bay segment of the California coastal zone pursuant to the federal Coastal Zone Management Act. The RSM strategy will improve and enable the Commission to better implement its coastal management program for the Bay.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF BOATING AND WATERWAYS

PROJECT TITLE: Coastal Regional Sediment Management Development Plan

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Statewide coastal California
Duration:	2008-2010
Total Estimated Project Cost:	$1,100,000
Total CIAP Funds Requested:	$700,000
Amount/Source of Match:	$400,000 DBW (Harbors and Watercraft Revolving Fund)
Estimated CIAP Spending Per Year:	2009 - $ 350,000 2010 - $ 350,000
Coastal RSM Plans $300K X 2 plans	$600,000 (CIAP)
GIS Support $50K/yr X 2 years	$100,000 (CIAP)
Project Management $200K/yr X 2 years	$400,000 (DBW match)

Project Background and Description

Develop Coastal Regional Sediment Management (RSM) Plans for three of California's regions/littoral cells with coastal sediment issues. CSMW proposes to develop the Coastal RSM Plans, prepare environmental documents for all Plans, and conduct needed project management to produce deliverables using CIAP assistance.

The California Sediment Master Plan (SMP) is currently focused on developing individual Regional Sediment Management (RSM) Plans for each region in California with coastal sediment supply issues. The statewide SMP will be implemented through development and subsequent use of these regional Plans throughout all of coastal California. To date, CSMW has contracted with three regional entities to provide pilot Coastal RSM Plans. These three regions were chosen for various specific reasons such that each region should contribute valuable information allowing CSMW to "ramp up" the pilot program to one eventually covering all areas in coastal California where the loss of beach resources has been of concern. CSMW has currently identified seven additional regions/littoral cells needing to be incorporated into the CRSMP. This project proposal covers the development of RSM Plans for two additional regions/littoral cells as the next step in SMP implementation.

Component 1: Develop Regional Sediment Master Plans
Develop three additional Coastal RSM Plans utilizing a regional planning entity that is required to coordinate with local governments and other identified stakeholders. The regional entity will obtain and direct qualified consultants in order to identify, assess, characterize and utilize potential sediment sources within that region for beneficial reuse at critical coastal erosion areas within the region. They are also expected to formally adopt the Coastal RSM Plan and identify a mechanism to ensure the Plan's use during future sediment management activities throughout the Region. The Coastal RSM Plans will 1) be based upon region-specific coastal processes, economic, environmental, geographic and societal data, 2) utilize current reports and data, 3) consult educational, process, regulatory and informational tools developed and compiled by CSMW as part of the Sediment Master Plan, and 4) address the needs of local and regional governments as well as local non-governmental stakeholders. Each CRSMP will include elements related to Governance, Outreach, and Plan Development.

Coastal Regions under Consideration:

Orange County (San Pedro Littoral Cell)
Central Coast (Morro Bay – Santa Maria River Littoral Cells)
Northern Monterey Bay (Santa Cruz Littoral Cell)
San Francisco (San Francisco Littoral Cell)
Northern Coast (Eureka Littoral Cell)

Component 2: GIS Support for RSM Plan Integration
This entails utilizing the California Geological Survey's GIS capability to provide development support and ensure consistency of RSM Plans for integration into the California State Sediment Master Plan.

Component 3: Environmental Impact Review Preparation
In addition, each of the Coastal RSM Plans proposed for second phase development, will require environmental impact review and document preparation designed to address NEPA/CEQA issues expected to arise during Plan development. Our expectation is that a Programmatic EIR can be conducted for each region for the estimated amount ($125K). However the complexity of the selected regions and presence of critical species/habitats can significantly affect this estimated amount.

Component 4: Project Management
Program Management will require CSMWs Project Manager to determine the willingness of potential regional entities to partner on Plan development and their commitment to adopting the Plan for use in their jurisdiction, work through contracting issues with the new partners, assist the regional entity in obtaining qualified consultant help, ensure the Scope of Work is appropriate, assist in preparing the Plans, using the Plan findings to update existing CSMW tools (e.g., references, GIS layers) review the draft documents, participate in workshops and other outreach efforts, coordinate with experts and regulatory staff regarding environmental issues and ensure statewide consistency between individual Plans. In addition, other efforts are currently underway to support implementation of RSM in California, as described in the SMP Status Report 2006. The Project Manager will be involved in these and other CSMW and OPC projects, helping to 1) develop additional products that will support implementation of the **CRSMPs 2) continue development of the SMP with our federal partners, and 3) assist other OPC** projects as appropriate, under the direction of the CSMW. Based on experiences to date, prioritizing Plan

Regions, discussions of interest within and by the various regions, developing MOUs with regional entities to administer the Plan Development, contractor selection and Plan development and adoption is expected to require about 2 years to accomplish.

Milestones and Deliverables:

2009 Region selection
Contract with regional entities
Scope of work approval and contractor selection
Public Workshops
Begin RSM Plan development
Draft EIR

2010 RSM Plan completion
Develop programmatic EIR
RSM Plan adoption by Region

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

US Army Corps of Engineers: SMP Activities through the CSMW, joint funding of projects NOAA Sanctuaries – Channel Islands, Monterey Bay, and Farallones: coordinate requirements for activities associated with Plan within their jurisdictions Minerals Management Service – Utilize Biological investigations and Reviews conducted on their behalf; possible information on prospects for use in RSM Plans

CALIFORNIA OCEAN PROTECTION COUNCIL

This project addresses multiple goals and objectives of the Ocean Protection Council's Strategic Plan.

- **Governance**

  Based on input from our Outreach program, CSMW has concluded that the best way to implement RSM across coastal California is through region-specific plans that recognize and address differences between various coastal regions. A pilot Coastal RSM Plan program has been initiated in three different regions of coastal California, intended to formulate consensus-driven regional sediment management guidance and policy, under the direction of CSMW and an appropriate regional entity, in order to: restore and maintain coastal beaches and other critical areas of sediment deficit; reduce the proliferation of protective shoreline structures; sustain recreation and tourism; enhance public safety and access; and, restore coastal sandy habitats throughout the Region. The three pilot efforts will catalogue all the available known sources of sediment (upland, offshore and dredged) throughout the specified region, capture areas of critical beach erosion of importance to the region, and develop a management plan using governance established through the Plan on how these potential sources of sediment can best be used to nourish the eroding areas. An Outreach component is included in each pilot effort to inform, educate and gather input from interested stakeholders. The proposed project will take the lessons learned from the pilot efforts and extend the program to three other regions within coastal California where loss of

beach resources has been a concern. Governance issues are addressed in each Plan to ensure the Plan's use throughout the jurisdictional area of the regional entity.

- **Physical Processes and Habitat**

  CSMW is a taskforce comprised of numerous State, Federal and local agencies working specifically to develop and implement Objective 2- *Regional Sediment Management* specifies "*Support the implementation of regional sediment management throughout California as a means of protecting, restoring and enhancing California's coastal sediment and beach resources*". CSMW is developing and implementing a coastal Sediment Master Plan (SMP) which addresses concerns important to RSM implementation such as identifying areas of critical coastal erosion, studies to examine how physical processes affect sediment transport, littoral cell approaches to beach nourishment and other coastal projects, identification and protection of coastal (on-land and nearshore) biota and/or habitat, preserving recreational resources and related economy, conducting and public outreach, amongst others. The three RSM Plans proposed herein represent partial implementation of CSMWs SMP.

  Restoring our beaches preserves and enhances habitats for shorebirds and improves the invertebrate forage base used by these and other coastal biota (including fish). The proposed project therefore supports the Physical Processes and Habitat Structure area's *Goal* "*Significantly improve the quantity and quality of ocean and coastal habitat in California*".

- **Ocean and Coastal Ecosystems**
  Numerous economic studies have shown that California's beaches provide a significant contribution to California's economy through tourism. Maintaining coastal tourism by protecting and restoring beaches while preserving our coastal biota and habitat contributes to OPC Objective 5, *Encourage sustainable Economic Activity*, in the Strategic Plan's area of Ocean and Coastal Ecosystems. Restoring California's beaches preserves and enhances habitats for shorebirds and improves the invertebrate forage base used by these and other coastal biota (including fish), thereby contributing to Ocean and Coastal Ecosystems Area's Goal of "*Significantly increase healthy ocean and coastal wildlife populations and communities in California*".

- **Education and Outreach**
  In the area of Education and Outreach, Objective 1, *Public Awareness*, the proposed project includes a Public Outreach component specifically meant to increase public awareness of coastal issues. Enhancements to CSMWs website will also contribute to the OPCs envisioned "*comprehensive ocean and coastal web portal*".

Authorized Uses:

The US Army Corps of Engineers and the California Resources Agency have formally agreed to pursue regional solutions to sediment supply issues in California. The method to accomplish this is through development and implementation of the Sediment Master Plan. The proposed project represents implementation of the SMP, and, as such, meets the intent of Authorized Use #4

"Implementation of a federally-approved marine, coastal or comprehensive conservation management plan".

The Coastal RSM Plans are intended to help restore coastal sandy habitat that is being lost due to erosion. Improving the coastal habitat will increase the shorebird populations and the invertebrate forage base used by these and other coastal/marine biota, including fish. As such, the proposed project qualifies for Authorized Use #2, *"Mitigation of damage to fish, wildlife, or natural resources"*.

The Coastal RSM Plans, through identification of critically eroding coastal areas and potential sources of sediment that can be used to stem such erosion will result in "soft" solutions to protect threatened coastal infrastructure, restore recreational resources and public access to the coast, and help conserve a resource important to the coastal economy. Therefore, the proposed project also complies with Authorized Use # 1 *"Projects and activities for the conservation, protection, or restoration of coastal areas"*

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF FISH AND GAME

PROJECT TITLE: Ecosystem-based Monitoring and Research in Support of the Marine Life Protection Act and Marine Life Management Act- Remote Operated Vehicle (ROV) Deepwater Benthic Fish, Invertebrate, and Habitat Statewide Sampling

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Field work is in deep water (20 -100+ m) within MPAs and referenced fished areas state wide.
Duration:	2009-2011
Total Estimated Project Cost:	$2,106,147
Total CIAP Funds Requested	$1,914,669
Amount/Source of Match:	$191,541 CA Fish and Game Baseline Budget (General Fund, Fish and Game Preservation Fund)
CIAP Spending Estimate Per Year:	2009 – $638,202 2010 – $638,202 2011 – $638,202

Funding Category	2009*	2010*	2011*
Exploratory and Baseline sampling	$184,097	$160,757	$140,984
PSMFC Staffing for Data Analysis & Publication	$454,105	$477,445	$497,281
Yearly Total	$638,202	$638,202	$638,202
Grand Total	$1,914,606		

* Includes Department overhead/administrative costs. Dates are for California fiscal years 2008/2009, 2009/2010 and 2010/2011.

Project Background and Description

Project Purpose: California's ocean systems are in trouble, with species abundances, biodiversity, and habitat having suffered a long period of degradation. Many species have become so severely depleted that fishing restrictions have been implemented and others, such as the white abalone, have been listed as endangered. In response to concerns of stock collapse, the California Department of Fish and Game (Department) has implemented a series of Marine Reserves that are aimed at helping to protect and rebuild depleted marine populations. As new MPA networks are implemented, the Department is required to conduct an evaluation to assess the value and effectiveness they add to the state's marine ecosystems.

In an effort to meet these needs, the Department began developing ROV-based deep-water assessments in 1997 when our current ROV was obtained by the Pacific States Marine Fisheries Commission (PSMFC) using Sea Grant and Department funds. Since that time, strong partnerships have been formed focused on developing ROV capability statewide has been expanded to include collaborations in funding and operational support by NOAA (Channel Islands National Marine Sanctuary), Pacific State Marine Commission, Marine Applied Research and Exploration, The Nature Conservancy, The Ocean Protection Council, and others.

With this collaborative help, a model sampling program was established on the northern Channel Islands from 2003 to present. A network of five MPAs and five fished reference areas are now monitored quantitatively on an annual basis. This year the Department with new funding from the Ocean Protection Council has expanded from the northern Channel Islands region to the Central California region, where again a network of MPAs and reference areas are being added to the array of annual sampling. Four Central coast MPAs were sampled in 2007 and expanded to eight to ten sites (MPA and fished) in 2008. This will be further expanded in 2009, when we will begin to explore and quantify the north central MPA region in partnership with NOAA's Gulf of the Farallon National Parks service[1].

Ultimately the Department and our collaborators are committed to developing a statewide nearshore monitoring program that provides data for both fisheries management and MPA assessment. In order to expand to a statewide level, a consistent infrastructure is needed. With the funding requested, we would build a foundation from which a sustainable program will be developed.

Proposed Project: The Department plans over the next three years[2] to explore and expand a network of sampled areas along California's coast. Currently there is funding to support our efforts at the northern Channel Islands. Our objective is to use the proposed funding to continue the annual monitoring of the central region, while adding new MPA regions as they are implemented.

The timeline for planning and implementing baseline-exploratory surveys statewide (in conjunction with NOAA and other partners) assumes supplementary Department or partner support to continue annual surveys at the northern Channel Islands. This will allow the Department and PSMFC staff

[1] Point Reyes National Seashore was awarded $180,000 to supplement a three year Department effort for exploratory and baseline sampling of the north-central region MPAs during 2009-2011.

[2] The project has been reduced from four to three years due to CIAP funding cuts. The Department plans to seek alternate funding to continue this important project beyond 2011.

to expand to both select permanent sampling areas while quantifying baseline densities within MPAs and reference fished areas are as follows:

- 2009 –Northern Channel Islands and central MPA region, begin north-central region
- 2010 –Central and north-central MPA region
- 2011 – North central and begin southern region

At first, annual surveys will be conducted to collect baseline data both inside and outside the selected regional MPA networks. Exploratory surveys, combined with quantitative assessments will allow selection of sampling areas that provide the data for both MPA assessment and fisheries management. After baseline data collection, biannual surveys will be conducted to track changes in abundance and biodiversity.

During the funding period, we will develop and test new sampling protocols, expand quantification of invertebrates and finfish, increase data analysis and publications, and provide 25 additional days of field data collection. The program's purpose is both to address the questions related to MPAs (e.g. do they work, what are the baseline densities and effects on biodiversity) and give managers a tool for "data rich" ecosystem-based management for both benthic finfish and invertebrates of concern.

This program will focus on building the foundation for sustainable monitoring with DFG and PSMFC staff; completing baseline R&D; and implementing a GIS structured data-base with good metadata. By establishing a core PSMFC staff, we would be able to handle post processing, analyzing, and producing data reports for 15 sampling pairs (30 discrete areas) annually during and after the grant period.

Measurable Goals and Objectives

Project Goals:

1) MPA Assessment: Provide the information necessary to evaluate the effectiveness of MPAs in helping to rebuild stock abundances and increase biodiversity.

2) Fisheries Management: Provide crucial data needed for natural resource protection and the development of adaptive ecosystem-based management.

3) Staffing Infrastructure: Establish a core contracted PSMFC staff with the experience and training necessary to sustain a statewide sampling program.

Project Objectives:

1) Conduct baseline surveys within MPA regions: As implemented, we will provide archival video records and associated quantitative data from annual surveys to state, federal, and other funding collaborators. Analyze and report data for finfish and invertebrate abundance, size, associated habitat, distribution and species diversity in all areas sampled in our annual report.

2) Increase sampling: Provide the information necessary to evaluate the condition of nearshore marine life and current fisheries management. Over the three year period,

increases sampling (up to 10 sampling pairs [20 sites yearly] at multiple regions of the state) both inside and outside MPAs as new regions are implemented. Provide a practical and cost-effective approach to gathering the information needed to manage an extremely complex marine environment.

3) Hire and train staff for data collection and post processing: Under a three year contract, hire and train a PSMFC ROV supervisor to oversee field collections and data analysis, along with hiring a field and post processing data specialist, and two permanent technicians through PSMFC for data collection analysis and reporting [3](2009-2011).

Timetable and Deliverables

COMPLETED BY	DELIVERABLE
July 2009	Yearly DFG Administrative Report(s) for Channel Island and central MPA region - Analysis and report of data for finfish and invertebrate abundance, size[4], associated habitat, distribution and species diversity in all areas sampled in each region as an annual report. Draft report is completed and distributed to DFG reviewers and managers for 30-day period – Archival data distributed to collaborators summary on DFG web page
July 2009	Paper submitted for peer review in Ecological Applications of baseline analysis of deepwater finfish abundances on and off northern Channel Island MPAs from 2005 to 2007 (2008 may be included given sampling success) Channel Islands finfish abundances at 10 sites on and off MPAs by K. Karpov, M. Bergen, and A. Lauermann
September 2009	Yearly Administrative reports for Channel Islands and central MPA region is published and placed on DFG web page and for library distribution.
December 2010	GIS specific data flat files of abundance by species to be made available to interested agencies and scientists by site for each region sampled since 2005 at the minimal sampling unit size (25sq. m.)[5]
July 2010	Yearly DFG Administrative Report(s) for central and north-

[3] DFG currently supports several PSMFC staff on the ROV project. DFG also has an established program of department part time technicians trained in taxonomy that are now ready to transition to permanent PSMFC technicians once funding is secured . These staff are ideally suited to staff a sustainable program.

[4] Currently sizing protocols are being developed for finfish and may or may not be available for these publications depending on results. Macro invertebrates such as sea urchin and sea cucumbers will be sized.

[5] Once the Ecological Applications paper detailing methods is In Press the data flat files will be made available for interested researchers and agencies.

	central MPA region - Analysis and report of data for finfish and invertebrate abundance, size[6], associated habitat, distribution and species diversity in all areas sampled in each region as an annual report.
	Draft report is completed and distributed to DFG reviewers and managers for 30-day period – Archival data distributed to collaborators summary on DFG web page
September 2010	Yearly Administrative reports for central and north-central MPA region is published and placed on DFG web page and for library distribution.
July 2011	Yearly DFG Administrative Report(s) for north- central and southern MPA region - Analysis and report of data for finfish and invertebrate abundance, size[7], associated habitat, distribution and species diversity in all areas sampled in each region as an annual report.
	Draft report is completed and distributed to DFG reviewers and managers for 30-day period – Archival data distributed to collaborators summary on DFG web page
July 2011	Final project report and paper submitted for peer review in Ecological Applications of baseline analysis of deepwater finfish and invertebrates on and off the central California region for 2008 to 2009 at 8 to 10 sites on and off MPAs
September 2011	Yearly Administrative for north- central and southern MPA region is published and placed on DFG web page and for library distribution.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

Program Coordination: The Department, NOAA Fish and Wildlife and National Marine Fisheries service are working together to coordinate the development and implementation of a statewide fishery independent monitoring program. Program development of deep water ROV based MPA and fished area sampling are closely lined and supported through the Department, NOAA, NGOs and the Ocean Protection Council. Federal and state programs for deep water MPA monitoring share goals, data, and resources as outlined in this proposal.

A key example of our collaborative coordination is the planned MPA symposium this February of 2008 that provided the Fish and Game Commission and the public insight into the ongoing northern Channel Islands monitoring program. The results of our collaborative Northern Channel Islands sampling program were presented this meeting. These results were included in a report to the Fish and Game Commission in December 2008 with a follow up peer reviewed publication planned. Likewise the management implications to state and federally managed species of finfish

[6] Currently sizing protocols are being developed for finfish and may or may not be available for these publications depending on results. Macro invertebrates such as sea urchin and sea cucumbers will be sized.

[7] Currently sizing protocols are being developed for finfish and may or may not be available for these publications depending on results. Macro invertebrates such as sea urchin and sea cucumbers will be sized.

and invertebrates that are being monitored statewide both on and off MPAs are also important to joint Department, Pacific Marine Fisheries Commission, and NMFS management efforts.

Additional Federal Support: We have continued to procure cooperative funding from NOAA, Fish and Wild Life and others.

- Vessel Support: We have applied for and been granted yearly allotments of Federal research vessel time including 20+ days each year of NOAA RV Shearwater time on the northern Channel Islands. This year we were awarded 9 days of NOAA RV Fulmar time for work in Central California. Recognizing we needed more time, we requested and were granted $270,000 from the Ocean Protection Council to provide a leased fishing vessel the Donna Kathleen for 2008.
- General operations support: We are coordinating with Ben Becker of the Point Reyes National Seashore. He successfully obtained a federal grant of $180,000 to supplement a three year DFG effort for exploratory and baseline sampling of the north-central region MPAs during 2009-2011. He is also seeking RV Fulmar boat time to expand our boat support for the north Central region.

CALIFORNIA OCEAN PROTECTION COUNCIL

Research and Monitoring: This project will provide the tools to quantitatively assess and analyze the sustainability and biodiversity of previously unexplored deep-water ocean ecosystems. The resulting time series of data will improve our understanding of ocean and coastal ecosystems and will provide information needed to manage an extremely complex marine environment.

Physical Processes and Habitat: The project is focused on providing the infrastructure needed to support implementation of sustainable, statewide, quantitative monitoring of essential habitat, both inside MPAs and in similar fished areas. This monitoring will provide the basis for determining whether MPAs significantly improve the quantity and quality of coastal marine resources and habitats.

Ocean and Coastal Ecosystems: Much of California's marine wildlife is severely depleted and the health of our ocean is at risk. The data provided by this project will provide information needed to evaluate and implement actions that will increase the health of coastal wildlife populations and their ecosystems.

Education and Outreach: The project will promote ocean and coastal awareness and stewardship through web based publishing, public presentation of our results, and active participation in NOAA's "teachers-at-sea" program. Teachers participate as co-researchers in the field, ultimately bringing the research into their classrooms. In addition, underwater footage can be utilized in a variety of educational and outreach venues.

CONSISTENCY WITH AUTHORIZED CIAP USES

CIAP Authorized Use #1 -- Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands: This project provides quantitative, scientific support for an ecosystem approach to monitoring and management of California's nearshore resources as mandated by the Marine Life Management Act (FGC sections 7050(b) (1) and (99.5).

It provides tools needed for management to ensure quality analysis of coast wide monitoring of the health of nearshore marine life and resources near rocky reef habitat communities. Data collected will also aide in evaluating the effectiveness of Marine Protected Areas and provide needed data for adaptive management.

CIAP Authorized Use #4 -- Implementation of a federally-approved marine, coastal, or comprehensive conservation management plan: Currently, the Department of Fish and Game and other policy makers are facing a "data poor" environment due to the lack of fisheries-independent assessments. We will be providing information needed to evaluate MPA effectiveness and for adaptive management of finfish, invertebrates, algae and essential habitat. This fulfills the deep water assessments required under the Marine Life Protection Act. The same types of data are also required under the Marine Life Management Act, the Nearshore Fishery Management Plan, and the Abalone Recovery and Management Plan.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

DEPARTMENT OF FISH AND GAME

PROJECT TITLE: Marine Law Enforcement Enhancement

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Coastal Counties Statewide
Duration:	2009
Total Estimated Project Cost:	$1,100,000
Total CIAP Funds Requested	$1,000,000
Amount/Source of Match:	$100,000 CA Fish and Game Baseline Budget (General Fund)
CIAP Spending Estimate Per Year:	2009 – $1,000,000

Project Background and Description

Project Purpose: Department of Fish and Game wardens operate large ocean-going and smaller patrol boats. These vessels operate from nearshore environments out to 200 miles at sea. Wardens enforce state and federal marine laws, investigate fish and wildlife violations, perform search and rescue operations, respond to marine oil pollution incidents and assist with marine research operations. Wardens also conduct land based coastal patrols and conduct inspections of commercial fish businesses such as, wholesale and retail fish markets and fish processing facilities.

California is an extremely diverse state with extensive fish and wildlife within the marine environment. The state's marine habitats encompass the Pacific Ocean, tidal waters, estuaries, marshlands, bays, delta's and, for the many anadromous species, rivers.

California's human population is also extremely diverse. This diversity is reflected through various cultures and the legal and illegal use of California's natural resources. This includes, but is not limited to, traditional medicinal practices, traditional foods, the need to take or possess certain fish and wildlife species for status, aphrodisiacs and a basic desire to gain monetarily through illegal take and commercialization.

A legislative study in the mid 1990's revealed the black market profits from poached California Fish and Wildlife estimated to be over $100,000,000 annually. This was second only to the illegal drug

trade. The illegal take of fish and wildlife and habitat destruction are two of the most significant factors impacting fish and wildlife populations in California.

Marine species live a fragile existence, are slow-growing and limited in number. Examples of some of the species targeted for aggressive enforcement include but are not limited to: abalone, rockfish, invertebrates, and anadromous fish. Nearshore ecosystems demand constant oversight by enforcement in order to minimize negative outside impacts. These areas include tidal sloughs, intertidal zone, and nearshore marine 'nursery' areas that support spawning, rearing and growth of numerous species.

The consumer demand for seafood has not decreased; with a three-fold increase in California's population over the last 30 years, this demand has significantly increased. Marine species, including many marine invertebrates, that were not considered fit for human consumption five, ten or twenty years ago, now demand prices competitive with traditional high-dollar species such as salmon, halibut, lobster and swordfish. This trend is not likely to diminish.

In the last decade the situations described in the paragraphs above have only increased while enforcement effectiveness has been challenged due to declining numbers of enforcement personnel, increasing populations and budget constraints.

Compliance with statewide fishery regulations (including many specific legislative mandates such as the Marine Life Protection Act) is a critical component for successfully managing the marine environment on an ecosystem basis. Compliance issues such as poaching (illegal take of living resources) can significantly reduce the accuracy of scientific data collection that is used to determine conservation or preservation management efforts. Sufficient on-water boat patrol enforcement hours are needed to reduce these concerns and increase compliance and pubic understanding of these regulations. On-water patrols are critical since many of the management regulations in effect are spatial in orientation, that is, the regulations include water depths, longitude and latitude parameters and ocean area closures. Successful enforcement requires the ability to conduct scheduled patrols and be available for emergency calls 24/7. Funding is needed for existing large patrol boat modernization and for additional small patrol boats used by Wardens to conduct on-water marine law enforcement patrols in the nearshore fisheries. Current large patrol engines are now failing at a high rate and the engines need to be replaced. Replacement engines will allow the Department to increase patrol hours, public contacts and resultant criminal prosecutions related to marine fisheries regulation and habitat protection violations. This project will also significantly assist the Department in reducing its carbon foot print through the use of modern low emission, low fuel consumption diesel engines. Enforcement funds would be used to fund the purchase of ten new large patrol boat low emissions, low fuel consumption diesel engines and to purchase additional small patrol boats with modern, high efficiency four-stroke outboard motors, marine electronics and marine related patrol boat support equipment.

Proposed Project: This project would allow one time funding to provide marine fleet equipment. This includes new marine patrol boats, up-grade existing patrol boats, dockside support equipment for patrol boats and marine electronics (See Table 1). CIAP funds requested would allow for an increased enforcement of existing statutes and regulations.

Table 1: Marine Fleet Equipment Requested for the 2009 Calendar Year

Completed By	Deliverables	Cost	Cumulative Total
May 2009	10 diesel engines to re-power large patrol boats	$473,000	$473,000
May 2009	1 small nearshore patrol boats	$120,000	$593,000
May 2009	12 outboard engines to re-power small nearshore patrol boats	$169,000	$762,000
May 2009	Marine electronics	$165,000	$927,000
May 2009	Marine support equipment	$73,000	$1,000,000

Measurable Goals and Objectives

Project Goals:

1) Increase the number of hours that Department marine based patrol boats conduct on-water patrols.

2) Increase fishery related inspections.

3) Increase the number marine related public contacts.

4) Increase detection and apprehension of marine regulation violators.

Timetable and Deliverables

COMPLETED BY	DELIVERABLES
May 2009	10 diesel engines to re-power large patrol boats
May 2009	1 small nearshore patrol boat
May 2009	12 outboard engines to re-power small nearshore patrol boats
May 2009	Marine electronics
May 2009	Marine support equipment

The re-power of five DFG patrol boats will provide a significant boost to the amount of time spent conducting offshore patrol. The diesel engines in these patrol boats have been unreliable, and have caused several of our patrol boats to be out of service for up to a year due to engine failures. These new engines should increase offshore patrol efforts by as much as 20 percent if they prove more reliable than existing engines.

The 12 outboard engines will provide better reliability for existing boats. These motors should allow wardens as much as ten percent more time on the water conducting enforcement patrols rather than dealing with breakdowns from old outboard motors.

The replacement of a patrol boat will allow for continued patrol efforts in the near shore marine waters. Keeping good quality patrol boats available to our wardens is a key element in maintaining an effective enforcement presence in the marine environment. While this vessel may allow some additional time to be spent conducting patrol, it definitely provides a safe and reliable patrol platform for wardens to respond to all types of resource related issues.

The marine support equipment and marine electronics will help make wardens more efficient and effective in their enforcement efforts. The equipment will be a great help to wardens as they patrol offshore areas for resource violations. When violations are found, marine electronics are routinely used to help document vessel positions to assist in the prosecution of the case.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

Law enforcement of all fishery Federal regulations is a cooperative partnership between California Department of Fish and Game and the National Oceanographic and Atmospheric Administration Fisheries (NOAA Fisheries) through a multi-year Joint Enforcement Agreement (JEA) in which NOAA Fisheries provides partial funding to the Department for the enforcement and monitoring of federally managed fisheries through concurrent state and federal on-water boat patrols and coastal fish business inspections. The Department also has two cooperative enforcement agreements with the National Marine Sanctuaries in Monterey Bay and the Channel Islands. Funds are provided through an agreement with the Monterey Bay Sanctuary Foundation for concurrent state and federal on-water boat patrols in the national sanctuaries. The Department also coordinates cooperative enforcement efforts with the National Park Service which include coordinated law enforcement boat and air patrols around the Channel Islands. In addition the Department coordinates on-water law enforcement patrols with the United States Coast Guard in which the Coast Guard makes its patrol boats and aircraft available for Department peace officers to join in on joint patrols. The Department also responds to all marine pollution incidents in a joint Incident Command position with the Coast Guard. The United States Fish and Wildlife Service provides funding to the Department for coastal stream and river law enforcement patrols for anadromous fish species.

CALIFORNIA OCEAN PROTECTION COUNCIL

Goals and Objectives of the California Ocean Protection Council's Strategic Plan

<u>Goal A: Governance</u>

Objective 2: Interagency Collaboration.

As described in the 'Coordination with Other Federal Resources and Programs' section above. The Department's Law Enforcement Division has current and on-going joint enforcement agreements with two federal agencies for concurrent law enforcement patrols to enforce both state and federal regulations.
Objective 3: Enforcement.

This objective requires 'enforcement officials from one agency to be equipped with the skills and authority to enforce laws from agencies with similar fishery management responsibilities'. The Department, through its JEAs with Federal agencies, has received deputization and training from these agencies regarding federal fishery regulations.

In addition this objective requires 'relevant state agencies to develop necessary legislation…and regulations, or other tools to improve the enforcement of ocean and coastal protection laws'. The Department's Law Enforcement Division, working with the Legislative Office and the California Fish and Game Commission, conducts an annual review of the laws, rules and regulations concerning marine fisheries. This review includes requests to change, delete or add regulations to the Fish and Game Code and the California Code of Regulations, Title 14 to meet the changing needs for marine fishery and habitat protection.

The Department participates in the formation of fishery related regulations that govern fisheries in the federal EEZ zone 3-200 miles from shore, through the Pacific Fisheries Management Council (PFMC). The PFMC for California, Oregon and Washington was established as one of eight management councils in the United States through the Magnuson Fishery Conservation and Management Act of 1976. Regulations established as law through the Council process are enforced by the Department as part of the JEA.

This project addresses the legislative mandates of the California Fish and Game Code and the California Code of Regulations, Title 14 related to marine fisheries, the Marine Life Protection Act (MLPA; Stats. 1999 Chapter 1015) which requires effective management and enforcement, the Marine Managed Areas Act (Stats. 2000, Chapter 385) which represents the Legislature's intent to protect the ocean environment and the California Ocean Protection Act (COPA) (Stats. 2004, Chapter 719) the purpose of which is to coordinate the activities of state agencies to ensure the protection of coastal ecosystems.

Objective 4: Ecosystem Based Management.

This objective requires that 'Ecosystem Based Management (EBM), an integrated approach that considers the entire ecosystem, including humans'. 'The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive, and resilient condition so that it can provide the services humans want and need'. Law enforcement deals directly with the human component of EBM. On-water and coast-side patrols involve contacting persons that legally and illegally impact the marine ecosystem. Commercial and sport vessels are boarded and inspected at sea to ensure compliance with all the laws, rules and regulations that protect marine ecosystems. Illegal activity is detected and violators are apprehended and prosecuted to limit the destruction to the marine environment that results from illegal commercial and sport take and through marine pollution incidents. On-water patrols are a critical component of successful marine law enforcement.

<u>Goal B: Research and Monitoring</u>

Objective 1 and 2: Research and Monitoring

'Solving complex ocean resource problems will require a better scientific understanding of the underlying functioning of ocean and coastal ecosystems'. This objective requires coordination in the collection of scientific data.

Illegal activity not only directly damages marine species and habitats, but reduces the effectiveness of other management activities, such as, accurate data collection that is used to develop laws, rules and regulations governing fishing and other marine related activities. Increased law enforcement activity through additional on-water and coast side patrols, inspections and prosecutions increases the effectiveness of scientific data collection resulting in the increased success of management efforts related to research and monitoring.

Law enforcement patrol boat use is coordinated with Department and Federal agency scientific staffs to provide platforms for scientific research, including monitoring and data collection activities. Department patrol boat scientific support includes transporting and deploying remote operating vessels (ROVs), providing support for diving operations, assisting scientific staff with data collection on such activities as sea otter, abalone and sea bird counts and numerous other research based programs.

Goal C: Ocean and Coastal Water Quality

Objective 1: Enforce Pollution Controls

'COPA states that "terrestrial sources of ocean pollution in the State contribute to significant water quality degradation, causing deleterious impacts to public health and marine ecosystems…" 'To reduce pollution, we must improve the way California enforces water quality laws".

The Department has an Oil Spill Prevention and Response unit. Department law enforcement officers compromise the enforcement portion of this unit. This unit depends on all law enforcement patrol boats for the prevention, detection and clean-up of not only marine oil spills, but any water pollution incident in the ocean and coastal streams and rivers. Once e again on-water, patrol boat based, patrols are critical to enforcing pollution control laws.

CONSISTENCY WITH AUTHORIZED CIAP USES

CIAP Authorized Use #1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands*: Enforcement of marine regulations to ensure that marine management goals of Department and the legislative mandates of the MLPA, MLMA, and other laws and regulations are met. These include the protection of natural diversity, marine life, and the structure and function of marine ecosystems, including the conservation of marine populations, and protection of marine life habitats. Thus, the proposed law enforcement activities will provide direct protection of marine ecosystems including the California coastline.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

COASTAL COMMISSION

PROJECT TITLE: Coastal Resource Maps and Associated Publications and Products
(Including: maps for a guidebook to the Southern California coast -fourth and final in a series; production of a brochure-style map of public coastal accessways in Malibu; website with text and maps of the approximately 1,500 public accessways along California's coast; and, producing maps for the California Coastal Atlas, a large-format book.

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Statewide
Duration:	2008-2011 (Note: project has been initiated)
Total Estimated Project Cost:	$700,000
Total CIAP Funds Requested	$560,000
Amount/Source of Match:	$140,000 Coastal Commission baseline budget (California General Fund)
CIAP Spending Estimate Per Year:	2009 – $333,910 2010 – $160,900 2011 – $65,190

Project Background and Description

The project consists of completing a statewide set of detailed maps of coastal accessways and coastal resources for publication in a variety of formats, to inform and educate the public about the California coast. There are four components to the project, and the first component has two parts. Completion of the four project components will require several subtasks that will be coordinated and completed by Commission staff, including: (1) overall project management by the editor, (2) development and final preparation of maps by cartographers, (3) writing, editing and final preparation of text by the editor and other Commission staff writers, (4) art and photo selection, overall design and layout, and art and photo research by the graphic designer, and (5) the creation of the webpage to include maps and accompanying text by the Commission's webmaster, working with the editor.

Component 1A: GIS-Based Coastal Maps and Printed Guidebook for Southern California coast

The first component of this project is the preparation of approximately 50 detailed shaded relief maps using the Commission's Geographic Information System for Los Angeles, Orange, and San Diego Counties, to include: all coastal public accessways, the California Coastal Trail, parks and recreation areas, key bicycle routes, nearshore bathymetry, and other coastal and ocean features on a shaded relief base. The maps will be used in a printed guidebook to the Southern California coast.

Component 1B: GIS-Based Coastal Maps and Printed Guidebook to North Central California Coast

This component of the project is the preparation of approximately 50 detailed shaded relief maps to complete the Commission's statewide maps, followed by preparation of a fourth – and final of the series - guidebook to the California coast.

Component 2: Folding Map of Coastal Accessways in Malibu

Using the coastal access maps created in Component 1, a brochure-style map of public coastal accessways in Malibu in Los Angeles County will be prepared and printed, modeled on an Orange County public access map prepared previously under another funding source.

Component 3: Web-based Guide to California Coastal Access

A website will be created with descriptive text and accompanying maps describing all of the approximately 1,500 accessways accessible to the public along California's ocean coast. The coastal access maps previously prepared for the four printed guidebooks will serve as a source for this website. Web-ready digital files will be created that ensure high accessibility and ease of use.

Component 4: California Coastal Atlas

This component consists of preparation of maps for the California Coastal Atlas, a limited-edition, hardbound, portfolio-sized book containing maps of California's coast and ocean, using maps already prepared for the regional guidebooks, along with additional new maps of natural and other coastal resources. The California Coastal Atlas will be a large-format book, and will contain text that describes the resources of the coast and ocean, much like the California Coastal Resource Guide, but with color photos and updated information. This component will include research and preparation of maps, while subsequent production of text, design of the book, and publication will depend on additional funding.

Measurable Goals and Objectives

2009 Preparation of approximately 50 new shaded-relief maps showing coastal accessways, parks, and other features in Los Angeles, Orange, and San Diego Counties (Component 1A)

Publication of the guidebook to Los Angeles, Orange, and San Diego Counties (Component 1A)

Publication of folding Malibu Access Map (Component 2)

Preparation of approximately 50 new shaded-relief maps for the remaining portions of the California coast, not already included in a previous regional guidebook (Component 1B)

2010 Publication of the guidebook to Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties (Component 1B)

2011 Creation of California Coastal Access website (Component 3)

Preparation of maps to be published subsequently in the California Coastal Atlas (Component 4)

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

As a federally-approved Coastal Management Program, the California Coastal Commission receives funding each year through NOAA's Office of Ocean and Coastal Resource Management (OCRM), as authorized through the Coastal Zone Management Act (CZMA). Funding is appropriated each year by Congress, and the Coastal Commission (in coordination with the San Francisco Bay Conservation and Development Commission and the California State Coastal Conservancy) submits a grant application for its share of the appropriation. The table below indicates total amounts allocated to the Commission in the last several years.

YEAR	CZMA Section 306*	CZMA Section 309	CZMA Section 310	TOTAL
2008	$1,770,300	$411,000	$58,000	$2,239,300
2007	$1,770,300	$411,000	$0	$2,181,300
2006	$1,872,000	$411,000	$154,000	$2,437,000
2005	$1,764,000	$415,000	$163,000	$2,342,000
2004	$1,764,000	$415,000	$163,000	$2,342,000
2003	$1,836,000	$415,000	$470,000	$2,721,000

** requires a state match*

While the Commission is diligent about seeking additional funding opportunities from NOAA and other federal agencies, no other sources for funding this project have been identified or applied for.

CALIFORNIA OCEAN PROTECTION COUNCIL

This project addresses several goals and objectives of the Ocean Protection Council's Strategic Plan, in particular Goal F that encourages public education.

Goal F—Education and Outreach: Promote ocean and coastal awareness and stewardship. Objective 1—Public Awareness: Increase public awareness of ocean and coastal issues and encourage individual stewardship.

The maps and other materials will enhance awareness of coastal resources by building on public interest in visiting beaches and other coastal areas for sightseeing and recreation with user-friendly and practical information about public access to the coast; short articles about coastal environments and habitats; illustrated descriptions of hundreds of key plants and animals; and articles and box features focusing on geology, shoreline processes, historic points of interest, Native American culture, and other topics.

The California Coastal Atlas will be a large-format, hard-bound book that will include more detailed information about ocean and coastal resources. Finally, the Coastal Access website will bring information about all of California's coastal accessways to everyone with web access, without cost. The Coastal Access website will have the capability of being updated regularly in the future and will provide an opportunity for drawing website visitors into learning more by providing appropriate web links and information.

Goal D—Physical Processes and Habitat Structure: Significantly improve the quantity and quality of ocean and coastal habitat in California.
Objective 1—Habitat Restoration: Restore and maintain valuable ocean and coastal habitats and resources.

Although the main purpose of the maps, guidebooks, and related components is to direct coastal visitors to their destinations and educate them about the importance of resources, the net effect of doing so can assist in long-term efforts to restore ocean and coastal habitats. The guidebooks include brief descriptions of habitat restoration efforts that have occurred or are planned to occur at various sites. The agencies or nonprofit entities that undertake restoration are named, and visitors are encouraged to look for the benefits of restored ecosystems. The goal of including this sort of information is to enhance the public's awareness of habitat restoration efforts, the responsibility of managing entities to undertake those efforts, the need for adequate funding to do so, and the positive outcomes that result. Future restoration efforts depend on continuing public support, and the guidebooks are intended to assist readers in seeing the value of such efforts.

Goal E—Ocean and Coastal Ecosystems: Significantly increase healthy ocean and coastal wildlife populations and communities in California.
Objective 5—Encourage Sustainable Economic Activity: Encourage emerging coastal and ocean activities that will provide new economic opportunities for the State, can be conducted in a sustainable manner, and are consistent with the goals and objectives of the California Ocean Protection Act.

The theme of the maps, guidebooks, and other components is to encourage visitors to explore a variety of experiences that can be had along the California coast, including on and in the ocean, and to perhaps try something new or to explore an area of the coast that is new to the visitor. Sustainable, non-consumptive activities, such as touring, sightseeing, hiking, wildlife-viewing, photography, ocean and coastal kayaking, and exploring are encouraged by the guidebooks and other products.

CONSISTENCY WITH AUTHORIZED CIAP USES

Authorized Use 1: Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands. A fundamental element in the successful conservation, protection, and restoration of coastal resources is the participation of an informed public. Without public knowledge about the values of wetlands, environmentally sensitive habitat areas, marine resources, coastal water quality, and other coastal resources, the long-term protection of coastal areas will not be achieved. Public education about coastal resources is therefore an essential component of conserving, protecting, and restoring coastal areas, including wetlands.

This project seeks to develop a wide appreciation among Californians and others for the significant resources of the California coast. The maps, guidebooks, website, and other materials that this

project will create are intended to expand public knowledge and understanding of coastal resources, as well as the threats that those resources face in a changing world, and the means by which those resources can be conserved, protected, and restored.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

COASTAL COMMISSION

PROJECT TITLE: Coastal Water Quality Technical Transfer

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	All California Coastal Counties
Duration:	2009-2011
Total Estimated Project Cost:	$700,000
Total CIAP Funds Requested	$525,000
Amount/Source of Match:	$175,000 Coastal Commission Baseline Budget (California General Fund)
CIAP Spending Estimate Per Year:	2009 – $250,000 2010 – $195,000 2011 – $80,000

Project Background and Description

This project is a partnership between the California Coastal Commission (Commission) and the California Ocean Protection Council (OPC) to improve coastal water quality by providing information to inform better land use decisions, especially at the local level, where those decisions are primarily made. The OPC Strategic Plan identified protection of coastal water quality and the implementation of innovative techniques, such as low impact development (LID), as priorities. The Coastal Commission has implemented California's federally approved Coastal Nonpoint Source (NPS) program since 2000.

Given that technical and policy aspects of NPS pollution control are continually evolving, it can be difficult for state and local agencies regulating water quality to assess the effectiveness of their requirements or to keep up with the development of new tools that can improve land use decisions and regulation that impact water quality. In order to ensure land use decisions are effectively protecting water quality, it is essential that the best technical information is made readily available to decision-makers, regulatory agencies and developers. If it is easily accessible and applicable, local governments and state regulators will better understand and more likely use that information to update water quality policies, ordinances, and permits to minimize the impacts of polluted runoff on coastal water quality.

Working closely with OPC staff, Commission staff will design and conduct a series of workshops addressing the impacts of land use on coastal water quality, specifically for state and local agency land use planners, decision-makers and permit writers, design professionals, developers and public works staff.

In the course of this project, the Commission will also invite the participation of the NOAA Coastal Services Center, the National Estuarine Research Reserves in San Francisco Bay and Elkhorn Slough, the Water Quality Protection Program of the Monterey Bay National Marine Sanctuary, and U.S. EPA Region 9 Water Division, among others, as appropriate.

This project will enhance Commission water quality staff efforts to document applications of best management practices (BMPs) and LID techniques in the coastal zone and to summarize studies of BMP effectiveness. It will also enable staff to continue working with other organizations that are gathering this information in other parts of the state (e.g., San Francisco Estuary Institute and the UC Davis Center for Water and Land Use). In consultation with these groups, Commission staff will develop workshop presentations that inform state and local agency land use planners, decision-makers and permit writers, design professionals, developers and public works staff about how to better predict the water quality impacts of their decisions, to implement necessary management measures, and to adopt enforceable policies and regulations, where necessary.

Measurable Goals and Objectives

The goals of this project are to compile and provide useful information to the targeted audience (state and local agency land use planners, decision-makers and permit writers, design professionals, developers and public works staff) to effectively encourage and facilitate land use decisions, policies and practices that can significantly contribute to reducing the impacts of coastal development on water quality along the California coast. That goal will be achieved through the following objectives:

Objective 1 Identify and convene a steering committee of state agency and coastal watershed practitioners who will provide guidance on the design and evaluation of BMP/LID and coastal watershed assessment workshops. Conduct a needs assessment if recommended by the steering committee.

Objective 2: Work with Commission staff to document the use of BMPs, management measures, and any associated water quality assessment information in coastal development projects completed during the last seven years, distilling the information into a lessons learned format appropriate for state and local agency land use planners, decision-makers and permit writers, design professionals, developers and public works staff.

Objective 3: Design and conduct internal staff presentations and feedback sessions on Water Quality Aspects of Coastal Development at Commission district offices, inviting staff of the OPC, State Coastal Conservancy and San Francisco Bay Conservation and Development Commission staff to attend.

Objective 4: Design, publicize and conduct at least four Water Quality Aspects of Coastal Development workshops for local agency planners, developers and interested public in coastal communities. Workshops will provide an overview of recent information on BMP applications and LID techniques, information about how both can be used to reduce the impacts of coastal development on water quality, and how to use these

tools as part of effective water quality programs to meet the specific needs of the local coastal watershed.

Objective 5: Design, publicize, and conduct at least four Coastal Watershed Assessment workshops for local agencies, developers and interested public in coastal communities. Workshops will describe how to assess the sources of NPS pollution, identify the resources to be protected, and evaluate the management measures (policies, ordinances, etc.) that already exist or may be necessary to protect the watershed.

Objective 6: Design and conduct internal staff presentations and feedback sessions for Coastal Commission staff focusing on information and feedback from the previous workshops and input from the steering committee. Potential topics may include watershed assessment tools for coastal planners (e.g., impervious surface analysis, watershed mapping, web-based learning, and wetland habitat assessment) to show the impacts of full build out under current planning scenarios.

Note: If additional CIAP funding is available (for example, if redirected from other projects that for some reason cannot be completed as planned), the following goals would be pursued:

Objective 7: Commission staff conducts an informal survey of a cross section of workshop attendees to assess to what extent the information from the workshops has been used successfully and then prepares a brief report to the Steering Committee on the survey.

Objective 8: Steering Committee is convened to review the survey report and review and evaluate the workshops to provide Commission staff with guidance on next steps

Timeline for Specific Deliverables

COMPLETED BY	DELIVERABLES
2 months after contract approval	Identification and initial meeting of project steering committee occurs; initial Water Quality Aspects of Coastal Development workshop topics, audience and speakers are identified; and steering committee provides direction on additional work to design the workshops for state staff, local agencies, developers and watershed groups.
4 months after contract approval	Dates, speakers and agendas for the Water Quality Aspects of Coastal Development workshop are finalized
10 months after contract approval	Internal state agency (CCC, OPC, CSCC, BCDC) presentations and feedback sessions on Water Quality Aspects of Coastal Development occur
18 months after contract approval	Water Quality Aspects of Coastal Development public workshops are initiated and completed.
22 months after contract approval	Steering Committee completes review of completed workshops and Commission staff develops proposal for Coastal Watershed Assessment workshops

24 months after contract approval	Dates, speakers and agendas for Coastal Watershed Assessment workshops are finalized and a summary of the information from the Water Quality Aspects of Coastal Development workshops is available
30 months after contract approval	Coastal Watershed Assessment public workshops are initiated and completed
34 months after contract approval	Steering Committee completes review of Coastal Watershed Assessment workshops and Commission staff develops proposal for workshops summarizing lessons learned from the public workshops for CCC planners.
38 months after contract approval	Dates, speakers and agendas for staff workshop are finalized
40 months after contact approval	Internal staff presentations and feedback sessions occur

NOTE: If additional CIAP funding becomes available additional work that could be added to the project scope includes: additional outreach and reporting of workshop materials and results on public websites, more comprehensive internal workshops including multiple state agencies and the following work in the support of Objectives 7 and 8 above:

DELIVERABLES
Commission staff develops questions for a survey of workshop attendees; Commission staff contacts a cross section of attendees from each workshop to conduct the survey
Results from the survey are compiled and provided to the Steering Committee
Steering committee meets with Commission staff to discuss survey results, evaluate the workshop, and identify next steps

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

Commission staff will coordinate with a number of state and federal agencies in the development and implementation of this project. At a minimum, Commission staff will coordinate and work closely with the NOAA Coastal Services Center, the National Estuarine Research Reserves in San Francisco Bay and Elkhorn Slough, the Water Quality Protection Program of the Monterey Bay National Marine Sanctuary, and U.S. EPA Region 9 Water Division, among others in the project.

As a federally-approved Coastal Management Program, the California Coastal Commission receives funding each year through NOAA's Office of Ocean and Coastal Resource Management (OCRM), as authorized through the Coastal Zone Management Act (CZMA). Funding is appropriated each year by Congress, and the Coastal Commission (in coordination with the San Francisco Bay Conservation and Development Commission and the California State Coastal Conservancy) submits a grant application for its share of the appropriation. The table below indicates total amounts allocated to the Commission in the last several years.

YEAR	CZMA Section 306*	CZMA Section 309	CZMA Section 310	TOTAL
2008	$1,770,300	$411,000	$58,000	$2,239,300
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2004	$1,764,000	$415,000	$163,000	$2,342,000
2003	$1,836,000	$415,000	$470,000	$2,721,000

** requires a state match*

CALIFORNIA OCEAN PROTECTION COUNCIL

Governance Goal

A fundamental concept of COPA is that controls on land uses are required to protect coastal water quality. There is a gap in the knowledge of most land use planners and decision-makers about the priority of various sources of pollution in coastal watersheds, the types of controls that are most effective and the degree of impacts on water quality of full build out of existing land use plans. These workshops will be designed to fill these gaps so that planning staff and elected officials will understand the affects of their decisions on coastal water quality.

Ocean and Coastal Water Quality Goal

A missing element in our ability to protect coastal water quality from the impacts of watershed development is information for planners and decision-makers on how to understand and promote good watershed assessments and how to condition projects with effective BMPs, including LID techniques. And while other state agencies have the authority to control the quality of identified discharges, they do not have the experience or authority to regulate land uses in ways that can control nonpoint sources of pollution. By educating land use planning staff and decision-makers at both the state and local level on the effectiveness of current water quality and land use controls, more effective coordination and water quality protections will result. Additionally, special attention will be paid to the role of coordinating land use planning and water quality protection with local and regional habitat and floodplain restoration and protection efforts. For example, since restored wetlands play such an important role in improving water quality, time will be dedicated in the workshops to ensure that participants are well-informed of current methods for evaluating mitigation and restoration success (e.g., the California Rapid Assessment Method for wetlands).

Education and Outreach Goal

The workshops developed by this proposal will be designed for state and local agency staff because they are the primary state mechanism for communicating the requirements for water pollution controls, and the basis for those requirements, to the public. In addition, representatives of the other stakeholders groups (landowners, developers, environmental organizations) will be included in the workshops.

CONSISTENCY WITH AUTHORIZED CIAP USES

This proposal is consistent with **Authorized Use 1 – "Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands"**- in that its assessments of the effectiveness of BMPs for coastal developments and workshop presentations will enable land use decision-makers, planners, and developers to better predict the water quality

impacts and to implement the necessary management measures, enforceable policies, and regulations that will support more effective conservation, protection, and restoration of coastal areas, including wetlands. This effort will ensure both state and local agency planners better understand the effects of land use decisions on coastal water quality so that they can effectively enhance conservation, protection, and restoration of coastal areas. (Note: authorized use #1 is the primary authorized use.)

This proposal is also consistent with **Authorized Use 2 – "Mitigation of damage to fish, wildlife or natural resources" –** as it will train state and local agency staff how to more effectively conduct or oversee appropriate watershed assessments and require BMPs that have been shown to be effective under the conditions of California watersheds in order to avoid or minimize damage to fish, wildlife, and natural resources and inform mitigation requirements if required.

Lastly, this proposal is consistent with **Authorized Use 4 – "Implementation of a federally-approved marine, coastal or comprehensive conservation management plan" –** because it will directly and indirectly enhance the implementation of the California Nonpoint Source Plan.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

COASTAL COMMISSION

PROJECT TITLE: *"Climate Change and the California Coastal Act – Rising to the Challenge - A Guide to Addressing Coastal Act Issues" ("Guide")*

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Statewide
Duration:	2009-2011
Total Estimated Project Cost:	$ 520,000
Total CIAP Funds Requested	$ 420,000
Amount/Source of Match:	$ 100,000 Coastal Commission Baseline Budget (California General Fund)
CIAP Spending Estimate Per Year:	2009 – $250,000 2010 – $150,000 2011 - $20,000

Project Background and Desription

This purpose of this project is to provide Coastal Commission staff, local governments, and other interested parties with a resource to help them better understand how the Coastal Commission – in exercising its authorities under the Coastal Act – considers the issue of global climate change in the decisions it makes regarding development within the Coastal Zone, using specific Local Coastal Plan updates and amendments and other projects as case studies.

"Climate Change and the California Coastal Act – Rising to the Challenge - A Guide to Addressing Coastal Act Issues" ("Guide") will be compiled with a strong emphasis on a review of relevant research and collaboration with other state agencies and local governments that are also developing policies relative to climate change to ensure the information is accurate and will be of high value and user-friendly for its primary users: Coastal Commission staff and local government planners and decision makers. Commission staff will focus initially on LCPs that are or will soon be undergoing updates and amendments, using them as the real-life case studies that will help to illustrate how information on global climate change will be considered and incorporated into recommendations to local government LCPs.
The "Guide" will be an online resource modeled after "Updating the Local Coastal Program (LCP) – A Place to Start," which will use a combination of existing information, strategies, and lessons learned from other similar projects as well as new guidance developed specifically for this project.

What will make this project unique is that it will compile, incorporate, and interpret the best information available specifically as it relates to the California Coastal Act and the implementation of Coastal Act policies.

Coastal management practitioners from around the country agree that global climate change will have far-reaching and long-term adverse impacts on coastal areas and resources, including the California coastline and the coastal resources protected by the California Coastal Act. Californians are also increasingly concerned generally about the impacts of climate change – particularly more severe droughts, increased air pollution, and increased flooding, in that order. [8]

The Coastal Commission, coastal cities and counties, and other state and federal agencies with authorities within the state's coastal areas are grappling with how to best prepare for the expected impacts of global climate change. Those impacts, which are likely to include sea level rise, increased storm frequency and intensity, and coastal erosion and flooding, could pose devastating consequences to coastal and marine habitats, wetlands, and water quality; expensive disruptions or long-term damage to coastal recreation, commercial and residential developments; and the inundation of public facilities and infrastructure, including highways, bridges, airports, commercial harbors, ports, and water treatment and wastewater facilities. The economic impacts could be breathtaking, when considering that a National Ocean Economics Program study in 2005 valued California's "ocean economy" at $43 billion (although more recent reports put it even higher).[9]

Efforts to implement mitigation and adaptation strategies to address global warming and climate change are in varying stages within and among local jurisdictions within California's coastal zone and State agencies, and the Guide will be help to provide information about, and complement and augment, those efforts as they evolve.

The dynamic nature of the information available about global climate change can be overwhelming to coastal planners and managers and other policy makers. The scientific community warns that even immediate and decisive policies to dramatically reduce the greenhouse gases contributing to global climate change may not prevent or significantly reduce the dramatic and adverse impacts in coming decades. While the information and predictions are constantly evolving as new research and analyses emerge, the Coastal Commission can neither ignore the growing body of information about how global climate change will affect coastal resources, nor wait for some final consensus before coordinating with local governments and others on ways to: 1) calculate and reduce greenhouse gas emissions from new development within the Coastal Zone; 2) identify strategies to mitigate the impacts of climate change on Coastal Act resources; and, 3) identify adaptation strategies for coastal communities.

When Dr. Susanne Moser and John Tribbia surveyed California county and city government employees who have some role in coastal management activities, they concluded "California is inadequately preparing for the impacts of climate change on coastal areas at this time. Local governments will need substantial support from state and federal agencies if the level of preparedness for climate change and other inundation-related risks is to be elevated in the future." They noted that:

[8] Public Policy Institute of California, "Californians & the Environment," July 2007, pg. 10.
[9] "*A Vision for Our Ocean and Coast - Five year Strategic Plan*," The California Ocean Protection Council, 2006, pg. 8.

> *"… local coastal managers would benefit from regular doses of relevant and accessible information on the latest climate change science, especially that relevant to coastal areas.….. Consistent with the priorities of California's Ocean and Coastal Protection Council's Strategic Plan, this research—through its exploration of managers' understanding and expectations of global warming impacts and their perceptions of action hurdles—also suggests that there is a need to improve not only managers' and the public's awareness, but maybe, more importantly, their deeper understanding of climate change impacts on coastal communities."*[10]

The Coastal Commission has made it a priority to better understand and closely examine the expected impacts of climate change, specifically in relationship to the likely affects, direct and indirect, on Coastal Act resources. To that end, Commission staff presented the first in a series of global climate change workshops for the Coastal Commission at its December 2006 meeting. Additionally, the Climate Change Task Force (CCTF) - an internal working group comprising staff from a cross-section of divisions, including: planning, enforcement, public education, management, water quality, federal consistency, technical services, and legal, - was formed in May 2007. The CCTF has been meeting almost weekly and several subcommittees have been formed to more closely examine several topics, in relation to global climate change and the Coastal Act, including: adaptation, green building, local governments and LCPs, smart growth, public education and information, interagency coordination, carbon footprint scoring systems, and carbon offsets/cap and trade/sequestration.

The overarching purpose of the CCTF and its subcommittees is to gain the knowledge necessary to advise and update Commission staff, the Commission, local governments and others on global climate change science and research; the opportunities for multi-jurisdictional cooperation in responding to and preparing for its impacts; and how the Commission's authorities under the Coastal Act may be exercised to minimize the adverse impacts over time on the resources specifically protected by the Coastal Act.

At the December 2006 Commission workshop, the Commission heard presentations by former Assembly Member Fran Pavley on AB 1493 and AB 32, by Dr. Jim Barry on marine resource impacts from climate change, and by Dr. Moser on local government awareness and responses to climate change. At this writing the CCTF is developing workshop topics and speakers for future Commission meetings.

In addition to those activities, Commission staff participates with representatives from other Resource Agency departments in conference calls facilitated by Deputy Secretary for Climate Change and Energy Tony Brunello and also on the Coastal States Organization Climate Change Work Group, which in August 2007 released its final draft report titled "The Role of Coastal Zone Management Programs in Adaptation to Climate Change." The Commission also recently coordinated responses from the Commission, the San Francisco Bay Conservation and Development Commission, and the California State Coastal Conservancy to the Coastal States Organization's "***Climate Change Adaptation Planning & Resource Needs Survey."***

The data, rationale, and findings used for each strategy incorporated into the Guide will be clearly explained. Members of the CCTF will conduct surveys at available data to ensure the Commission is using the most up-to-date and scientifically defensible information.

[10] "*Vulnerability to Inundation and Climate Change Impacts in California: Coastal Managers Attitudes and Perceptions."* Marine Technology Society Journal, Vol. 40, No. 4, Winter 2006/2007.

Like the LCP guide, the Guide and all companion documents will be user-friendly and offer a variety of links to other resources for information on the full range of issues identified by the CCTF in the course of completing this project. One other element of this effort will be to coordinate with work other state agencies, local government planners, and others who have an interest in development within the Coastal Zone.

The Commission's proposal submitted to NOAA Coastal Services Center - *Climate Change and the California Coastal Act: Rising to the Challenge Planning and Partnering for Reduction, Mitigation and Adaptation* - was selected for the 2008 Coastal Management Fellowship Program, but unfortunately, the Fellow who was expected to start a two-year fellowship at the Commission in September 2008 has decided to pursue other opportunities. The Commission will be updated and resubmitting the proposal for next year's selection process, and we are hopeful that a NOAA Fellow will be joining the Commission in the Fall of 2009, who will be focused specifically on the issue of climate change. The revised proposal will be revised to ensure it would integrate well with and complement this project and that the Fellow's work will directly and significantly enhance the rate of progress, the results derived, and the utility of this project during that time.

Measurable Goals and Objectives

The goals of this project are for the CCTF (and other staff as needed) to evaluate and analyze relevant research and information about the impacts of climate change on coastal resources protected by the California Coastal Act; to evaluate existing techniques for calculating carbon footprints that will help determine the greenhouse gas emissions associated with development proposals before the Commission; and to develop the Guide that will be useful to Commission staff, local government planners, applicants and others (the general public and ratepayers; energy entrepreneurs, investors and analysts; and decision makers and policy makers at all levels of government).

Objective 1: Complete an assessment of research, literature, experts and other sources for relevant information to be used in compiling the "*Climate Change and the California Coastal Act – A Guide to Addressing Coastal Act Issues."*

Objective 2: Select specific LCPs that are scheduled for amendments and updates to be used as case studies in the Guide and identify staff who will work on tracking the processes to ensure relevant information is available for inclusion in the Guide.

Objective 3: The CCTF will assist in the development of the NOAA Fellow's workplan, including providing an orientation to the Commission, the CCTF and this project to ensure the timing and specific tasks support the successful completion of this CIAP project.

Objective 4: Form a CCTF ad hoc subcommittee that will develop an initial outline for the Guide, work with the NOAA Fellow on developing and compiling the Guide, review feedback on the Guide and make recommendations for a process for periodically updating the Guide

Objective 5: Information about the Guide is provided to staff at the Commission district offices, who will help to inform local government and other interested parties in each district about the Guide.

Timetable and Deliverables

COMPLETED BY	DELIVERABLES
June 2009	Information about of literature, experts and other sources of relevant information is compiled by the CCTF. Specific LCPS to be included as case studies are identified Internal draft *outline* for the Guide is completed and ready to circulate to staff for comments.
December 2009	The CCTF has provided an orientation on this project for the NOAA Fellow and a strategy for integrating this project with the Fellow's workplan has been developed and approved by the Fellow's supervising mentor. A subcommittee has been identified to work with the NOAA Fellow on developing the first draft of the Guide.
April 2010	Comments on the draft outline have been received and analyzed by the CCTF and NOAA Fellow. Preparation of the draft Guide begins.
June 2010	Draft of the Guide is completed by the NOAA Fellow and the CCTF subcommittee and circulated for review to the CCTF, a sampling of Commission staff from the district offices, and other end users selected as reviewers.
September 2010	Comments are received by the subcommittee and incorporated into the final version of the Guide, as appropriate.
December 2010	Final version of the Guide is completed and available on the Commission website, with some feedback loop available to solicit comments from end users of the Guide.
April 2011	CCTF and the NOAA Fellow complete a review of feedback on the Guide, evaluate how the Guide has been used by Commission staff and other end users and develop a process for updated the Guide with new information as it becomes available (new research, policies, strategies, LCP decisions, etc.)
Ongoing/ TBD	Revisions to the Guide are provided on the Commission website

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

As a federally-approved Coastal Management Program, the California Coastal Commission receives funding each year through NOAA's Office of Ocean and Coastal Resource Management (OCRM), as authorized through the Coastal Zone Management Act (CZMA). Funding is appropriated each year by Congress, and the Coastal Commission (in coordination with the San Francisco Bay Conservation and Development Commission and the California State Coastal Conservancy) submits a grant application for its share of the appropriation. The table below indicates total amounts allocated to the Commission in the last several years.

YEAR	CZMA Section 306*	CZMA Section 309	CZMA Section 310	TOTAL
2008	$1,770,300	$411,000	$58,000	$2,239,300
2007	$1,770,300	$411,000	$0	$2,181,300
2006	$1,872,000	$411,000	$154,000	$2,437,000
2005	$1,764,000	$415,000	$163,000	$2,342,000
2004	$1,764,000	$415,000	$163,000	$2,342,000
2003	$1,836,000	$415,000	$470,000	$2,721,000

** requires a state match*

While the Commission is diligent about seeking additional funding opportunities from NOAA and other federal agencies, no other sources for funding this project have been identified or applied for.

CALIFORNIA OCEAN PROTECTION COUNCIL

This project will support several of the goals and objectives of the California Ocean protection Council's Strategic Plan, including:

Governance Goal

Objective 2 - Interagency Collaboration - The project will encourage greater communication and sharing of information among Commission staff, other state agencies, local governments and others.

Objective 6 – Regional Coordination - Commission staff will contact other state's coastal management programs -including Oregon and Washington –about any innovative climate change policies they may already have in place. Commission staff will coordinate with OPC staff to maximize effective regional coordination.

Physical Processes and Habitat Structure *Goal*

Objective 3 – Understand Impacts of Climate Change - The project will facilitate greater interest in, understanding of, and communication about the impacts of climate change and sea level rise, among Commission staff, other state agency and local government staff, and others.

Ocean and Coastal Ecosystems Goal

Objective 5 – Encourage Sustainable Economic Activity - The project's focus on the impacts of climate change and land use decisions will help to effectively incorporate that information to inform decision makers about whether the long-term sustainability of certain coastal development and activities.

CONSISTENCY WITH CIAP AUTHORIZED USES

The major goal of the California Coastal Management Program (CCMP) is to protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and human-made resources. California employs a comprehensive coastal management program that is implemented through a coordinated process involving all appropriate governmental agencies and public participation. The California Coastal Act is the foundation of the federally approved California Coastal Management Program for the Pacific Ocean coast segment of the California coastal zone, and the Coastal Commission carries out the policies of the Act through its

planning and regulatory activities.

By providing information and raising awareness about the relationship between climate change, global warming and the protection of resources within the Coastal Zone, the guide will contribute to better-informed and more creative decisions, in the short-term, that ensure the long-term conservation and protection of coastal areas, including wetlands **(Authorized Use 1),** as well as the mitigation of damage to fish, wildlife and natural resources **(Authorized Use 2).** This project will also enhance and support the implementation of the federally-approved California Coastal Management Program **(Authorized Use 4).** (Note: authorized use #1 is the primary authorized use.)

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

COASTAL COMMISSION

PROJECT TITLE: *"Energy and Ocean-Based Projects and the California Coastal Act - Meeting the Challenge of Emerging Technologies, Including Alternative Energy, Liquefied Natural Gas, and Desalination*" – a Report to the Commission.

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	San Francisco
Duration:	2009-2010
Total Estimated Project Cost:	$275,000
Total CIAP Funding Requested:	$175,000
Amount and Source of Match	$100,000 from the California Commission Baseline Budget (California General Fund)
CIAP Spending Estimate Per Year:	2009 - $75,000 2010 - $100,000

Project Background and Description

The funding requested will enable Commission staff to research, analyze and compile information for the development of - *"Energy and Ocean-Based Projects and the California Coastal Act - Meeting the Challenge of Emerging Technologies, Including Alternative Energy, Liquefied Natural Gas, and Desalination*" - a report to the Commission. This report will provide information that will enable staff to more efficiently and effectively review the increasing number of energy and ocean-based projects – many which are technically complex and controversial - to ensure project consistency with the California Coastal Act and the state's federally-approved California Coastal Management Program (CCMP). The report will also be available to interested stakeholders via the Commission's website.

The California Coastal Commission's Energy and Ocean Resources Unit is responsible for reviewing projects involving emerging technologies which have major statewide and national significance. Many of these projects are also of great interest to a wide variety of stakeholders, among them: the general public and ratepayers; energy entrepreneurs, investors and analysts; and decision makers and policy makers at all levels of government.

The time and expertise required to adequately understand, review and process proposals for ocean-based energy projects, especially those projects using emerging technologies which have not before been analyzed by Commission staff, pose many challenges for staff and the

Commission, which is charged with balancing the conservation of - and mitigation for impacts to - resources protected by the California Coastal Act with the need for the public services associated with projects that may include:

- oil and gas production facilities
- liquefied natural gas (LNG) receiving terminals and re-gasification facilities
- alternative energy facilities (e.g., wave, wind and tidal power)
- desalination plants
- trans-pacific fiber optic cables
- oil and gas "decommissionings" (e.g., removal of platforms and associated infrastructure)
- oil spill response and remediation activities
- aquaculture
- energy-related Local Coastal Program (LCP) updates and amendments.

The Coastal Commission expects to receive numerous such proposals between 2008 and 2011. Many will be highly complex and/or have precedent-setting potential at the state and/or federal levels. It is likely that during that period the Commission will be asked to review and process proposals for:

- as many as three LNG terminals and re-gasification facilities
- 15 or more desalination facilities
- four or more oil and gas development proposals
- conversion of some existing coastal power plants from once-through cooling to alternative cooling
- multiple wave energy pilot projects and as many as three commercial-scale wave energy projects
- open ocean "fish farms"
- wind energy proposals

Because these projects and technologies are so technically complex and raise numerous and significant concerns regarding coastal resource protection and land use policies, applicants frequently request significant guidance from Commission staff even prior to submitting an application. Applicants may need guidance on specific Coastal Act policies; the scope of environmental information needed for a complete application (e.g., biological studies; geotechnical reports); and examples of past Commission decisions regarding the type of mitigation that may be required to offset unavoidable resource impacts associated with their project. This guidance and information can result in submission of more thorough applications, which in turn can expedite the processing of the project proposal. But providing such guidance requires not only a significant amount of staff time, but, in some cases, a large amount of research.

As these projects are developing, Commission staff may also receive multiple requests from other stakeholders who are interested in the specific land use and resource protection issues and procedures associated with these projects. Although some of this information may be available from a variety of sources (research findings, previous staff reports, other publications, etc.), it is rarely compiled and organized in any comprehensive form, making it difficult and extremely time consuming for staff to respond to those requests.

The Energy and Ocean Resource Unit staff now comprises only two analysts and may soon be impacted by layoffs resulting from anticipated budget cuts. Analysts each have a severe workload, making it almost impossible to find the time keep up with requests to meet with project applicants and other stakeholders interested in this information. If the projected cuts in the state budget become a reality, important and proactive projects such as this will not happen without some form of supplemental non-state funding from other sources, such as CIAP.

The report will provide specific information about the process used by the Commission to review major energy and ocean-based proposals (e.g., LNG; desalination and alternative energy); identification of Coastal Act issues raised by these project types; case studies of Commission decisions on such projects or projects that raise similar impacts; and analysis of the significant issues and Coastal Act policies considered by Commission staff in developing findings, mitigation strategies and other recommendations for the Commission. The report will be modeled in part after the 2003 draft "Seawater Desalination and the California Coastal Act" report.

Because the nature of these projects and emerging technologies is ever-changing, the report will need to be updated from time to time to reflect new information and emerging trends and additional case studies and Commission decisions. Having this initial report as a template will make those updates much easier to complete. The report will have many uses and provide many benefits, including:

- Enhancing the Coastal Commission's analysis and processing of new and complex proposals for potential impacts to ocean and coastal resources and the development of mitigation measures.
- Providing applicants and others with an interest in these types of emerging technologies and projects with an overview of the process under which their proposals will be scrutinized and analyzed.
- Helping the interested public and others to better understand the issues associated with these projects and the Commission's role in reviewing them for consistency with the California Coastal Act.
- Assisting local governments that are in the process of amending or updating their LCPs to better understand the issues earlier in the process.

Measurable Goals and Objectives

The goals of this project are to assemble and compile information about the variety of technically complex and often controversial energy and ocean-based projects that the Commission reviews to ensure consistency with the California Coastal Act into one comprehensive report which will be available to Commission staff and others (the general public and ratepayers; energy entrepreneurs, investors and analysts; and decision makers and policy makers at all levels of government); to design the report in such a way that it can be updated by Commission staff with new information as it becomes available; and to present that report to the Commission at a public workshop. Those goals will be achieved through the following objectives:

Objective 1: Develop a scope of work for of the project, to include identification of the types of proposals/projects, issues, emerging technologies, specific projects, and case studies to be included in the report.

Objective 2: Identify a cross section of end users who will review and comment on the draft report.

Objective 3: Complete a draft *"Energy and Ocean-Based Projects and the California Coastal Act - Meeting the Challenge of Emerging Technologies, Including Alternative Energy, Liquefied Natural Gas, and Desalination*" and develop a 60-day review process to solicit comments from a sampling of end users. Distribute the draft.

Objective 4: Review comments and revise the draft report, as needed, for presentation at a Commission public workshop.

Objective 5: Develop staff report and present final draft report at a Commission public workshop.(The report will then be available on the Commission website as part of the staff report, but a link to the report will also be included, where appropriate.)

Timeline for Deliverables

COMPLETED BY	DELIVERABLE
July 2009	Scope of work for the report is completed by Commission staff Individuals representing a cross section of end users who will review and comment on a draft report are identified and contacted
December 2009	Outline of draft report is completed by staff and distributed to reviewers for 60-day comment period
February 2010	Draft report is completed by staff and distributed to reviewers for 60-day comment period
June 2010	Comments received have been reviewed by staff and the report is revised in preparation for a workshop for the Commission. A workshop is scheduled for a Commission meeting sometime between October – December 2010 (to be determined based on sufficient time available on the Commission's agenda
To be determined once a date for the workshop has been decided	Completion of a staff report detailing the process involved in developing *"Energy and Ocean-Based Projects and the California Coastal Act - Meeting the Challenge of Emerging Technologies, Including Alternative Energy, Liquefied Natural Gas, and Desalination*" (Once this happens the report will be available on the Commission's website)

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

During the course of completing this project, Commission staff will be consulting frequently and by necessity with representatives from both the Minerals Management Service and the Federal Energy Regulatory Commission. The Commission will also encourage the participation of other federal programs, including the NOAA Coastal Services Center, the National Estuarine Research Reserves in San Francisco Bay and Elkhorn Slough, the National Marine Sanctuary Program, and U.S. EPA Region 9, among others, as appropriate.

As a federally-approved Coastal Management Program, the California Coastal Commission receives funding each year through NOAA's Office of Ocean and Coastal Resource Management (OCRM), as authorized through the Coastal Zone Management Act (CZMA). Funding is appropriated each year by Congress, and the Coastal Commission (in coordination with the San Francisco Bay Conservation and Development Commission and the California State Coastal Conservancy) submits a grant application for its share of the appropriation. The table below indicates total amounts allocated to the Commission in the last several years.

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2003	$1,836,000	$415,000	$470,000	$2,721,000

** requires a state match*

While the Commission is diligent about seeking additional funding opportunities from NOAA and other federal agencies, no other sources for funding this project have been identified or applied for.

CALIFORNIA OCEAN PROTECTION COUNCIL

The overarching objective of the OPC Strategic Plan is to protect and restore California's ocean and coastal resources. The report will useful to many stakeholders, including other government agencies. It will also provide information and analysis important to completion of many of the goals and objectives in the OPC Plan; including:

Governance Goal

Objective 2a.Inventory laws and identify gaps or overlaps between jurisdictions affecting priority ocean issues and *Objective 3a. Identify all ocean enforcement authorities, programs, and budgets, and convene a task force to provide recommendations to OPC on more efficient ways of conducting and coordinating enforcement, including integrating enforcement actions across agencies.*- This project may also indirectly support Objective 6a. (Adopt a tri-state agreement between California, Oregon, and Washington that focuses on initiatives by all three states to improve ocean and coastal management) as it will inform the information exchange between coastal managers in California and Oregon and Washington.

Research and Monitoring Goal

Objective 1. *Improve scientific understanding of our oceans and coastal ecosystems* - Included in the report will be information that can directly and indirectly inform the process and support OPC and others in achieving this objective.

Ocean and Coastal Water Quality Goal

Objective 1e. Support local governments in addressing land use planning issues affecting ocean and coastal water quality, including updating local coastal programs. - The report completed with this funding will be extremely helpful to local governments in understanding some of the issues they may be addressing as part of their LCP update process.

Objective 1f. *Prepare policy responses and address conflicts between state and federal authorities as necessary relating to offshore development proposals impacting ocean and coastal water quality. Review proposals for co-locating other offshore industries with existing offshore oil platforms and for decommissioning aging platforms to determine potential impacts to ocean and coastal resources.* - There will be many ways in which the information contained in these reports will support this objective.

Objective 3 Work to eliminate the harmful effects of once-through cooling at coastal power plants. - There will be many ways in which the information gathered and contained in this report will support and inform this objective.

CONSISTENCY WITH AUTHORIZED CIAP USES

Requested funds will cover staff time and expenses associated with the development of this report, which will be a tool to ensure comprehensive and coordinated management, conservation, and enhancement of California's ocean and coastal resources for their intrinsic value and for the benefit of current and future generations.

Specifically, the proposed work program is consistent with **CIAP Authorized Use 4 -- implementation of a federally-approved marine, coastal, or comprehensive conservation management plan.** The express purpose of the proposed work program is to assist the Coastal Commission in implementing fully California's federally-approved Coastal Management Program, whose enforceable policies include the Chapter 3 coastal resource protection and use policies of the California Coastal Act and the requirements of the Clean Air Act and Clean Water Act. Additionally, the proposed work program includes identification and implementation of mitigation measures that **conserve, protect and restore coastal areas consistent with CIAP Authorized Use 1, and mitigation of damage to fish, wildlife and other natural resources consistent with CIAP Authorized Use 2.**

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

STATE COASTAL CONSERVANCY

PROJECT TITLE: Invasive *Spartina* Control Program

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	1) The San Francisco Baylands and lower creek channels of the nine counties that bound the San Francisco Bay. 2) Humboldt Bay, Eel River Estuary, and Mad River Estuary, Humboldt County.
Duration:	January 2009 through December 2012
Total Estimated Project Cost:	$1,975,000
Total CIAP Funding Requested:	$950,000
Amount and Source of Match	$1,025,000 Coastal Conservancy
CIAP Spending Estimate Per Year:	2009 - $540,000 2010 - $210,000 2011 - $100,000 2012 - $100,000

The 2007 West Coast Governors' Agreement on Ocean Health Draft Action Plan calls for the west coast-wide eradication of invasive *Spartina* cordgrasses. The two projects described below are necessary to eradicate two of the largest populations of invasive *Spartina* on the coast of California: San Francisco Bay and the Humboldt Bay region.

Project Background and Description - San Francisco Bay

The goal of the project is to eradicate invasive *Spartina* and hybrids on a total of up to 1,800 acres to prevent 69,402 acres of marsh and mudflats from being invaded and potentially covered by the infestation.

The spread of invasive *Spartina* is perhaps the most serious danger (besides development) to ever threaten the marsh ecosystem of the San Francisco Estuary. The spread of hybridized *Spartina*, which occurs at a greater than exponential rate, threatens to eliminate most, if not all, of the nesting and foraging habitat for migratory birds that utilize the S.F. Estuary, the most significant U.S. Pacific Flyway stopover, by replacing the existing habitat with a monoculture of invasive *Spartina.* The USFWS Recovery Plan addressing the San Francisco Baylands, ranks eradication of the exotic plant *Spartina* as a number one recovery action needed to prevent other listed species' foreseeable slide towards extinction. Other problems caused by the rapid spread of the non-native invasive Spartina and hybrids include the following:

- Invasive *Spartina* causes the bay muds to 'accrete' or build up, filling in navigation channels and causing flooding as it spreads.
- Invasive *Spartina* hybridizes with the native cordgrass, *Spartina foliosa,* to create more vigorous offspring that spread further into the bay and landward. Hybridization also threatens to cause the extinction of the native *Spartina foliosa*.
- 95% of tidal marsh restoration projects completed within the south and central San Francisco Bay Estuary prior to 2005 – 45 projects totaling greater than 3,500 acres – have been invaded, and most dominated, by invasive *Spartina*.

Since 1999, the Coastal Conservancy has managed the regionally coordinated effort to address the problem. From 2000 through 2003 the Conservancy completed the Programmatic Environmental Impact Statement/ Environmental Impact Report (PEIS/R) and an array of other environmental documents in partnership with the United States Fish and Wildlife Service. The Conservancy adopted the PEIR in September, 2003. In 2004, The Conservancy coordinated treatment at thirteen Demonstration Sites (420 acres), through implementation of site specific plans and mitigation measures. Also in 2004, the Conservancy's Invasive *Spartina* Project (ISP) hosted the Third International Conference on Invasive *Spartina*, at which scientists from the region and around the world expressed support for the Conservancy to implement an aggressive treatment strategy.

In 2005 the Conservancy's ISP coordinated the first year of region-wide aggressive treatment. 2006 and 2007 marked the second and third years of intensive, regional *Spartina* control, and the results have been excellent. In 2006 partners of the ISP treated 107 of 134 known *Spartina* locations, comprising 94% of the net baywide non-native *Spartina* acreage. Of a total of 1,750 treated acres, 1,350 acres were treated by helicopter, and 400 acres by ground or water. In 2007 139 out of 146 locations were treated. Of a total of 1,050 acres 800 acres were treated by helicopter, and 250 acres by ground or water. The project's monitoring program, which conducts regional inventory and efficacy monitoring each year, is confirming that after the 2006 and 2007 treatments there's an impressive 60-95% efficacy (effective kill) over all treated sites.

For the 2008 treatment season, which occurred from July through October, all locations treated in 2007 were retreated and treatment of the new populations began. It's expected that spot treatments will be the norm from 2009 forward with full eradication achievable by 2012. Unfortunately, although there is less *Spartina* to treat each subsequent year, the cost of treatment bay wide will actually increase, due to the much higher costs of ground based treatment.

ISP partners who currently receive State Coastal Conservancy grants for *Spartina* control include Alameda County Public Works Agency, California Wildlife Foundation, City of Alameda, City of Palo Alto, City of San Leandro, East Bay Regional Parks District, Friends of Corte Madera Creek Watershed, Friends of Petaluma River, San Mateo County Mosquito Abatement District, State Parks and Recreation, and US Fish & Wildlife Service Don Edwards National Wildlife Refuge. Other partners who coordinate with our Control Program to treat *Spartina* infestations, but are not funded through the Conservancy, include Mid-Peninsula Open Space District, Rhone Polenc, Levine Fricke, Inc., Santa Clara Valley Water District, Simeon Ventures, and students of Palo Alto High School.

Deliverables will include final reports from the Conservancy's treatment grantees at the conclusion of each treatment season ending October 30th. These reports will describe treatment and

mitigation measures implemented at sites consistent with the site specific plans for treatment by each grantee.

Project Background and Description - Humboldt Bay

The goal of this project is to develop a regional cordgrass eradication plan for the Humboldt Bay, Eel River, and Mad River estuaries. Invasive dense flowered cordgrass (*Spartina densiflora*) has come to dominate an estimated 90% of salt marshes in the three adjacent estuaries of Humboldt Bay, the Eel River Delta, and the Mad River Estuary. This species is known to displace native vegetation, reducing salt marsh biodiversity dramatically. The species was mapped in Humboldt Bay in 1998 and 1999. At that time, over half of the total salt marsh consisted of nearly pure stands of cordgrass, and the species was present in much of the remaining salt marsh, as well. While cordgrass is most abundant at mid-marsh elevations in Humboldt Bay, it is spreading to the high marsh, where it threatens to displace populations of Humboldt Bay Owl's Clover and Point Reyes Bird's Beak, both ranked as endangered (List 1B.2) by the California Native Plant Society. Little is known about the ecosystem-level impacts of this invasion, but it appears likely that cordgrass has altered sedimentation rates and carbon cycling rates in Humboldt Bay and neighboring estuaries. In addition to its impacts locally to these estuaries, cordgrass in the Humboldt Bay region threatens to colonize other west coast estuaries via ocean dispersal of its seeds, as demonstrated by the preliminary results of a drift card study carried out by Portland State University. Drift cards from Humboldt Bay in 2004 and 2005 were found within a month of their release in numerous locations along the Oregon Coast, as well as in southwest Washington.

Experiences in other west coast estuaries have shown that the local community must be educated and supportive for an eradication program to succeed. This is especially true when some salt marshes are under private ownership, as is the case in Humboldt Bay and adjacent estuaries. In Washington and Oregon, successful eradication has required the use of the herbicide imazapyr as part of an Integrated Pest Management (IPM) strategy that also includes mechanical methods. The community around Humboldt Bay has shown resistance to the use of herbicides on invasive species. California State Parks and the Humboldt County Agriculture Commissioner are currently facing a lawsuit over their plan to control purple loosestrife with imazapyr on the Eel River, filed by Californians for Alternatives to Toxics because no CEQA analysis was conducted and there was little opportunity for public input. The proposed project will require a genuine IPM approach that evaluates all alternatives in order to gain community support and landowner cooperation. Staff at the Humboldt Bay National Wildlife Refuge has been working for over four years to develop mechanical cordgrass control techniques. Approximately 15 acres of cordgrass have been treated, and all mature plants were killed. This work has shown that mechanical methods can be used successfully as part of an IPM strategy, but has also demonstrated the need for a regional approach in order to prevent re-invasion.

The proposed plan will include a technical analysis developed by a team of experts on cordgrass control and estuarine ecology, and an implementation strategy, developed through collaboration among local agencies and stakeholders. In order to accomplish this, we need to collect data on eradication methodology, and at the same time we need to build local consensus around the need for eradication. Tasks associated with these two components are summarized below.

Objective A: Plan Development and Community Outreach.

1. Organize *Spartina* working group to guide technical aspects of the plan.

2. Identify key stakeholders (salt marsh/estuarine land owners, recreational and subsistence users, estuary-based industry, tribal interests, local governments, etc). Develop GIS database showing salt marsh/estuarine land owners**.**
3. Develop and implement outreach and education, working with groups such as the Humboldt-Del Norte Weed Management Area (WMA) and the Humboldt Bay Ecosystem-Based Management Program. Distribute educational materials, make presentations to diverse stakeholders, and work with local media.
4. Develop strategies for involving stakeholders in eradication (e.g. land trusts or agencies with estuarine holdings), and include a strong volunteer component.
5. Develop a regional eradication plan with geographically-specific methodologies, monitoring protocols, and measures of success. Utilize adaptive management, allowing for refinement of methods to reflect ongoing results.
6. Complete Initial Study/Environmental Assessment (IS/EA) to identify CEQA/NEPA approach and needed permits.

Objective B: Development of efficient, low-impact eradication techniques, and increased understanding of the impacts of *Spartina* invasion and of eradication.

1. Map and measure abundance of *S.densiflora* in Humboldt Bay, Mad River and Eel River estuaries.
2. Update 2002 literature review on *S.densiflora* ecology and control.
3. Quantify relative contributions of native and non-native vascular plants to estuarine primary productivity. Evaluate potential impacts on local estuaries from changes in primary productivity due to cordgrass eradication.
4. Determine interactions/impacts of *Spartina* and invertebrate/vertebrate fauna. Evaluate potential impacts on local estuaries from changes in community composition due to cordgrass eradication.
5. Quantify competitive interactions between native salt marsh plants and *Spartina.* Evaluate potential impacts on local estuaries from changes in community composition due to cordgrass eradication.
6. Determine the size and estimated longevity of the *Spartina* seedbank.
7. Compare the effectiveness of different combinations of mowing and herbicide applications on *Spartina* survival, their effect on native plants, microbiota, soil disturbance and/or compaction, tidal creek integrity, carbon load, and turbidity.
8. Evaluate the need for and effectiveness of revegetation techniques (propagation from seed, salvage, seeding) for the different control treatments.

Timeline for Deliverables – San Francisco Bay

By December 31st of each year the Conservancy will submit the final reports of treatment accomplished using the CIAP grant funds. Years expected to be covered include 2009, 2010, 2011, and 2012.

Timeline for Deliverables – Humboldt Bay

In September 2008, mapping of the regional Spartina population was initiated, and key stakeholders were identified and contacted. By August 2009, research on control methods and the effects of eradication will be completed. By June 2010, extensive outreach and education will have occurred, and a draft plan and IS/EA will be completed.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

San Francisco Bay

The Invasive Spartina Project received two grants from CALFED's Ecosystem Restoration Program (ERP). The first grant was funded by the United States Fish and Wildlife Service (FWS), and assisted with funding for management, environmental documentation, and implementation. The purpose of the second, which runs through 2009 and is state funded, is to monitor changes in distribution and abundance of non-native Spartina, the efficacy of treatment efforts, and the impacts of control efforts on the endangered California clapper rail.

In addition to these CALFED ERP grants, one small grant from the FWS Coastal Program assisted with environmental documentation; and one grant from the National Fish and Wildlife Foundation (NFWF) assisted with management and mapping of the infestation during the early stages of the project.

FWS and the Conservancy partnered on the Programmatic EIS/R adopted for the project, and FWS has received Conservancy grant funding for treatment activities since 2004. The Conservancy will continue to closely coordinate with FWS for treatment of infestations at the Don Edwards National Wildlife Refuge and the San Pablo Bay National Wildlife Refuge. The Conservancy is also currently working with FWS to update/amend the Biological Opinion as an intra-service Section 7 Consultation for the project. The Conservancy also coordinated with NOAA on the Biological Opinion with regards to potential impacts to fishery resources. Finally, the Conservancy provides funding to the United States Geographical Survey to conduct a study of California clapper rail movement to better assess appropriate mitigation for the bird's survival.

Humboldt Bay

The project will be coordinated with the newly formed Humboldt Bay Ecosystem Based Management (EBM) Program, funded by the Conservancy, and the working group will have representation from the EBM advisory and core teams. The EBM program currently consists of an advisory group that is focused on identifying research priorities to further EBM in the Bay. Because the EBM Program is not preparing a comprehensive plan for the Bay, it will not adopt the Spartina Eradication Plan as part of the EBM Program. However, we will seek input and formal support for the Plan from the EBM group. We have applied for matching funds to the NFWF. The Natural Resources Conservation Service is interested in participating, and is another potential funding source.

CALIFORNIA OCEAN PROTECTION COUNCIL

San Francisco Bay

1. Ocean and Coastal Ecosystems

Goal E: Control Invasive Species" under the Goal to "Significantly increase healthy ocean and coastal wildlife populations and communities in California."
Objective E.3 specifically calls out the problem presented by the invasion of *S. alterniflora* in which it states on page 30, "Native cordgrass, *Spartina foliosa,* is being replaced by an eastern invader, *Spartina alterniflora,* and has begun to destroy many of the region's mudflats, critical foraging areas for many bird species. This invasion has been arrested, for now, by a multi-agency task force, but to preserve native species and habitats, many more battles will have to be fought."
Goal E, Objective 3 also calls for full implementation of the California Aquatic Invasive Species Management Plan (CAISMP). Strategy 4.B of the CAISMP calls for the eradication of targeted populations of invasive species, and 4.B.1 specifically calls for the continuation and completion of

the eradication efforts of the Invasive *Spartina* Project in S.F. Bay. Funding to assist with the final four years of the control program will help accomplish the goal of full eradication by 2011.

2. Physical Processes and Habitat

Objective D.1 "Restore and maintain valuable ocean and coastal habitats and resources."
Objective D.1.a (page 27 and 48): This objective calls for funding priority habitat restoration projects, including those that involve wetlands. The Invasive *Spartina* Project is one of the highest priority projects for the Coastal Conservancy.
Objective D.1.d (page 27 and 48): This objective is to complete the planning for and begin ecosystem-scale wetlands restoration projects (e.g. South Bay Salt Ponds). The Invasive *Spartina* Project will implement an ecosystem-scale wetland restoration. Restoration for the diversity of various types of habitats planned for the South Bay Salt Ponds will not be possible until and unless the infestation is eradicated in the South Bay. If the Control Program maintains its schedule for eradication by 2012, the South Bay Salt Pond restoration should also be able to proceed on schedule. The proposed funding will assist the Conservancy to complete the eradication according to these schedules.

Humboldt Bay
Goal A, Governance, Objective 2. Interagency Collaboration: Interagency collaboration will be critical to determine who will carry out eradication and follow-up monitoring in various locations around Humboldt Bay and adjacent estuaries.

Goal A, Governance, Objective 4. Ecosystem Based Management: The Plan will incorporate the principles of Ecosystem Based Management (EBM). Evaluating the impacts of cordgrass and of eradication activities on the Bay ecosystem will be a key element of plan development. The planning effort will consider connections between species and the effects of cordgrass eradication on the Bay ecosystem as a whole. The Humboldt Bay EBM Advisory Team will be asked to provide input, and to help the Spartina eradication planning team incorporate an EBM approach. Ongoing cordgrass eradication activities in the area will use an adaptive management approach, which is an important principle of EBM.

Goal B. Research and Monitoring, Objective 1. Research, and Objective 2. Monitoring: In addition to the research on cordgrass control and impacts described above in the "Project Summary" section, the plan will outline ongoing monitoring to be carried out as part of cordgrass eradication in the Bay.

Goal E. Ocean and Coastal Ecosystems. Objective 3. Control Invasive Species: Eradication of cordgrass in the Bay will greatly enhance salt marsh habitats for native species, and will reduce potential colonization of Oregon and Washington marshes.

Goal F. Education and Outreach. Objective 1. Public Awareness: The planning team will work with the Humboldt-Del Norte WMA to develop and distribute educational materials to community groups. A technical publication describing eradication methodology will be prepared and distributed.

CONSISTENCY WITH AUTORIZED CIAP USES

1. Projects and activities for conservation, protection or restoration of coastal areas, including wetlands.

San Francisco Bay: Treatment and eradication activities of invasive cordgrass (*Spartina alterniflora)* and its hybrids within the San Francisco Bay Estuary are critical to the long-term health of the Estuary and to the species which inhabit and rely upon the salt marshes and tidal flats along its perimeter. The extremely significant threats posed by invasive *Spartina* in S.F. Bay are discussed above.

Humboldt Bay: Plan preparation will facilitate the enhancement of habitat quality for native species in the region's salt marshes and reduce opposition to wetlands restoration. The significant and extensive impacts of cordgrass on the region's salt marshes are discussed above.

4. Implementation of a federally-approved marine, coastal, or comprehensive conservation management plan.

San Francisco Bay: The Invasive *Spartina* Project's Control Program implements specific Actions in the Wetlands Chapter (WT) of the San Francisco Estuary Project's 2007 Comprehensive Conservation and Management Plan (CCMP) and is a top priority for CCMP implementation. The project implements the following actions:

Action WT - 4.2: Prevent the introduction and establishment of non-native plant species in wetland restoration and mitigation projects:

Action WT - 1.2: Encourage geographically focused cooperative efforts to protect wetlands: The Invasive *Spartina* Project is a model for unifying state, federal, local and non-profit entities around the Bay to effectively work together to implement coordinated treatment of the bay-wide infestation.

Humboldt Bay: The project implements a policy of the Humboldt Bay Harbor, Recreation, & Conservation District's 2007 Humboldt Bay Management Plan, as follows.

Policy CAS-4: Control or remove non-indigenous invasive species.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

STATE COASTAL CONSERVANCY

PROJECT TITLE: San Clemente Dam Removal Project

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Carmel River, 18.5 miles from river mouth. Carmel Valley, Monterey County		
Duration:	Design & Permitting: Construction:	Jan. 2009 - April 2010 April 2010 – Nov. 2012	
Total Estimated Project Cost:	$83,000,000		
Total CIAP Funding Requested:	$904,000		
Amount and Source of Match	$50,000,000	California American Water	
	$24,000,000	State of California (Coastal Conservancy, Dept. Fish and Game, Wildlife Conservation Board, Resources Agency; tentative)	
	$6,000,000	NOAA Fisheries (tentative)	
	2,096,000	Private sources (tentative)	
CIAP Spending Estimate Per Year:	Design and Permitting Construction	2009 2010 2011	$225,000 $200,000 $479,000

Project Background and Description

The San Clemente Dam Removal Project will remove a 106-foot high concrete-arch dam that is seismically unsafe and has negatively impacted the Carmel River in Monterey County, California, for over 85 years. Removing the dam will permanently resolve a public safety hazard that threatens lives and approximately 1500 downstream structures. The project will provide unimpaired access to 25 miles of spawning and rearing habitat for steelhead trout, listed as threatened under the federal Endangered Species Act. It will also re-establish sediment transport to the downstream river

channel and beach and restore the river's ecological continuity. Finally, the project will result in the donation of over 900 acres of new regional park land.

The Carmel River represents one of the best opportunities for river restoration on California's Central Coast. The river has its headwaters in Los Padres National Forest and its 255-square mile watershed drains the north side of the Santa Lucia Mountains. The river provides essential habitat for many important species, including steelhead trout and California red-legged frog, also listed as threatened. Since 1921, the Carmel River and its wildlife resources have been impacted by San Clemente Dam. The dam is an obsolete structure that no longer serves a water supply function and has been declared unsafe by the Department of Water Resources (DWR) Division of the Safety of Dams. California American Water (CalAm), a private investor-owned water utility, owns and operates the dam and is responsible for addressing the safety issue identified by DWR. The cheapest option is to simply strengthen the dam in place.

Removing the dam instead would have multiple public benefits including:

- Permanently solving the public safety issue.
- Restoring unimpaired access to over 25 miles of spawning and rearing habitat for steelhead trout. The National Marine Fisheries Service (NMFS) has stated that restoration of the Carmel River steelhead population is critical to the overall recovery of the South-Central California Coast Distinct Population Segment (S-CCC DPS).
- Re-establishing sediment supply to the downstream river channel and beach.
- Restoring the river's ecological connectivity for the benefit of multiple aquatic and riparian species, including red-legged frogs.
- Protect and provide recreation access to over 900 acres of watershed lands.

For this reason, the Coastal Conservancy, NMFS, the California Department of Fish and Game (DFG), and the Planning and Conservation League Foundation are working with CalAm to remove the dam rather than strengthen it. CalAm will contribute an amount equivalent to the cost of strengthening the dam. State, Federal, and private funds are being secured to pay for the additional costs of dam removal. In this way, CalAm would meet its regulatory responsibilities without undue cost to its ratepayers, and the public would achieve the additional benefits of dam removal.

The conceptual approach to removing the dam was evaluated in the Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the San Clemente Dam Seismic Safety Project certified by DWR in December 2007, and is referred to as the Carmel River Reroute and Dam Removal project. San Clemente Dam is located just downstream of the confluence of the Carmel River and San Clemente Creek. Upstream of the dam, the river and creek run parallel for about one-half mile, separated only by a narrow peninsula. Most of the sediment that has accumulated behind the dam is located on the Carmel River side of the reservoir. These conditions offer a unique opportunity to remove the dam while minimizing the volume of accumulated sediment that must be excavated and moved.

To accomplish this, a half-mile reach of the Carmel River would be permanently bypassed and used as a sediment disposal area. To bypass the reach, a 450-foot-long channel would be cut through the narrow peninsula thereby connecting the Carmel River to San Clemente Creek, approximately 3,000 feet upstream of the dam. The rock excavated from the bypass channel will be used to construct a dike that will permanently reroute the Carmel River into the San Clemente

Creek drainage and seal off the upstream end of the abandoned reservoir. The accumulated sediment in the San Clemente Creek arm of the reservoir will be excavated and relocated to the abandoned reach of the Carmel River, and the sediment in the abandoned Carmel River arm will be stabilized in place. The half-mile reach of San Clemente Creek between the dam and the bypass channel will be restored to its 1921 elevation, and a series of step-pools will be created to aid fish passage. When all the project elements are in place, the dam and fish ladder will be demolished and removed.

The project will require several permits and approvals. These are summarized in the table below:

Permit/Approval	**Issuing Agency**	**Associated surveys and reports**
Section 404 Permit	Army Corps of Engineers	Wetland delineation 404(b) Alternatives Analysis Mitigation and Monitoring Plan
Incidental Take Permit	U.S. Fish and Wildlife Service NMFS	Biological Assessment for California red-legged frog Biological Assessment for steelhead trout
Compliance with National Historic Preservation Act	State Office of Historic Preservation	Cultural Resources Report Archaeological Research Design and Treatment Plan Archaeological Testing Plan Historic American Building Survey Historic American Engineering Report
Streambed Alteration Agreement	DFG	
Section 401 Water Quality Certification	Central Coast Regional Water Quality Control Board (RWQCB)	
Waste Discharge Requirements	RWQCB	
NPDES Permit	RWQCB	
Construction General Permit	State Water Resources Control Board	Stormwater Pollution Prevention Plan
Land Use Approval	County of Monterey	

The Reroute and Removal project will be implemented in two phases. Phase one will involve constructing and improving roads, constructing the temporary diversion pipeline, and several other site preparation tasks. The main project components will be undertaken in phase two during the second and third years of construction. Phase two will include relocation of reservoir sediment, blasting the bypass channel, creations of the diversion dike, stabilization of the sediment stockpile,

and removal of the dam. Construction is expected to be restricted to the dry season, approximately April through October and is expected to take three to four seasons to complete.

The estimated cost of the San Clemente Dam Removal project is $83 million. CalAm will pay approximately $50 million of this. The Coastal Conservancy and NOAA Fisheries have committed to securing the remaining $33 million from Federal, State and private sources. One option for reducing the project costs is to use the assistance of the U.S. Department of Defense's Innovative Readiness Training Program (IRT). Through this program, members of the military reserves achieve their training objectives through participation in civilian projects. Civilian partners must pay for equipment and materials, but the military pays for the labor costs. IRT troops could potentially undertake many elements of the dam removal project including construction of roads, pipelines, and the river diversion dike, blasting of the new river channel, and removal of the dam.

Measurable Goals and Objectives

The goals of this project are as follows: to work cooperatively with CalAm to remove San Clemente Dam without undue impact to its ratepayers; to resolve the public safety threat posed by San Clemente Dam; to restore unimpaired access to 25 miles of steelhead spawning and rearing habitat; to re-establish sediment transport to the downstream river and beach; to restore the river's ecological connectivity; and to protect and provide recreation access to approximately 900 acres of watershed lands. These goals will be achieved by implementing the Carmel River Reroute and San Clemente Dam Removal project. The Reroute and Removal project will be implemented through the following objectives:

Objective 1: Complete geotechnical and geomorphological field investigations and analyses needed to support the preliminary and final designs.

Objective 2: Advance project designs to final design through an iterative design and review process. Establish a Technical Review Team of qualified experts to review interim designs and associated technical analyses at critical milestones in the project development.

Objective 3: Secure permits and approvals for the project.

Objective 4: Secure additional funding needed to implement the project from Federal, State, and private sources. IRT program services may be secured in lieu of some project funding.

Objective 5: Develop and execute project implementation agreement among CalAm, the Coastal Conservancy, and NMFS specifying each organization's roles and responsibilities, decision-making and dispute-resolution procedures, administrative and financial procedures, and policies for dealing with contingencies and unexpected circumstances.

Objective 6: Implement the Reroute and Removal project over a three to four year construction period.

Timeline for Deliverables

COMPLETED BY	DELIVERABLE
February 2009	Report on geotechnical and geomorphological field investigation and analyses.
April 2009	Draft funding plan with informal commitments from funding organizations and details of process and schedule for securing funds.
June 2009	Preliminary design plans (approximately 30%) Completion of all permit applications and supporting documentation
July 2009	Executed project implementation agreement.
January 2010	Final design plans. All project permits and approvals.
January 2010	Project funding secured.
April 2010	Project construction initiated.
November 2012	Project construction completed.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

The San Clemente Dam Removal Project is being jointly developed by the Conservancy and NOAA Fisheries. NOAA has provided $100,000 for technical studies to date, along with technical assistance on the project design. NOAA is also contributing a significant amount of staff time to developing the implementation strategy and securing project funds. The U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and U.S. Bureau of Reclamation have also assisted in the review and development of the technical design, and have been advising the Conservancy and NOAA on agency permitting issues.

In addition to the planning funds provided by NOAA, the Conservancy and NOAA have been working to secure IRT assistance for project implementation (see project summary for more information). Representatives of IRT have visited the project site and confirmed that the San Clemente Dam Removal Project has several elements that would serve their training needs. If IRT participation is secured, it would be amount to a large federal contribution of in-kind services to the project and a significant reduction in the cash funding needed.

CALIFORNIA OCEAN PROTECTION COUNCIL

The San Clemente Dam Removal Project will advance the State's progress in meeting the Physical Processes and Habitat goal of the California Ocean Protection Council's (OPC) *Strategic Plan*. This goal calls for the State to "significantly improve the quantity and quality of ocean and coastal

habitat in California." The first objective identified under the goal is to "restore and maintain valuable ocean and coastal habitats and resources," and removal of fish passage barriers is identified as a priority action. San Clemente Dam is a significant barrier to fish passage on the Carmel River. Removing it will provide unimpaired access to over 25 miles of spawning and rearing habitat. The detailed list of priority actions provided in Appendix A of the *OPC Strategic Plan* specifically calls for the OPC to "support large scale dam removal and associated watershed restoration projects that require additional funds to complete, such as … San Clemente Dam."

CONSISTENCY WITH AUTORIZED CIAP USES

Requested funds will be used for capital costs of project implementation and staff time and expenses associated with development and management of the project. The San Clemente Dam Removal Project is consistent with two of the authorized uses for CIAP funds:

- *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.* Removing San Clemente will restore the ecological connectivity of the Carmel River. This will restore sediment supply to the downstream channel and beach and provide access for anadromous fish to upstream spawning and rearing habitat. Removing the dam is a critical step towards restoration of this coastal watershed.

- *Mitigation of damage to fish, wildlife, or natural resources*. The Carmel River steelhead run has decreased by over 90% from historic levels. Between 1999 and 2005, steelhead counts at San Clemente Dam's fish ladder ranged from approximately 400 to 800 fish per year, whereas historic returns to the river have been estimated to be as high as 12,000 to 20,000 adult fish. San Clemente Dam blocks fish passage to upstream habitat areas and leads to the degradation of downstream habitat by trapping spawning gravels in the reservoir. Removing San Clemente Dam is critical for recovering steelhead on the central coast and will be a significant mitigation for damage done to steelhead over the past century.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

STATE COASTAL CONSERVANCY

PROJECT TITLE: Surfers Point Managed Retreat

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Project Location	City of San Buenaventura	
Project Duration	Construction: September 2009 to June 2011; Monitoring through 2016	
Total Estimated Project Cost	$8,150,000	
Total CIAP Funds Requested	$400,000	
Amount/Source of Match	$1,100,000	Coastal Conservancy Proposition 84
	$500,000	OPC (pending)
	$172,500	City of Ventura
	$1,500,000	Federal Transportation Funds: SAFETEA-LU
CIAP Spending Estimate per Year	2008 - $0 2009 - $200,000 2010 - $200,000	

PROJECT BACKGROUND AND DESCRIPTION

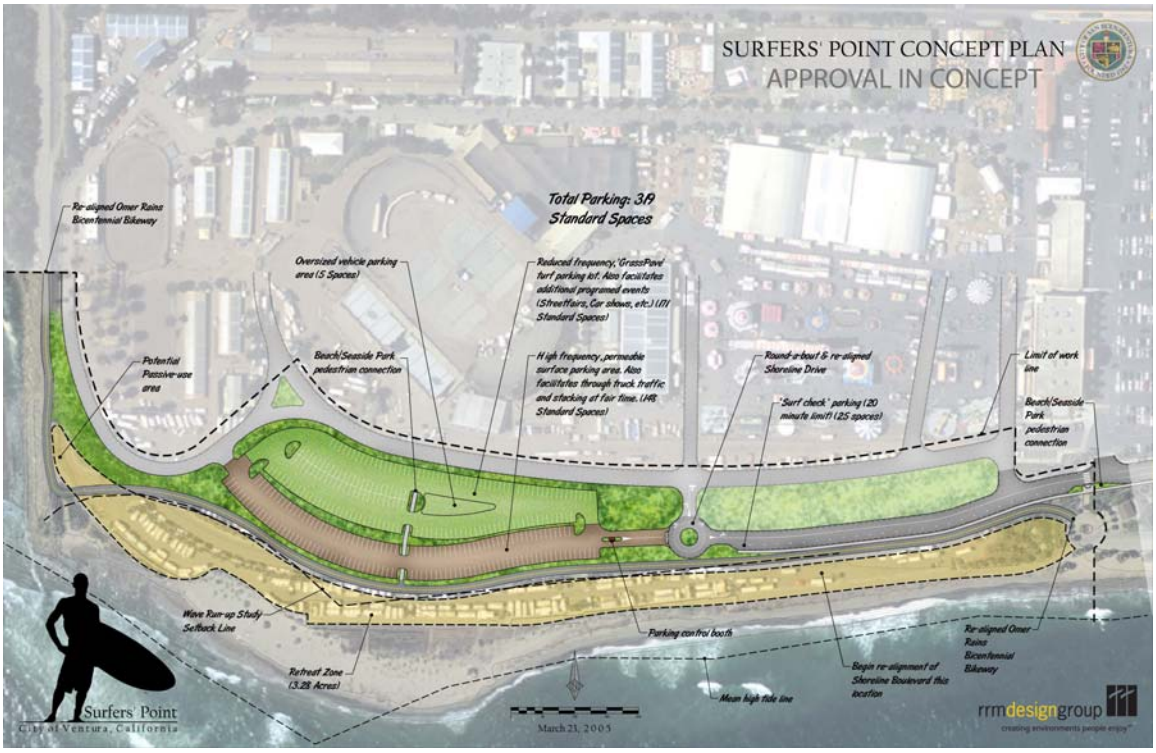
Surfers Point is a popular surfing spot and recreational destination, adjacent to the mouth of the Ventura River located in the City of San Buenaventura (Ventura). The beach, the shoreline bike path and the adjacent public parking lot, have all experienced severe damage from shoreline erosion. Since the mid 1980s, Surfrider Foundation has been advocating for relocating the bike path inland to prevent the future need of a seawall, loss of the beach and destruction of the famous surf break. However, to protect the Point, the City decided to place boulders above the mean high tide line along its upper end. The project exacerbated erosion down the coast and the parking lot and bike path continued to erode into the ocean. In some places more than 60 feet of land have been lost, including sandy beach shoreline and native sand dune habitat.

A working group was created to resolve the issues of beach erosion and damage to public resources and in 2001 the group reached a consensus for a “managed retreat” project that includes the following objectives:

- remove all existing improvements seaward of Shoreline Drive, including the damaged bike path and eroded public parking lot and relocate them further inland;

- modify Shoreline Drive to allow for retreat of the existing parking facilities and preserve public access to Surfers Point in the face of sea level rise;
- improve parking by constructing two new low impact development (LID) parking lots that incorporate runoff treatment controls, including appropriate landscaping, permeable surfaces and a stormwater treatment system, and installation of an entry kiosk and bicycle parking;
- improve recreational amenities by constructing a new multi-use trail to replace the existing path, creating a new interpretive area and expanding an existing picnic area;
- restore the retreat zone and provide protection for the new improvements by recontouring the retreat area with natural beach materials and recreating sand dunes (see Exhibit 2).

The project will relocate and redesign the existing parking lot and bike path to maximize available beach and sand dune habitat area and provide water quality benefits through the implementation of Best Management Practices (BMPs) at the new parking lot locations. The conceptual plan for this project is shown below.



The project is now in final design and is expected to be constructed in 2 phases between September 2009 and June 2011. The Coastal Commission has approved a coastal permit and the environmental analysis is complete. The City of Ventura has allocated approximately $1.2 million dollars of Department of Transportation, local and state funding for the design and permitting of the project. The total construction cost is estimated to be approximately $8 million. So far, $2,772,500 has been secured and the City is actively pursuing funding for the remaining costs. The City has committed to constructing the project as soon as funding is available.

Measurable Goals and Objectives

The goals of this project are as follows: relocate the existing infrastructure 80-130 feet further inland; restore 1,800 linear feet of shoreline by restoring the natural beach profile and sand dune habitat; improve water quality; and protect and improve public access to the shoreline and coastal watershed. The project will be implemented through the following objectives:

- Removal of rip rap,
- Modification of existing road,
- Removal, relocation and construction of pedestrian/bike path and parking lot, including permeable surfaces, bio-swales and other stormwater best management practices,
- Placement of cobble substrate overlaid with sand and planted with native dune vegetation,
- Monitoring of water quality in estuary and at adjacent beach,
- Monitoring and maintenance of sand dune habitat restoration,
- Monitoring of restored beach profile.

Project Deliverables and Schedule

DELIVERABLE	COMPLETE
Project Construction Initiated	September 2009
Project Construction Completed	June 2011
Sand Dune Habitat Monitoring Report 1 year 2 years 3 years 4 years 5 years	December 2011 December 2012 December 2013 December 2014 December 2015 December 2016
Water Quality Monitoring Report pre-project post-project 1 year 2 years 3years 4 years 5 years	 September 2009 September 2011 September 2012 September 2013 September 2014 September 2015 September 2016
Beach Profile Monitoring Report 1 year 2 years 3 years 4 years 5 years	September 2011 September 2012 September 2013 September 2014 September 2015 September 2016

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

This project is being held up as a model of sustainable shoreline management. The project was featured at the California and the World Ocean Conference in 2006 and as a case study for managed retreat by NOAA's Office of Ocean and Coastal Resource Management (http://coastalmanagement.noaa.gov/initiatives/shoreline_ppr_retreat.html)

As the infrastructure proposed to be relocated as part of the project primarily serves public access and recreational needs in the region, the project has received funds from two federal transportation programs: $688,000 ISTEA-TEA for planning and design of the public access facilities and $1,500,000 SAFETEA-LU for the construction of the facilities.

In addition, this project is part of the larger regional sediment management program and coastal watershed restoration program for the Ventura River. The project partners for this project are working cooperatively with the partners for the Matilija Dam Removal Project, which includes the Army Corps of Engineers, Ventura County Watershed Protection District and others, toward the program goals of both of those ecosystem based efforts.

CALIFORNIA OCEAN PROTECTION COUNCIL'S (OPC) STRATEGIC PLAN

This project will support several of the goals and objectives of the California Ocean protection Council's Strategic Plan, including:

OPC GOAL: **Significantly improve the quantity and quality of ocean and coastal habitat in California.**

This project directly supports objectives in the OPC's Strategic Plan for its goal related to Physical Processes and Habitat Structure. The second objective under this goal is to "support implementation of regional sediment management". This project is a model of multi-benefit, regional sediment management. This project avoids the adverse impacts to natural resources associated with more traditional shoreline protection measures.

OPC GOAL: **Significantly improve ocean and coastal water quality.**

This project will support objectives in the OPC's Strategic Plan for its goal related to Ocean and Coastal Water Quality in that it will implement innovative approaches to manage urban runoff and nonpoint source pollution. The project will serve as a highly visible demonstration of improved storm water management techniques.

CONSISTENCY WITH CIAP AUTHORIZED USES

This project is consistent with the CIAP authorized uses 1 and 2. The project will protect and restore coastal areas (#1) including restoration of the natural beach profile and sand dune habitat and protection of water quality in the estuary and at the beach. In addition, the project mitigates damage to natural resources (#2) such as the loss of sensitive sand dune habitat, loss of sandy beach and adverse impacts to water quality which impacts fish habitat in the adjacent river estuary.
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STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

OCEAN PROTECTION COUNCIL

PROJECT TITLE: California Seafloor Mapping Program, Product Development

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	California state waters
Duration:	2008-2012
Total Estimated Project Cost:	$ 29,000,000
Total CIAP Funds Requested	$ 910,000
Amount/Source of Match:	$ 23,992,000*
Department of Fish and Game	$1,000,000
State Coastal Conservancy	$4,000,000
Ocean Protection Council	$15,000,000
CGS from CalTrans	$42,000
NOAA	$3,450,000
USGS	$500,000
CIAP Spending Estimate Per Year:	2009 – $350,000
	2010 – $310,000
	2011 – $250,000

**Not all funds have been raised to complete the seafloor mapping for all state waters.*

Project Background and Desription

California's state waters are among the most productive in the world. Accurate statewide mapping of seafloor substrates, marine habitat types, and bathymetry (underwater topography) of California's coastal and nearshore waters is a crucial component necessary to guide multiple ocean management decisions. Designating and monitoring marine reserves, understanding sediment transport and sand delivery, ensuring shipping safety, identifying dredging and dumping sites, helping identify fault dynamics, helping describe tsunami potential, regulating offshore coastal development, and illuminating the dynamics of fisheries and other marine species, are just a few of the applications that would benefit from coastal and marine mapping data and products. Detailed bathymetric maps are also critical in the development of an ocean circulation model that will allow better prediction of potential ocean responses to environmental and anthropogenic changes. Although small sections of the coast, including some federal waters, have been mapped to varying extents and resolutions, a comprehensive and seamless map of the state's near- and offshore benthic and marine resources does not currently exist.

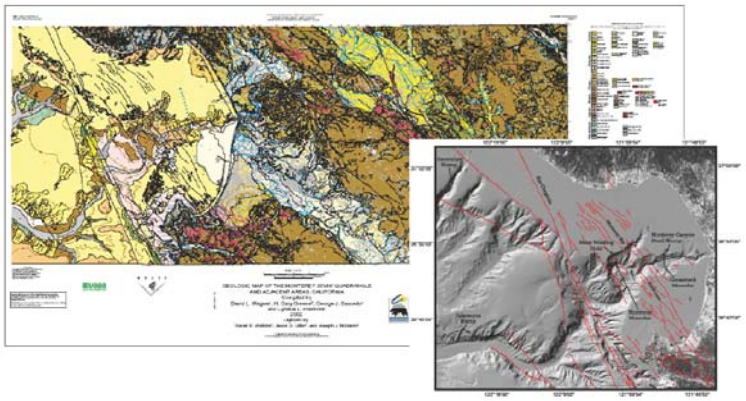
The goal of the California Seafloor Mapping Program (CSMP) is to create a comprehensive coastal/marine geologic and habitat base map series for all state waters (mean high water out to 3 nautical miles) in support of the Marine Life Protection Act (MLPA) Initiative. About 33% of the coast has been mapped with enough detail to support the MLPA process and other resource management needs critical to the state. The CSMP aims to complete the remaining 67%, which will include the following basic components:

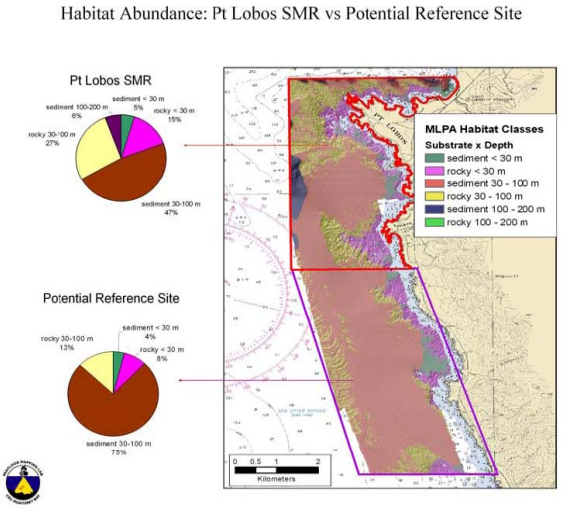
1. Data Collection—high-resolution multi-beam data will be collected for all parts of the CA coast currently unmapped
2. Data groundtruthing—video and/or physical sampling of the seafloor, and where appropriate sub-bottom profiling to determine the thickness of sediment layers. Necessary for the creation of reliable map product.
3. Map Production—creation of multi-sheet folio map sets at 1:24,000 scale of bathymetry, and geologic and habitat interpretation maps spanning the entire California land/sea margin
4. Data Management and Dissemination—creation of a online data repository for the public dissemination of all digital data and map products covering the California state waters

The Ocean Protection Council recently authorized $15 million for this program, largely devoted to data collection. However, OPC funding will also include up to tier 2.5 maps, as described below. The proposed CIAP funding will be applied to the final tier 3 map production.

Mapping Products: There is a broad consensus in the mapping community that the CSMP should include four levels of basic mapping products:

- Tier 1 - cleaned bathymetric soundings and backscatter data





Tier 2.5 map: auto-classified benthic habitat map created with high-resolution multibeam sonar data that was created to help the MPA monitoring desian.

- Tier 2 - GIS –ready imagery and data layers (slope, aspect, rugosity, contours, relief, etc.)
- Tier 2.5 - Map products that can be efficiently derived through automated GIS processes from the raw data. These maps products are often of high value to management agencies because many of the patterns they reveal (e.g. rocky versus soft bottom habitats, bed forms, and depth zones) are easily discernable at this intermediate level of data analysis. These products can only be produced where there is groundtruthing data available.

- Tier 3 – fully interpreted, classified and attributed geologic and habitat maps, derived from preceding Tiers. This includes integration of the newly collected data set with other data sources of varying scales and so represents considerable "value added" products. However, these maps require careful "manual" work of highly experienced geologists and biologists who interpret and apply complex classification schemes to the second tier products.

Tier 3 maps: Fully interpreted and attributed geological map of Monterey Bay and surrounding terrestrial area.

This approach would produce a series of 1:24,000 scale quadrangle maps spanning land/sea interface, integrating existing terrestrial habitat and geology data with new marine geology data acquired during the CSMP.

Measurable Goals and Objectives

The goal of the overall CSMP is to create a comprehensive and seamless marine geologic and habitat base map series for all California waters (mean high water out to 3 nautical miles). However, current funding constraints have limited data collection to 10 meters water depth (or the depth of safe navigation) out to three nautical miles. The CSMP will produce a multi-sheet folio map sets (printed and digital) at 1:24,000 scale of bathymetry, marine geology and habitat spanning the entire California coast, and fill in the nearshore information once funding becomes available. This project will complete final mapping products for the following areas:

Objective 1: Complete the folio map series for the sections of the coast from Ano Nuevo to Pt. Arena (excluding islands), an area where data collection is now complete, but funding is lacking to produce the final maps (*white block on the map to the right indicate spatial coverage for each map set*).

Objective 2: Complete the folio map series for 4-5 more survey blocks, location to be determined (bathymetry data has been collected, but map production will be dependant on ground truthing scheduled for this summer). Likely locations include the Klamath, Santa Barbara Channel, or Monterey Bay.

Timetable and Deliverables

COMPLETED BY	DELIVERABLES
June 2010	Complete map series for blocks from Ano Nuevo to Bolinas.
December 2010	Complete map series for blocks from Pt. Arena to Bolinas*.
December 2011	Complete map series for 4-5 additional survey blocks, location to be determined*.

**schedule is determined by data collection, which in part is determined by weather.*

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

Four programs within NOAA have expressed their support for the goals and objectives of the CSMP: the National Ocean Service's Office of Coast Survey (OCS), National Marine Sanctuary Program (NMSP), and Coastal Services Center (CSC), and the National Marine Fisheries Service. OCS has been surveying the coastal waters of the U.S. and producing navigational charts for our nation's ports and waterways for two centuries. The bathymetric data collection requirements for navigational charting and habitat mapping are essentially the same, and therefore data can be shared and data collection coordinated. To assist the CSMP, NOAA OCS will contribute funds to collect data in navigationally "critical areas"[11] of California's inshore, nearshore and offshore waters, including large portions of San Francisco Bay and Humboldt Bay, and share that with the CSMP. The CSMP will share all data collected with OCS and that will be used to update California's navigational charts. Updating these charts will prove to be an asset to the state and to navigation interests that, absent the CSMP, would not likely happen for decades. NOAA OCS will also cover the substantial mobilization and demobilization costs for the program.

NOAA CSC has made available to the CSMP a contracting vehicle that will allow access to federally approved, pre-qualified mapping firms at no cost to the state. Using this contracting option has many advantages:

- NOAA will provide technical oversight and quality control of the data collection.
- NOAA will manage the industry contract which will relieve OPC staff of an enormous amount of administrative work and expense.
- Pre-qualified firms and contracts are already in place, so mapping could conceivably start quickly.
- Data will be archived in the National Geophysical Data Center.

NOAA NMSP has once again offered the use of its research vessels in support of the CSMP. Ship time is one of the most expensive elements of survey work and finding the right vessel is critical to assuring data quality. NMSP has contributed ship time to previous mapping efforts and has been a valuable partner to the CSMP. OPC and NMSP staff are working together to try to leverage resources to continue mapping the four California national marine sanctuaries outside of state waters.

[11] As defined in *NOAA Hydrographic Survey Priorities, 2007 Edition*; http://nauticalcharts.noaa.gov

Lastly, NOAA NMFS has provided staff time to assist with the biological ground-truthing effort of CSMP. Working in cooperation with the USGS, NMFS biologist will assure the accuracy of habitat classification of the mapping data.

The U.S. Geological Survey has been a valuable asset in previous phases of the CSMP, participating in mapping, ground-truthing and map production. Continuing and strengthening this collaboration is fundamental for the CSMP to support the MPLA Initiative as well as create applications for improved sediment management, to reveal onshore and offshore fault dynamics, and to help understand tsunami potential off our coast. By continuing to pledge in-kind support to the program, the USGS has allowed the CSMP to accomplish far more in each phase of work. CIAP funding will allow the California Geologic Survey and the Moss Landing Marine Lab to collaborate with the USGS to create final tier 3 interpreted geologic and habitat maps.

Agency	FY2008 Funding
NOAA OCS	$3,000,000
NOAA NMSP	$200,000
NOAA NMFS	$250,000
USGS	$500,000

CALIFORNIA OCEAN PROTECTION COUNCIL

The OPC strategic plan emphasizes the need to better understanding the biological, physical and socioeconomic processes of the coastal zone. Habitat maps of the seafloor represent the most fundamental data set missing in order to achieve this objective. This initial baseline dataset will help map and monitor marine protected areas addressing the dynamics of fisheries and other marine species; greatly contribute to our understanding of sediment transport and sand delivery; and better describe fault dynamics and tsunami potential. This initial data set will also allow for future mapping efforts to address changes in the seafloor habitats. Detailed bathymetric maps are also critical in the development of an ocean circulation model that will allow us to better predict ocean response to natural and human-induced changes.

This project will support several of the goals and objectives of the California Ocean protection Council's Strategic Plan, including:

Research and Monitoring Goal

Objective 2 – Monitoring – specifically prioritizes creating seafloor maps for all state waters:

- Objective 2d specifically states that OPC staff shall "pursue funding and partnerships to complete sea floor maps of all state waters. Ensure the distribution of marine habitat and substrate maps to promote effective management of fisheries, design of marine protected areas, and other management efforts. Mapping includes data acquisition, interpretation, and creation of habitat maps. Work with the federal government to map essential areas of federal waters. Implement the recommendations from the Statewide Marine Mapping Planning Workshop and Report." The CSMP is designed to accomplish this objective, and the CIAP funding would go directly to the creation of the final map products identified.
- Objective 2e addresses state-federal partnerships that leverage investments in mapping. *See "Coordination with Federal Resources and Program" section*.

- Objectives 2a-c supports the development of an integrated and relevant ocean observing program. Seafloor mapping is a critical part of our state's ocean observing program, and this project will serve as the basis for ongoing habitat change detection investigations.
- Objective 2g addresses creating a comprehensive monitoring program for MPAs, of which seafloor mapping is a critical element.

Physical Processes and Habitat Structure Goal
Objective 2 – Regional Sediment Management – address the implementation of the CA Coastal Sediment Master Plan. Highly detailed bathymetric data can be coupled with ocean current information to help understand sediment transport dynamics and sand delivery, and identify appropriate dredging and disposal sites.

Ocean and Coastal Ecosystems Goal
Objective 1 – Marine Life Protection Act (MLPA) – asserts the need to create a statewide network of marine protected areas. The CSMP has been funded specifically to address the data needs of the MLPA. However, the MLPA, The California Ocean Protection Act (Public Resources Code Sections 35500, et seq.), the OPC Strategic Plan, and many other marine policies laws and statues emphasize the need to implement ecosystem-based approaches to managing coastal and marine resources using sound science. Implementation of ecosystem-based management strategies requires consideration of interactions between species, their habitats, and human activities. Many of these interactions are not well understood, and significant data and information gaps hinder achievement of effective ecosystem-based management. Statewide, California's resource managers and scientists must often make decisions based on a patchy picture of the habitats that lie offshore. This is especially true of nearshore coastal habitats. The CSMP is designed to fill this critical data need.

CONSISTENCY WITH CIAP AUTHORIZED USES

This project is consistent with CIAP authorized use #1: Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands. Benthic habitat maps are a vital tool to allow managers to visualize the distribution, diversity and extent of marine communities under their jurisdiction. Recent advances in acoustic mapping systems, such as sidescan sonar and multibeam sonar, has made it possible to obtain high-resolution information about the seafloor, and has made benthic mapping feasible for large areas of the seafloor. Benthic habitat maps can be used to aid in siting and reviewing the environmental impacts of a wide variety of development projects on the seafloor. They can also be used as a planning tool to insure future protection efforts (fishery closures, marine protected areas, ocean use allocation) are habitat based and representative of all regional habitat types. Managers have a critical need to monitor the individual and cumulative impacts of human activity in the marine environment, which will be greatly facilitated when the spatial distribution of various benthic habitat types are known**.**

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

OCEAN PROTECTION COUNCIL

PROJECT TITLE: Integration of Science into Coastal and Ocean Policy and Management

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Statewide
Duration:	2009-2011
Total Estimated Project Cost:	$1,825,500
Total CIAP Funds Requested	$420,000
Amount/Source of Match:	$1,405,500 California Ocean Protection Council and TBD

CIAP Spending Estimate Per Year:

2009 – $140,000
2010 – $140,000
2011 – $140,000

Project Background and Description

Purpose: The purpose of this project is to support the integration of science into California coastal and ocean policy and management. The California Ocean Science Trust (OST) will 1) integrate coastal and ocean science into the Ocean Protection Council (OPC) decision making; and, 2) provide critical scientific advice and review to OPC members and staff decisions, thus meeting the mandates of the California Ocean Protection Act (COPA). The Executive Director of the OST will serve as the Science Advisor to the OPC and will co-chair a recently designated OPC Science Advisory Team (OPC-SAT). The OST will act as the scientific "arm" of the OPC by providing a Science Advisor, managing the OPC-SAT, coordinating expert advice/review, and acting as liaison and bridging institution. The CIAP funds will directly support the OST integration of science into coastal and ocean policy and management for the OPC.

The OST will improve coordination among scientists, policymakers, and resource managers, focusing specifically on issues that are a priority for the latter; establish mechanisms to connect science and scientists with the OPC; and establish mechanisms and partnerships to improve communication, collaboration, and quality of interactions between scientists and the OPC. Currently, no organizations have the same mandate.

Background: Two of the California OPC's principal mandates are: 1) to establish policies to coordinate the collection and sharing of scientific data between agencies on coast and ocean resources; and, 2) to improve the effectiveness of state efforts to protect ocean resources. In order to carry out these provisions, the OPC: 1) developed a Five-Year Strategic Plan which calls for the establishment of a OPC-SAT; and, 2) designated the Executive Director of the OST as the Science Advisor to the Council at the February 8, 2007 OPC meeting. To accomplish these mandates, the OPC provided a $200,000 grant through September 2008 to support the OST in initiating these services. The Science Advisor not only provides technical guidance to the OPC, but also serves as the OPC representative to relevant science projects and activities throughout the state, the West Coast, and nationally. To date the OST has implemented the following two tasks:

1. Develop and manage the OPC-SAT: activities include establishing the OPC Science Advisory Team, convening the SAT, and developing and disseminating SAT reports, analysis, and publications.

2. Provide integration of science into coastal and ocean policy and management and support to the OPC: activities include communicating with the scientific community; performing outreach as the OPC Science Advisor; reviewing OPC staff and Council documents; and developing an ocean expert directory.

The mission of The OST is to ensure science is informing California policy and management to maintain a healthy, resilient, and productive ocean and coast for the benefit of current and future generations. In support of the mission, a primary goal of the OST is to provide integration of science into coastal and ocean policy and management for the OPC, including the development and coordination of the Ocean Protection Council Science Advisory Team (OPC-SAT). The OPC-SAT offers the best and most authoritative science advice available to inform OPC staff recommendations and Council decisions for selecting issues and projects that meet the goals and objectives of the OPC Strategic Plan.

Project Description: The OST will integrate science into California coastal and ocean decision making and provide integration of science into coastal and ocean policy and management for the OPC. In support of COPA, the OST will provide avenues for academic researchers to learn more about policy and management needs and to share their research relating to management issues facing California in order to help coordinate data among OPC, state agencies, and other organizations. The OST plans to continue integrating coastal and ocean science into policy and management decision making by building scientific capacity and coordination.

The OPC, through OPC staff, will request support from the OST when it encounters problems, issues, or questions that would benefit from sound technical and scientific advice and review. Examples may include a synthesis of data needs to develop effective fishery management plans for lobster and halibut fisheries, and providing the state of the science on sources of beach pathogens that make people sick. The OST proposes the following sciences services to the OPC and will deliver the following outputs:

1. <u>Provide Scientific Recommendations to the OPC</u>: OST will provide OPC members and staff with advice through a variety of avenues including:

- Coordinate and Manage the OPC Science Advisory Team. The OST will coordinate and manage the OPC-SAT. This includes hosting an annual meeting in 2009, 2010, and 2011.
- Develop Research Priorities Linking Science to Management. The OST will coordinate the efforts of the new OPC Science Advisory Team (OPC -SAT) to develop research priorities in 2009, 2010, and 2011 for OPC research funding.
- Establish and Convene Technical Working Groups, Workshops, and Science Forums to Address Questions or Critical Management Problems Identified by OPC. The OST will coordinate two expert working groups a year on prioritized issues to assist OPC in decision-making or assessment of an issue. The OST will co-sponsor three workshops a year.
- Administer and Peer Review of Science. The OST will coordinate the development of contracted reports (produced either by academics or consultants), and internally-developed information syntheses and reports. The OST will conduct four expert technical science reviews a year.
- Maintaining Directory of Scientific Experts. The OST will maintain an ocean experts directory.

2. Bring Science to the OPC: To inform OPC staff and members of emerging critical ocean and coastal science issues of concern, as well as significant scientific findings, the OST will:
    - Respond to Information Requests: The OST will produce responses to OPC requests for information and advice and research questions for the SAT to address.
    - Connect Science to Policy and Management. The OST will share and disseminate information between the scientific community and relevant state agencies and OPC through various mechanisms including convening meetings among OPC staff, agencies, and scientists.
    - Exchange Information on Emerging Issues. The OST will bring emerging scientific information to the OPC by recommending speakers for OPC presentations and panels. And, make recommendations of emerging science needs and issues.

3. Provide Outreach to the Scientific Community: The OST will inform the scientific community of OPC activities and support the policy actions of the Council with robust scientific research. The OST staff will:
    - Attend up to 15 workshops/conferences annually.
    - Apply Science to Management. The OST will communicate with recipients of OPC funded research projects to ensure the researchers are coordinating with managers and the resulting research is applied to state management needs. The OST will conduct a program in collaboration with OPC, Sea Grant to link research grant recipients with resource managers.
    - Communicate OPC Objectives and Research Needs. The OST will make presentations to scientists and academic institutions on OPC objectives and research priorities.

4. Provide the Science Advisor to the OPC: The OST will provide the Science Advisor to the OPC, who oversees the development and provision of the integration of science into

coastal and ocean policy and management for the OPC. The OPC Science Advisor and OST will perform the following functions:

- Coordinate Science for COPA. Serve as lead scientific staff to the OPC by coordinating all scientific aspects of the planning and implementation of COPA
- Implementing Objectives of the California Ocean and Coastal Information, Research, and Outreach Strategy. Implement objectives of the California Ocean and Coastal Information, Research, and Outreach Strategy and to ensure that projects brought before the OPC meet scientific standards and established OPC funding guidelines.
  - Proposal Review. Participate in all the of project proposal review sessions to evaluate the technical merit of proposals submitted to the OPC for funding.
  - Resources Agency Sea Grant Advisory Panel Proposal Review. Support the Resources Agency Sea Grant Advisory Panel (RASGAP) process by providing review of proposals and advice to the OPC and Assistant Secretary for Ocean and Coastal Policy. Provided logistical support for and arrangement of RASGAP meetings as needed.
  - Sea Grant Proposal Review. Participate in the technical reviews coordinated by Sea Grant for the OPC funded research pre-proposals and full proposal review process.
- Communicate with Key Partners and Donors. Meet with representatives from state and federal agencies, NGOs, industry, foundations and others to discuss OPC research and monitoring priorities and identify opportunities for increased communication and collaboration.
- Participate in Steering Committees Representing OPC Objectives and Connecting Science to Policy and Management.

Additional funds are needed over the next three years to support the development and expansion of these critical services. OST is requesting CIAP funds to match OPC funding and build its programmatic capacity to deliver scientific services to the OPC.

Measurable Goals and Objectives

The OST collaborates with state policy makers, resource managers, key decision makers, scientists, and other relevant organizations to achieve two primary goals:

- Goal 1: Facilitate two-way connections between the world of science and that of policy and management by establishing and supporting multi-partner information systems and exchanges that yield tangible improvements in coastal and ocean management —The OST serves as a bridge among science, management, and policy organizations.

- Goal 2**:** Institutionalize the integration of best science, where necessary, into California coastal ocean policy and decision making by building new organizations, programs, and processes and catalyzing applied research—reflecting the great need to develop, disseminate, and apply science that is designed to inform and improve policy and management.

The OST objectives will lead to fulfilling the goals above:

- Meet with representatives from state and federal agencies, NGOs, industry, foundations, and others to discuss OPC research and monitoring priorities and identify opportunities for increased communication and collaboration.
- Provide outreach about OPC activities at conferences and meetings across the state, nationally, and internationally.
- Provide recommendations to the OPC on opportunities for collaboration on specific initiatives.
- Improve the integration of science into decision making of state agencies and coordinating bodies including the OPC.
- Design and establish mechanisms and partnerships to improve communication, collaboration, and quality of interactions among scientists and the OPC.
- Design and establish mechanisms to connect science and scientists with state agencies and coordinating bodies including the OPC.

Timetable and Deliverables

CIAP funds will specifically support 50% time of one Program Associate and 25% of the Science Advisor as well the following activities and deliverables:

COMPLETED BY	DELIVERABLES
Quarterly OPC Meetings 2009, 2010, and 2011	Attendance of Science Advisor and Program Associate at 4 OPC meetings every year.
January-July 2009, 2010, 2011	Co-sponsor 3 workshops on critical issues identified in collaboration with the OPC. *Location TBD*
July-September 2009, 2010, and 2011	Coordinate annual OPC-SAT meeting to determine OPC research priorities and emerging issues *Location TBD*
Continual	Maintain directory of experts

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

The OPC and state of California have a number of very successful and fruitful partnerships with federal agencies in support of federally-approved marine, coastal, or comprehensive conservation management plans, such as with the National Estuarine Research Reserves, the National Marine Sanctuaries, Sea Grant, the NOAA Restoration Center, the NOAA Coastal Services Center, and the MARINe rocky intertidal monitoring program. The OST will help the OPC make science-based decisions to provide funding in support of many of these partnerships. For example, the OPC strategic plan calls for providing $1 million dollars per year to Sea Grant to fund applied research. The OST will help develop and refine annual research priorities to ensure that these funds are used to support research that has direct application to state management needs. Helping the OPC prioritize funding for research and ensuring that the best available science is brought to bear on these federally approved plans and programs will improve how we manage and protect our ocean and coastal resources for the benefit of future generations.

CALIFORNIA OCEAN PROTECTION COUNCIL

As detailed above, The OST will provide integration of science into coastal and ocean policy and management for the OPC that will advance two of the OPC's principal mandates. It will also provide the essential scientific underpinnings to advance most of the goals and objectives in the OPC Strategic Plan. In particular, the OST services apply to and support objective 2 under *Governance* and objective 1 under *Research and Monitoring*.

Governance Goal*:*
Objective 2: Maximize the effectiveness of state agency efforts to protect and conserve ocean and coastal resources. The California Ocean Science Trust will collect, synthesize, and prioritize scientific research and findings to better inform Council decisions. The OST will also host working groups and forums to promote collaboration among the science community and between the science community and relevant state agencies.

Research and Monitoring Goal*:*
Objective 1: Improve scientific understanding of our ocean and coastal ecosystems. The OST will promote the actions outlined in the California Ocean and Coastal Information, Research, and Outreach Strategy to expand and improve access to ocean and coastal scientific information.

CONSISTENCY WITH CIAP AUTHORIZED USES

Providing integration of science into coastal and ocean policy and management to the OPC is consistent with CIAP authorized uses 1 and 2 under Section 31 (d) (1) (b):

Authorized Uses1:
Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.

This proposal will ensure the OPC has access to the critical scientific information needed to help ocean and coastal managers conserve, protect, and restore coastal areas, including wetlands. This proposal seeks to arm the OPC and ocean and coastal managers with the scientific information that they need for effective management. This approach will help ensure the most effective and efficient approaches are used to develop the most valid scientific information for policy decisions and management purposes.

Authorized Uses 2:
Mitigation of damage to fish, wildlife, or natural resources.

Making the best available science accessible to the OPC and ocean and coastal managers will improve decisions about mitigation as well mitigation effectiveness and efficiency.

The OST has no intent to use CIAP funds for cost sharing or matching purposes.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN
PROJECT PROPOSAL

OCEAN PROTECTION COUNCIL

PROJECT TITLE: California Thank You Ocean Public Awareness Campaign

PROJECT CONTACT INFORMATION:

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PROJECT SUMMARY:

Location:	California
Duration:	January 2009 – January 2011
Total Estimated Project Cost:	$900,000 for 2 years
Total CIAP Funds Requested	$200,000 total for 2 years
CIAP Spending Estimate Per Calendar Year	$ 100,000 (CY 2009) $ 100,000 (CY 2010)

Amount and Source of Non-Federal Match:

Ocean Protection Council:	$140,000 commitment
In kind services:	
California Resources Agency and California Ocean Protection Council:	$80,000 ($40,000 per year) in staff time
University of Southern California:	$24,000 ($12,000 per year) for program evaluator

Project Background and Description**:**

The Thank You Ocean campaign is a joint partnership between the California Resources Agency and the National Oceanic Atmospheric Administration (NOAA). Thank You Ocean is an ongoing campaign to raise awareness of ocean and coastal issues for all Californians and to encourage ocean stewardship.

A central component of the Thank You Ocean campaign is the Ocean Communicator Alliance. The California Ocean Communicators Alliance was created in April 2005 as a partnership between the National Marine Sanctuary Program within NOAA and the California Resources Agency. As of August 2007, the California Ocean Communicators Alliance has over 300 members, consisting of communications professionals in ocean-related organizations, agencies and businesses. These individuals and agencies help develop messages about the ocean and help communicate those messages to the public.

The need for greater public awareness about the conditions of our nation's coasts and oceans was identified in the 2004 Pew Ocean Commission and the U.S. Commission on Ocean Policy reports. In response to the U.S. Commission on Ocean Policy, the Bush Administration released the *U.S. Ocean Action Plan* in December 2004. The plan promotes lifelong ocean education through increasing coordination among ocean education organizations and incorporating a broad education and outreach mission into the operations of the NOAA.

The National Marine Sanctuaries Act under the jurisdiction of NOAA, in the findings, purposes and policies has a directive to enhance public awareness, understanding, appreciation, and wise sustainable use of the marine environment. The National Marine Sanctuary Program, established from the Act, is responsible for four marine sanctuaries in California. The National Marine Sanctuary Program manages a total of thirteen sanctuaries and one national monument.

In 2004, California was the first state in the nation to create a comprehensive plan to address concerns raised by the U.S. and Pew Ocean Commissions. The plan, *Protecting our Ocean: California's Action Strategy*, contains the following action:

Develop an Ocean and Coastal Stewardship Campaign. The Schwarzenegger Administration will work with members of government, academia, industry, and non-governmental organizations to develop a series of public service announcements to help get the word out regarding the role of average citizens in protecting and managing California's ocean and coastal resources.

In addition, the California Ocean Protection Council's (OPC) five year strategic plan, *A Vision for Our Ocean and Coast*, seeks to increase public awareness of ocean and coastal issues and encourage individual stewardship. The development of a public media campaign is specifically called out in the plan.
The project involves using $200,000 of CIAP funds to support the Thank You Ocean Campaign which would be used to purchase media buys in California communities. Examples of media buys could include: outdoor advertising, media sponsorship and radio news sponsorship, including the California Report hosted by National Public Radio.

<u>Deliverables</u>
The Thank You Ocean team will consult with the campaign strategist to determine the most effective purchase of media time depending upon the timing of the purchase and California Resources Agency and NOAA goals.

Examples of deliverables may include, but are not limited, to the following:

Example #1	**Amount**
Outdoor advertising	$50,000
Radio news sponsorship	$50,000
Total per year	**$100,000**

Example #2	**Amount**
Outdoor advertising	$50,000
Print advertising	$50,000
Total per year	**$100,000**

Example #3	**Amount**
Radio news sponsorship	$50,000
Print advertising	$50,000
Total per year	**$100,000**

For each grant reporting period, the Thank You Ocean team will report details of the media purchase such as the number and location of outdoor advertising, the number and respective channels for television advertising, or the number and venue for print advertising. As stated previously, the determination of the media purchase for each year will be made in coordination with the Thank You Ocean campaign strategist (contracted in June 2008).

Measurable Goals and Objectives:

2009 Work with campaign strategists to identify most appropriate and cost-effective media type (radio vs. print)
Identify which particular media outlet (i.e., National Public Radio vs. local radio station) would be most cost-effective and appropriate
Develop script for radio and graphic design for print advertising
Purchase media time
Evaluate effectiveness of campaign

2010 Revise media strategy based upon prior evaluation
Purchase additional media time based upon revised media strategy
Evaluate effectiveness of campaign

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

As stated previously, the Thank You Ocean campaign is a joint partnership between NOAA and the California State Resources Agency. This partnership has been effective in developing materials and messages as well as leveraging funds for the Thank You Ocean campaign.

National Marine Sanctuaries Act

The National Marine Sanctuaries Act under the jurisdiction of NOAA, in the findings, purposes and policies has a directive to enhance public awareness, understanding, appreciation, and wise sustainable use of the marine environment. The National Marine Sanctuary Program, established from the Act, is responsible for four marine sanctuaries in California. The National Marine Sanctuary Program manages a total of thirteen sanctuaries and one national monument.

The National Marine Sanctuary Program contributes 5% of time for the co-chair of the campaign and an average of 95% of the time of two communications professionals between April 2005 and August 2007. As of September, 2007, the Program contributes 40% of a media/outreach coordinator and 50% of an ocean etiquette coordinator to the campaign. The National Marine Sanctuary Program was aided by several volunteer interns, including a graduate student from the Bren School of Environmental Management at the University of California, Santa Barbara. The estimated in-kind contribution of NOAA is approximately $200,000 per year.

- **NOAA Fisheries**
  The campaign received further funding from NOAA Fisheries in July of 2006 in the amount of $5,000 for support of Ocean Communicators Alliance Workshops for further campaign development.

- **Channel Islands Sanctuary Foundation**
  The Channel Islands Sanctuary Foundation contributed $25,000 to campaign brand identity development for the campaign in August 2006.

Non-federal funds:

- **The Ernest F. Hollings Ocean Awareness Trust Fund:**
  The campaign received $25,000 from the Ernest Hollings Trust Fund in July 2006. These funds were dedicated to building the Thank You Ocean Website. The Thank You Ocean campaign received an additional grant of $20,000 from the Ernest Hollings Trust Fund in November 2007 to develop podcasts and targeted news radio stories.

- **Resources Legacy Fund Foundation**
  The campaign received funding from the Resources Legacy Fund Foundation in the amount of $100,000 in May 2006. Funds from the foundation were directed to purchasing media for campaign billboards and outdoor advertisements.

- **Marisla Foundation**
  The Marisla Foundation contributed $25,000 in February 2007 for translation of the television public service announcement into Spanish.

- **California Resources Agency**
  The California Resources Agency contributed $14,000 in 2006 and 2007 for the purchase of stainless steel Thank You Ocean mugs. The California Resources Agency also contributed $58,000 to the campaign in May 2007 to hire a web content coordinator and a web host/web master. The funds are committed for contracts of one year, or until May 2008.

CONSISTENCY WITH THE CALIFORNIA OCEAN PROTECTION COUNCIL

The campaign will advance the state toward meeting the goals and objectives of the California Ocean Protection Council with respect to education and outreach. The Ocean Protection Council's Five Year Strategic Plan includes the following action item; "Build a public media campaign with the National Marine Sanctuary Program and the Ocean Communicators Alliance."

Governor Arnold Schwarzenegger's 2004 Ocean Action Plan also contains an action item directly related to the Thank You Ocean campaign; "Launch an ocean and coastal stewardship media campaign by working with members of government, academia, industry, and non-governmental

organizations. This would, at a minimum, include a series of public service announcements to help inform the citizens about their role in protecting and managing California's ocean and coastal resources."

CIAP AUTHORIZED USES

The Thank You Ocean campaign is consistent with Authorized use #1: "projects and activities for the conservation, protection, or restoration of coastal areas, including wetland;" (1356a(d)(1)).

The campaign targets California citizens to become active in ocean and coastal activities. Thank You Ocean links the public with a way for them to become involved with ocean and coastal activities that seek to conserve and protect the marine environment. Ocean stewardship can be dramatically improved through statewide outreach programs such as Thank You Ocean.

There is growing recognition that the majority of impacts to California's enclosed waters and nearshore ocean zones derive from pollution generated on land and then transported through inland waterways to the ocean. California's $46 billion ocean economy is dependant on a healthy and robust ocean ecosystem. A variety of ocean and coastal industries, including commercial and sport fishing, mariculture, biotechnology, tourism, and recreation, depend upon healthy ocean ecosystems. Long-term maintenance and enhancement of the state's ocean and coastal resources can only be achieved with coordinated efforts to manage California's entire ocean ecosystem (i.e., resources located on both land and sea). For these reasons, California's Thank You Ocean campaign proposal submitted through CIAP provides a comprehensive approach to addressing key stewardship concerns related to coastal access, ocean and coastal habitats, marine life and fisheries, shoreline erosion, and watershed issues.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

OCEAN PROTECTION COUNCIL

PROJECT TITLE: Santa Cruz Marine Debris Reduction Program

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Santa Cruz, California
Duration:	Two Years
Total Estimated Project Cost:	$210,000
OPC/Conservancy Match:	$100,000
CIAP Spending Estimate per year:	2009 – $110,000 2010 – $100,000

***** The first year of the program (2007/08) is already being funded by the Conservancy; the second and third year would be supported with CIAP funds.

Project Background and Description

The Santa Cruz Marine Debris Reduction Program will develop a locally-based pilot program to demonstrate techniques for engaging community citizens, businesses, and government in the prevention and reduction of marine debris. The goal of the program is to advance the California Ocean Protection Council (OPC)'s Marine Debris Resolution and implement draft actions outlined in the agency's Ocean Litter Implementation Strategy. The program will identify debris sources, pathways, and hotspots during routine watershed and beach clean-ups, and use the data collected to develop effective marine debris prevention and reduction strategies to be implemented at a local level.

At its February 7, 2007 meeting, the California Ocean Protection Council (OPC) called attention to the significant threat of marine debris to the state's marine and coastal environment and adopted a resolution calling for the continuation and expansion of watershed-based cleanups, and the promotion of education and outreach on the impacts of plastic debris and litter prevention.

To advance the state's progress toward meeting these goals, the Coastal Conservancy in concert with the nonprofit organization Save Our Shores will develop a community-based pilot program for marine debris reduction. The program is focused on engaging the City of Santa Cruz and community members in identifying the primary sources of marine debris in their region, educating and outreaching to businesses and the public about reducing marine debris sources, and

establishing citizen clean-up efforts and stewardship programs to remove and reduce debris in local waterways.

Marine debris is commonly single use disposable food and liquid containers, plastics, derelict fishing gear and cigarette butts. Since these are often products disposed of by individual citizens, a critical element of a debris reduction effort is educating the public about their negligent actions and their impacts. At the same time, businesses and governments need to improve debris receptacle availability and design, and invest in more environmentally friendly products where available.

The Conservancy will fund a pilot project for three years in the City of Santa Cruz to establish a model marine debris reduction program that could be adopted by other communities. This model will demonstrate techniques for engaging community citizens, businesses, and government in the prevention and reduction of marine debris in the marine and coastal environment.

Measurable Goals and Objectives

The goals of the Santa Cruz Marine Debris Reduction program are the following: to collect data on marine debris abundance, frequency and sources and identify significant debris sources and pathways; to engage coastal users and businesses in marine debris reduction strategies; to assist local government in developing marine debris policies and strategies; to develop and disseminate outreach materials on marine debris and its impacts; and to support marine debris clean-up efforts in local watersheds and beaches.

These goals will be achieved through the following measurable objectives:

OBJECTIVE 1: Develop a marine debris data collection card and database that can be easily used by local volunteers and incorporated into other state and national debris data databases.

OBJECTIVE 2: Collect data on debris sources and pathways in the County and prepare a report that highlights the most abundance, frequency and sources of local marine debris.

OBJECTIVE 3: Develop local volunteer and stewardship groups to provide monthly clean-up efforts, continue data collection, and build community awareness.

OBJECTIVE 4: Establish a working group with the City and County government, and the State Parks Department to analyze the data collected on marine debris and determine strategies for increasing receptacles, providing clean-up efforts after popular beach use days (i.e. July 4th) and enhancing litter enforcement.

OBJECTIVE 5: Develop strategies for promoting the use more environmentally friendly disposable products by local businesses.

OBJECTIVE 6: Research methods for tracking marine debris and determine approaches for evaluating the efficacy of various debris prevention and reduction strategies.

OBJECTIVE 7: Provide a description of a program model that can be applied to other communities, discuss lessons learned from establishing the program, and recommendations for engaging local government, citizens and businesses.

Timeline for Deliverables

COMPLETED BY	DELIVERABLE
October 2008	Development of a model debris data collection card.
June 2009, June 2010	Report on debris abundance, frequency, and sources.
October 2008, Oct 2009, Oct 2010	Annual summary of monthly clean up activities and development of stewardship groups.
September 2009	Report on strategies for tracking marine debris and evaluating prevention and reduction strategy efficacy.
September 2010	Description of a program model, including recommendations for engaging local government community citizens and businesses in local marine debris reduction and prevention actions.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

The program is designed to be consistent with the U.S. EPA's marine debris abatement program. Save Our Shores will be developing debris tracking cards based on the EPA's National Marine Debris Monitoring Program, and continuing to build on this data collected from 2001-2006. The program also emphasizes the NOAA marine debris program strategies: source tracking, reduction, and prevention and community participation in International Beach Clean-up Day sponsored by NOAA, U.S. EPA and the Ocean Conservancy.

Save Our Shores submitted an application for funds under NOAA's 2007 community based marine debris prevention and removal grant program to expand on the activities funded by the Conservancy in 2007/2008. These activities include expanding debris removal efforts at the local harbor through a Dockwalker program and the Harbormaster, establishing a partnership with the NOAA funded derelict gear removal program led by UC Davis to collect citizen reported data on derelict gear, and working with local government officials on reducing cigarette butt debris.

CALIFORNIA OCEAN PROTECTION COUNCIL

The program is designed to meet the goals outlined in the OPC adopted marine debris resolution on February 8, 2007, and implement draft actions in the OPC's Ocean Litter Implementation Strategy released in July 2008.

The program is also consistent with the following OPC strategic goals:

Ocean and Coastal Water Quality Goal

Objective 1: Enforce pollution controls

The Santa Cruz Marine Debris Reduction Program directly addresses the OPC performance measure of *decreasing the tonnage of debris along the coastline and in coastal waters by 50% from 1999 by 2011.* The community model program will demonstrate techniques for collaborating with local and state government to implement and enforce pollution controls, with the goal of reducing the introduction of debris to ocean and coastal ecosystems.

Physical Processes and Habitat Structure Goal

Objective 1: Habitat Restoration
Marine debris clogs, pollutes, and degrades coastal waterways and the nearshore habitats of our marine environment. These are often critical habitat areas for coastal birds, endangered marine mammals such as sea otters, and serve as spawning and breeding activities for many other sensitive marine and coastal species. Plastic nurdles, derelict fishing lines, and cigarette butts often found in coastal and nearshore water habitats can result in injury or death of these species. By removing marine debris from these areas and preventing the introduction of debris into these habitats, the community model program will greatly enhance and restore the quality of these habitats.

Ocean and Coastal Ecosystems Goal

Objective 1: Marine Life Protection Act
The Marine Life Protection Act is establishing marine protected areas along the State that can stretch to the shoreline and include river or creek openings. By developing a pilot program to be outsourced across the state, OPC will be building local capacity to reduce and remove marine debris that may impact the effectiveness of these protected areas in restoring ocean and coastal ecosystems.

Education and Outreach Goal

Objective 1: Public Awareness
The pilot program will be conducting a significant amount of education and outreach to community citizens, government, and businesses about marine debris and its impacts. In addition, the program will emphasize individual stewardship by establishing citizen clean-ups, using local businesses to promote proper debris disposal and more environmentally friendly products, and heavily engaging recreational and commercial marine and coastal users in collecting and removing marine debris.

CONSISTENCY WITH AUTHORIZED CIAP USES
The community marine debris reduction program meets criteria 1 stipulated by the California Coastal Impact Assistance Program as *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands.*

The proposed work program directly addresses the conservation, protection, and restoration of coastal areas. The program will establish a community model for the removal and reduction of marine debris, with the overall objective of restoring the water quality and habitat of the coastal and marine areas currently impacted by this debris, and protecting these habitats from further degradation. Because marine debris is directly linked to individual behaviors and local stewardship of coastal and marine resources, efforts at the State level will require complimentary community-based efforts to successfully address the debris problem. The program is consistent

with the California Ocean Protection Council's strategy to reduce the impact of marine debris on the state's coastal areas and staff anticipate working with Save Our Shores to link the local and state efforts, as well as outsource lessons learned to other communities across the state.

The Conservancy intends to use the requested funds to match the $100,000 (one hundred thousand dollars) that it will commit to this project. The project will be funded at $110,000 for one year and $100,000 for the second year, for a total of $210,000.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

NATURAL RESOURCES AGENCY

PROJECT TITLE: Development and Implementation of California's Wetland Monitoring Tool Kit

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PROJECT SUMMARY

Project Location:	California Coastal Watersheds
Project Duration:	2009 – 2011
Total Estimated Project Cost:	$1,005,000
Total CIAP Funds Requested:	$795,000
Amount and Source of Match:	$210,000

State Coastal NPS Program (Proposition 50 Grant)

Total CIAP Funds Requested: $795,000

CIAP Spending Estimate per Year	2009:	$400,500
	2010:	$294,500
	2011	$100,000

Project Purpose and Background

The purpose of this project is to further develop and implement a standardized set of assessment and tracking tools for California wetlands and riparian areas. Watersheds within the Regional Water Quality Control Boards 1-4, 8 and 9 comprise the proposed geographic focus.

Over the past five years, statewide and regional teams of scientists and agency staff have been developing standardized wetland assessment and tracking tools modeled after USEPA's three-level framework for wetlands monitoring (USEPA Elements Letter, 2006). Level 1 tools yield map-based inventories of wetlands and riparian areas and related on-the-ground projects; Level 2 tools yield field-based diagnoses of condition based on standard visual indicators relative to the full array of beneficial uses or ecological services expected for the type of habitat being assessed; and Level 3 tools are used to quantify specific aspects of condition, beneficial uses or services, or stressors that might account for the observed conditions. California's wetland monitoring toolkit currently consists of the following tools.

- **Level 1 wetland and riparian mapping methods**. A state wetland inventory is being produced in cooperation with the California Riparian Habitat Joint Venture and the National Wetlands Inventory (NWI) of USFWS. The methods are being piloted through regional projects covering nearly 15,000 mi^2 in the Bay Area and Southern California coastal watersheds. The products shall be used to update the National Hydrographic Dataset of the

USGS as well as the NWI. The riparian methods generate maps of the expected extent of riparian area based on topography, vegetation structure, and user-selected riparian beneficial uses.

- **Standardized Level 2 rapid assessment method (CRAM)**. The California Rapid Assessment Method (www.cramwetlands.org) is the Level 2 method of choice for wetland and riverine-riparian wetlands. There is also a "field-to-PC" data collection and management software package (eCRAM) to help assure data consistency and standards.
- **Standardized Level 3 protocols**. The State has begun to implement CRAM alongside the Level 3 California Stream Bioassessment Procedures though the Perennial Steam Assessment Program (PSA) of the Surface Water Ambient Monitoring Program (SWAMP). Regional teams are developing additional Level 3 protocols for stream periphyton, sentinel species indicators of mercury problems in estuarine wetlands and riparian areas, and stream geomorphology at the reach and watershed scales. The State's Vegetation Classification and Mapping Program (http://www.dfg.ca.gov/biogeodata/vegcamp/) provides a Level 1 protocol for mapping wetland vegetation.
- **Wetland Tracker information system**. Public access and inter-agency exchange of data and information about wetlands and riparian areas is made possible in some coastal regions of California through an open-source, web-based information system called Wetland Tracker (www.wetlandtracker.org). The system will enable state and federal agencies and the public to track permits and the progress of projects relative to regional ambient condition and project-specific performance criteria. The system is being implemented through existing SWAMP Data Centers with future links to the California Environmental Data Exchange Network (CEDEN).

Coordination with Other Federal Resources and Programs

The wetland monitoring and assessment toolkit has been developed over the past seven years with funding, advice, and in-kind services from USEPA, NOAA, and the USACE. The toolkit is based on the framework and guidance for comprehensive wetland monitoring provided by USEPA. The USGS and USFWS have helped develop the mapping methods and are using them to update the National Hydographic Dataset (NHD) and National Wetland Inventory (NWI) through the State's pilot mapping efforts. The USACE has formally reviewed CRAM and is considering pilot implementation of CRAM through its CWA 404 program in the Los Angeles and Sacramento Districts. Further development and implementation of the monitoring toolkit, including the work conducted through CIAP, will have oversight from the California Wetland Monitoring Workgroup that includes representation of the USEPA, USACE, NRCS, and USFWS.

Project Description and Work Plan Outline

To achieve broader success in implementing the wetland monitoring toolkit, the following tasks need to be conducted:

1. Support inter-regional coordination of continued toolkit development;
2. Upgrade Wetland Tracker engineering based on user community input;
3. Validate CRAM for depressional wetlands;
4. Establish North Coast Team through regional watershed demonstration project.
5. Manage the project to report progress and outcomes.

Task 1 (years 1-3): Inter-team coordination. Grant funds will be used to coordinate among the four coastal regional teams and to produce and present technical materials to the State Wetland Monitoring Workgroup (CWMW) and for other interagency briefings.

Task 2 (years 1 and 2): Wetland Tracker. Grant funds will be used to update and upgrade the Wetland Tracker information system and eCRAM based on state and regional priorities as assessed by the CWMW. For eCRAM, this includes incorporating local imagery, enabling batched data uploads and downloads, updating eCRAM for depressional wetlands, and enabling user-defined data queries. For Wetland Tracker, upgrades include final conversion to open source code, development of online mapping tools to standardize habitat maps and project maps through the State's 401 Program and SWAMP, and automation of summary reports of wetland extent and condition. While additional upgrades can be expected, the planned work is designed to meet essential needs through 2011.

Task 3 (years 1-3): Validate CRAM for depressional wetland systems. The CWMW recognizes that the depressional wetland type includes seasonal and perennial sub-types for which CRAM needs to be separately adjusted. CRAM calibration will involve forming new sub-teams to compare CRAM scores to existing Level 3 data statewide.

Task 4 (years 1-3): North Coast Team formation and watershed demonstration. To formally establish the North Coast team as a regional entity to coordinate wetland monitoring, it will conduct a community-based, multi-agency demonstration of the monitoring toolkit in one watershed selected by the regional interests.

Task 5 (years 1-3): Project coordination and administration. The four coastal regional teams will continue to work together as co-leads on all CIAP technical tasks. SFEI will play the lead role for contract administration, progress reporting, and final reporting. The final report will be a description of the products generated by each task, with an assessment of their use to date by public agencies and other members of the coast-wide community of wetland interests.

Measurable Goals and Objectives and Timeline

Task	Year 1 Quarter				Year 2 Quarter				Year 3 Quarter			
	1	2	3	4	1	2	3	4	1	2	3	4
1: Coordination												
Produce agendas, minutes, presentations	X	X	X	X	X	X	X	X	X	X	X	X
2. Information Technology												
Remove backlog of project data input			X									
Conceive change detection method			X									
Deploy online Tracker update form				X								
Automate Tracker updates/QAQC				X								
Deploy project notification tool				X								
Enable CRAM batch upload/download							X					
Deploy CRAM results visualization tool						X						
Deploy habitat change detection tool								X				
Create eCRAM installer						X						
Enable eCRAM and online map editing							X					

Update eCRAM for depression wetlands											X	
3. Validate CRAM Module												
Assemble statewide team		X										
Conduct initial field tests				X								
Assemble Level 3 Data					X							
Identify Validation sites				X								
Conduct validation field work statewide								X				
Analyze validation results										X		
Finalize depressional module of CRAM												X
4. Watershed Demonstration												
Form regional team			X									
Develop sample frame					X							
Develop sample draw						X						
Assess ambient condition								X				
Assess project condition								X				
Report on watershed demonstration											X	
5. Project Administration												
Manage contracts	X	X	X	X	X	X	X	X	X	X	X	X
Produce progress reports	X	X	X	X	X	X	X	X	X	X	X	X
Produce final report												X

CALIFORNIA OCEAN PROTECTION COUNCIL

A. Governance Goal

Effectiveness of funds: Project prevents applying a single expensive monitoring approach when not warranted. Level 2 rapid assessment is effective use of limited funds. Spending for Level 3 intensive assessment can then be targeted as needed.

Interagency collaboration and agency effectiveness: Project increases capacity to evaluate performance of wetland policies and programs by standardizing assessment with cost-effective tools.

Ecosystem based management: Project is fundamentally an ecosystem approach to wetland and riparian assessment. Assessment Levels 1-3 provide profiles of ecosystem condition and status of key ecosystem services across the full range of existing condition.

Federal influence: Project will update the NWI of USFWS, the NHD of USGS, implement the USEPA guideless for state wetlands monitoring, and will build state capacity for the national assessment of wetlands planned by USEPA for 2011.

Regional coordination: Toolkit is designed to foster inter-regional coordination of wetland and riparian assessment using shared assessment tools and data management systems linked to state clearing houses.

B. Research and Monitoring Goal

Improve understanding of coastal ecosystems: Project will provide a baseline measure of wetland and riparian conditions for coastal watersheds that will serve to assess the relative effects of climate change and management actions on watersheds health.

Monitoring: Project provides maps of coastal wetland and riparian areas consistent with state and federal guidelines and local agency needs. Project implements a state-sanctioned framework for wetland monitoring for all wetland types and related projects.

C. Coastal Water Quality Goal

Coordinate and support water quality personnel and programs: Project will provide standard tools across programs to track projects and to assess all wetlands and riparian areas in coastal watersheds.

Support new technologies and approaches to reduce NPS pollution: Project implements first-ever open source IT technology to track project permits and resource condition.

D. Physical Processes and Habitat Structure Goal

Support state efforts to detect impacts of climate change and develop strategic responses: Coastal wetlands, especially tidal wetlands ands season wetlands, are on the front line of sea level rise and climate change. Project will establish baseline picture of extent and condition of these resources and a set of tools to cost-effectively track their response to climate change through existing programs.

Significantly increase capacity to respond and reduce invasive species: Project provides base map for tracking invasions in wetlands and riparian area, and a rapid method of assessment sensitive to biological invasion.

E. Education ands Outreach Goal

Increase public awareness of coastal issues and encourage stewardship: Project provides first-ever online access to standardized wetland and riparian maps and information of adequate detail and accuracy to inform local, watershed-based, and regional planning.

CONSISTENCY WITH AUTHORIZED CIAP USES

This project is consistent with **authorized use #1 (projects and activities for conservation, protection, or restoration of coastal areas, including wetlands**) because it will enable the coastal community of environmental managers, scientists and the public to routinely and consistently assess the ambient condition, restoration opportunities, and performance of. wetland and stream protection policies, programs, and projects. The proposed work establishes a framework to organize existing and new methods into a common approach among federal, state, regional and local agencies and NGOs to efficiently share responsibilities for tracking the relative effects of climate change, other stressors, and management actions on the distribution, abundance, and condition of coastal wetlands and streams.

The project is also consistent with **authorized use #2 (mitigation of damage to fish, wildlife, or natural resources)** because it will enable the coastal community of environmental interests to readily track the net change in habitat acreage and condition due to mitigation actions, while also training state and local agency staff and NGO staff to assess wetland and stream condition using

existing and new tools to better avoid negative impacts to fish, wildlife, and natural resources. It will also enable the community to better identify mitigation requirements.

This project can be consistent with **authorized use #3 (planning assistance and the administrative costs of complying with CIAP)** by providing a common framework and web-based data management system for tracking intertidal and upland CIAP projects in the context of all other restoration projects at the watershed and regional scales. This can enable CIAP staff and participants to assess the contribution of CIAP projects to ambient conditions.

The proposed project is consistent with **authorized use #4 (implementation of a federally-approved marine, coastal, or comprehensive conservation management plan)** because it fulfills entirely or in part wetland and other environmental monitoring components of many federal plans, including the CCMPs of San Francisco Bay, Morro Bay, and Santa Monica Bay; Endangered Species Recovery Plans for California intertidal and anadromous species, the Long-Term Management Strategy for dredging SF Bay, and the national Non-Net-Loss wetland policy. For many of these plans and others, the proposed project will provide a common framework to organize monitoring data for its spatial integration. For example, the project will implement the National Hydrographic Dataset standards of the USGS as well as the emerging standards of the NWI of the USFWS. This project supports the federal Mitigation Action Plan and it implements the USEPA guidelines for comprehensive state wetland monitoring programs.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

NATURAL RESOURCES AGENCY

PROJECT TITLE: Implementation of the Action Plan for the West Coast Governors' Agreement on Ocean Health

PROJECT CONTACT INFORMATION:

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PROJECT SUMMARY:

Location:	California
Duration:	June 2009 – December 2011
Total Estimated Project Cost	At least $5 million for initial implementation
Total CIAP Funding Requested:	$225,000
Amount and Sources of Match:	$1,000,000 potential commitment from the Ocean Protection Council $80,000 per year in staff time from the California Resources Agency and the Ocean Protection Council
CIAP Spending Estimate Per Year:	2009 - $75,000 2010 - $75,000 2011 - $75,000

Project Background and Description:

The Governors of Washington, Oregon, and California formed a landmark partnership on September 18, 2006 when each signed the West Coast Governors' Agreement on Ocean Health. In the agreement, the Governors identified seven issues of regional significance, which they believe will be more effectively addressed through the collective effort of all three states. Together, the three states are joining forces to help protect the health of ocean and coastal ecosystems along the entire West Coast and the economies that depend on them. By working together to forge solutions and leverage funding, and by supporting and agreeing to national and state-level policies on coastal activities that impact the region, the Governors hope to make significant improvements in ocean and coastal health for the entire region.

The Agreement directs staff of the three Governors to take certain immediate actions, and to develop a more extensive action plan within one year. The three states prepared a discussion paper to guide public input on actions for consideration during development of the action plan and sponsored a series of meetings to obtain public and stakeholder input on the Agreement. A draft plan was released for public comment in October 2007 a final plan was released on July 29, 2008.

In order to implement some of the actions, the states will need to form work groups comprised of state, federal, and external experts on a particular issue. The work groups will be responsible for developing action-specific work plans. The work groups will meet face-to-face for the first time at an implementation meeting, scheduled for October 2008, in Seattle, Washington. The first part of the meeting would consist of a plenary session in which the state and federal leads would outline the vision and goals of the West Coast Governors' Agreement on Ocean Health. The second part of the meeting would consist of various meetings of action-specific work groups that would be charged with developing implementation work plans.

Although implementation of the West Coast Governors' Agreement on Ocean Health will require funding from a variety of sources, we propose to use CIAP funds for the following:

Coordination of work group activities and writing of status reports

In developing the final action plan for the West Coast Governors' Agreement on Ocean Health, the three states have been aided tremendously by the assistance of Rebecca Pollock of NOAA's Coastal Services Center. Ms. Pollock scheduled meetings amongst the representatives of the three states, between the states and the federal co-leads, and coordinated writing the final action plan. Unfortunately, Ms. Pollock's services will not be available after the release of the final action plan. The states, however, feel that coordination amongst the states continues to be a critical role as the project moves from planning to implementation. The California Resources Agency proposes to use CIAP funds for the services of a contractor who would serve as the project manager. The contractor will have four tasks:

Task 1: Project status management:
Contractor will be the point of contact between the action-specific work groups and the Governors' representatives. The contractor will be responsible for providing up to date information on the status of the action items to the state representatives. Contractor will facilitate on an as needed basis, conference calls with appropriate persons to determine the status of the action item.
Deliverables: Contractor will develop periodic status reports on action items, including the two-year formal report the states committed to in the final action plan.

Task 2: State Conference Calls:
Contractor will convene at least monthly conference calls on the status of action items within the agreement. Contractor is responsible for communicating with participants, primarily through email to schedule calls, for developing and disseminating call agendas in advance, for memorializing discussions, and using information and decisions reached on calls to inform subsequent actions.
Deliverables: Contractor will develop agendas and regular updates for WCGA team.

Task 3: Federal Conference Calls:
Contractor will convene conference calls among the Governor's representatives and federal leads from the National Oceanic Atmospheric Administration (NOAA), Department of the Interior (DOI), and the Environmental Protection Agency (EPA) for purposes of gathering information on federal participation in the agreement. Contractor is responsible for communicating with participants, primarily through email to schedule calls, for developing and disseminating call agendas in advance, for memorializing discussions, and using information and decisions reached on calls to inform subsequent actions.
Deliverables: Contractor will develop agendas and updates on action items for the WCGA.

Task 4: Content Manager for Website:
Contractor will be responsible for providing and updating content on a website dedicated to the WCGA. Web hosting and web master services will continue to be provided by NOAA's Coastal Services Center. Contractor will be responsible for reviewing and disseminating, as appropriate, public comment submitted thought the website.
Deliverables: Contractor will be responsible for timely updates on the website (www.westcoastoceans.gov) in addition to developing the website material to keep the public apprised of the status of the action items.

Task 5: Professional Services:
Contractor will be responsible for research, writing and communication tasks needed to produce memos, letters, and report updates on the actions outlined in the WCGA. Interim components may be required to support ongoing efforts between state and federal entities.
Deliverables: Letters to fulfill specific actions in final action plan. Contractor will develop a formal 2 year update report on the status of the action items listed in the WCGA. This report will be distributed widely to the public.

Overall Budget for Contractor per Year	
Professional Services	$72,000
Photocopying/supplies	$1,000
Travel	$2,000
Total	$75,000
Total for 3 years	**$225,000**

Measurable Goals and Objectives:

2009 Selection of contractor to serve as project manager
Development of action-specific work plans
Coordination of action-specific work groups including workgroups on climate change, polluted runoff, marine debris, *Spartina* eradication, Integrated Ecosystem Assessments, offshore alternative energy development, ocean awareness and literacy, sea floor mapping, and sustainable coastal economies.

2010 Continued implementation of actions
West Coast Governors' Agreement on Ocean Health formal status report due two years after release of final action plan (July 2010)

2011 Continued implementation of actions
Implementation status reports to a variety of audiences as appropriate

Although the activities outlined in this proposal are expected to be complete by December 31, 2011, some of the actions in the final plan have timeframes for completion that go beyond 2011. The states will continue to pursue implementation of those actions with other funding sources.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

The West Coast Governors' Agreement is a partnership between California, Oregon and Washington with the assistance of federal counterparts from National Oceanic Atmospheric Administration (NOAA), Department of the Interior (DOI), and the Environmental Protection Agency (EPA).

CONSISTENCY WITH THE CALIFORNIA OCEAN PROTECTION COUNCIL

The West Coast Governors' Agreement on Ocean Health final action plan completes the California Ocean Protection Council's Objective 6 under Governance which states "Adopt a tri-state agreement between California, Oregon, and Washington, that focuses on initiatives by all three states to improve ocean and coastal management."

CONSISTENCY WITH AUTHORIZED CIAP USES

The West Coast Governors Agreement on Ocean Health is consistent with authorized use #1: "projects and activities for the conservation, protection, or restoration of coastal areas, including wetland;" and authorized use #2 "mitigation of damage to fish, wildlife, or natural resources" (section 1356a(d)(1)(E)). To illustrate this consistency, several actions in the plan are described:

"Action 2.2: Restore estuarine habitats, including seasonal wetlands, to achieve a net increase in habitat and their function by at least 10% over the next 10 years." This action seeks to conserve and protect coastal areas, as described in the CIAP authorized use #1.

"Action 4.2: Explore the feasibility for offshore alternative energy development and evaluate the potential environmental impacts of these technologies". This action will evaluate the environmental impacts of wave and tidal energy projects which are in various stages of development along the West Coast. The three states will work together, and in partnership with federal agencies, to conserve and protect habitat and wildlife species that may be impacted by wave and tidal energy projects.

"Action 7.4: Develop regional sediment management plans to maximize beneficial use of sediment in an environmentally responsible manner to protect and maintain critical community economic and environmental infrastructure." Under this action, the three states will work together, and in partnership with federal agencies, to continue progress on regional sediment management plans and to effectively address legacy pollutants in sediments.

For the three actions described above, and for the remaining 23 actions in the Action Plan, the CIAP funds will be used to help coordinate work between representatives of California, Oregon, Washington, and the federal government to develop action-specific work plans. The action-specific workplans will guide the work to achieve the goals in the Action Plan for the West Coast Governors' Agreement on Ocean Health.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

RESOURCES AGENCY

PROJECT TITLE: California and the World Ocean Conference 2010

PROJECT CONTACT INFORMATION:

Name of Primary Staff Contact:	Amy Vierra, Ocean and Coastal Policy Analyst
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E-mail Address:	amy.vierra@resources.ca.gov

PROJECT SUMMARY:

Location:	California
Duration:	June 2009 – October 2010
Total Estimated Project Cost:	$276,500
Total CIAP Funds Requested	$120,000
CIAP Spending Estimate Per Year	2009 - $40,000 2010 - $80,000

Amount and Source of Non-Federal Match:
In kind services - California Resources Agency
Agency and California Ocean Protection Council: $40,000 per year in staff time

Project Background and Description

The California and the World Ocean (CWO ’10) Conference is the continuation of a state-sponsored conference of the same name first held more than 40 years ago and then in 1997, 2002, and 2006. Since the 1964 conference, California's population has grown from 18 million to more than 35 million. By 2025, it is expected that 75 percent of California's population will live in coastal counties. This population trend is similar to those occurring throughout the United States and in other coastal areas throughout the world. Impacts to the world’s ocean and coastal resources resulting from this population growth will range from degraded ocean water quality and declining fish populations to increased pressure for new offshore energy development (oil/gas, wave, tidal). **A CWO '10 Conference will provide California ocean and coastal managers, policy-makers, scientists and the public with an opportunity to receive views and innovative ideas from the international community on addressing current ocean and coastal resource management issues in California.** Methods for obtaining this information will include short courses and field trips, conjunctive meetings and events, poster sessions (including photo and video media, electronic databases, books, maps and art works), social events, plenary sessions, commercial and not-for-profit exhibits, and paper presentations.

Short courses and field trips will offer conference attendees and their guests an opportunity to update their education and see first-hand how some of the resource issues being discussed at the conference are currently managed (or not, as may be the case). Conjunctive meetings and events will offer conference attendees an opportunity to participate in policy level discussions, while social events afford a more relaxing environment for dialogue and exchange of ideas.

Presentations and plenary sessions will cover a broad spectrum of ocean and coastal issues that are of interest to a multi-disciplinary and international audience, with particular interest in policy development. These presentations will identify or offer solutions to problems, utilize case studies, identify knowledge gaps or collaboration opportunities, and discuss broader applications and implications of material presented. Papers will be published in the CWO '10 Conference Proceedings, to be made available approximately 120 days after the conference. Other publications may also result from this conference in an effort to further information and idea sharing among ocean and coastal resource managers around the world. Attendance at each of the three previous CWO conference exceeded 800.

Project Budget

The budget below is only a projected budget. Details such as registration fee and level of sponsorship have yet to be determined.

Income	
Proposed CIAP Funds	$120,000
Sponsorships	82,250
Registration Fees (650 @ $100 each)	65,000
Registration Fees (50 @ $55 each)	2,750
Field Trips and Workshops	1,000
Exhibit Booth Rentals	2,500
Proceedings Sales (50 @ $60 each)	3,000
Total Income	$276,500
Expenses	
Management Fee - Professional Conference Coordinator	$35,000
Clerical Fees	30,000
Printing - Preliminary Program and Announcement	35,000
Printing - Final Program and Book of Abstracts	25,000
Printing – Proceedings	40,000
Printing - Other	15,000
Conference Facility Rental Fees	10,000
Conference Equipment Rental Fees	15,000
Conference Food/Entertainment	35,000
Conference Security	2,500
Conference Exhibitors/Exhibit Space	6,000
Conference Field Trips and Workshops	1,500
Conference Gifts/Awards	1,500
Supplies and Equipment	4,500
Travel	5,000
Telephone	500
Postage and Mail Service	5,000
Contingency	10,000
Total Expenses	$276,500
Net income	0

Project Timeline and Deliverables

The following timeline is only a projection. The final date for the CWO '10 conference has yet to be finalized.

Hire professional conference coordinator	October 2009
Identify funding sources and sponsors	June/July 2009
Finalize venue details	June/July 2009
Set up committees	July 2009
Develop website	July/August 2009
Begin monthly Executive Committee meetings	August 2009
Develop and distribute call for papers	August/September 2009
Contact potential exhibitors	October/November 2009
Schedule workshops, tours, and field trip	November/December 2009
Schedule Concurrent Session Committee meetings	February 2010
Send out preliminary program/registration materials	April 2010
Final program printed	September 2010
Conference dates	September (4 day total) 2010
Post conference evaluation meeting	October 2010

Measurable Goals and Objectives

GOAL: To hold a California and the World Ocean Conference in September 2010

OBJECTIVE 1: Hire professional conference coordinator.

OBJECTIVE 2: Establish a committee for reviewing papers and proposals.

OBJECTIVE 3: Develop a final program for the conference.

OBJECTIVE 4: Develop a poster for the conference

OBJECTIVE 5: Record (audio and/or video) conference sessions

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

Previous California and the World Ocean conferences required a high-level of coordination with federal programs such as the NOAA Sanctuaries, NOAA National Estuarine Research Reserves, US EPA National Estuary Programs, and the state's coastal zone management programs. For example, staff from these programs and agencies played key roles in developing conferences programs, organizing fieldtrips and tours, chairing conference sessions, and making presentation. In order for CWO '10 to be as successful as its predecessors, the same level of federal participation will undoubtedly be necessary.

CIAP AUTHORIZED USES

CWO '10 conference is consistent with Authorized use #1: "projects and activities for the conservation, protection, or restoration of coastal areas, including wetland;" (1356a(d)(1)).

The CWO '10 Conference will be attended by nearly a thousand and will feature hundreds of speakers, presenters and panelists in more than 60 different sessions on issues from ocean water

quality and ecosystem-based management to marine protected areas and fisheries management. The outcomes of the four previous conferences of the same name demonstrate that ocean and coastal stewardship in California benefit dramatically from the information and views obtained at the CWO conferences.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

NATURAL RESOURCES AGENCY

PROJECT TITLE: CIAP Administration and Support

PROJECT CONTACT INFORMATION:

Name of Primary Staff Contact:	Chris Potter
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PROJECT SUMMARY:

Location:	Statewide
Duration:	January 2008 – June 2012 (Note: project has been initiated)
Total Estimated Project Cost:	$549,500 total
CIAP Spending Per Year:	2009 - $68,687.50 2010 - $137,375.00 2011 - $137,375.00 2012 - $137,375.00 2013 - $68,687.50

Amount and Source of Non-Federal Match:
In kind services:
California Resources Agency: $80,000 per year in staff time

Project Background and Description:
Chris Potter, the Resources Agency's CIAP Coordinator, will be the primary person responsible for the administration of the Coastal Impact Assistance Program for the state of California. However, additional staffing may be necessary when the MMS initiates grants with the state and coastal political subdivisions.

The Resources Agency will administer CIAP funds for all state projects as authorized in the CIAP guidelines, including the preparation, management and implementation of the Plan, plus oversight, travel expenses, copying and publication costs associated with the performance of the approved projects.

Measurable Goals and Objectives

GOAL: Implementation of the California Coastal Impact Assistance Plan

OBJECTIVE 1: Achieve MMS approval of Final Coastal Impact Assistance Plan.

OBJECTIVE 2: Provide outreach to state and county agencies.

OBJECTIVE 3: Organize grants training for state and county agencies.

OBJECTIVE 4: Prepare and submit annual reports to MMS.

OBJECTIVE 5: Prepare and submit Plan amendments to MMS.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS
Successful implementation of the California Coastal Impact Assistance Plan will require a high level of coordination and assistance from federal agencies and programs. These include but are not limited to the Minerals Management Service, National Oceanic Atmospheric Administration (NOAA) Fisheries, U.S. Environmental Protection Agency (USEPA), U.S. Army Corps of Engineers, NOAA Sanctuaries Program, National Sea Grant Program, and USEPA's National Estuary Program.

CONSISTENCY WITH THE CALIFORNIA OCEAN PROTECTION COUNCIL
Goal 1: Governance. This project directly addresses objective 2 in goal 1 of the California Ocean Protection Council's Strategic Plan (2006): "Maximize the effectiveness of state agency efforts to protect and conserve ocean resources."

CIAP AUTHORIZED USES
CIAP Administration and Support is consistent with authorized use #3: "planning assistance and the administrative costs of complying with the CIAP" (section 1356a(d)(1)(E)).

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN

STATE LANDS COMMISSION

PROJECT TITLE: Santa Barbara Channel Hazards Removal Program (SBCHRP)

PROJECT CONTACT INFORMATION:

Name of Primary Staff Contact:	Madhu P. Ahuja, P.E. Senior Engineer, Petroleum Structures (Specialist)
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PROJECT SUMMARY:

Location:	Statewide
Duration:	2009-2012
Total Estimated Project Cost:	$900,000
Total CIAP Funds Requested:	$700,000
Amount/Source of Match:	$200,000 State Lands Baseline Budget (California General Fund)
CIAP Spending Estimate per Year:	2009 - $250,000 2010 - $250,000 2011 - $200,000

Project Background and Description:

The purpose of the California State Lands Commission's (CSLC) Santa Barbara Channel Hazards Removal Program (SBCHRP) is to remove and eliminate man-made coastal hazards from State lands along Santa Barbara and Ventura County coast line and allow the sites to safely support public trust uses of these sovereign lands. Some of the hazards are remnants of past oil and gas development, while others are the result of other types of development along the coast line. All the hazards pose a potential threat to public health and safety.

The funding provided through CIAP will be used primarily to contract for the removal of hazards along the coast line. CSLC staff estimates that the CIAP funds will be adequate to pay for the physical removal of most all of the hazards identified in the SBCHRP except for the offshore oil and gas well head (site 24).

In 1986, the CSLC identified over 400 hazards on lands within or adjacent to State lands. These hazards were deteriorating structures that impeded trust uses and/or posed a potential threat to public health and safety. They included corroded sheet piling, "H" piles, "H" beams, well casings, well caissons, groins, railroad irons, electrical cable, angle bars, pipelines, pipe frames, and an offshore wellhead. Several of the hazards that were identified as high risk were removed in the 1980s.

In November 2001, the California State legislature appropriated $931,000 for the SBCHRP for the removal of hazards at 21 sites located along the coastline of Santa Barbara and Ventura Counties. The CSLC awarded a construction/demolition and permitting contract in June 2002. In January 2003, due to the State's fiscal crisis, the monies appropriated for the SBCHRP reverted back to the State's General Fund before all the permits were obtained or any field work was conducted. CSLC staff continued the permitting process and by May 2003 obtained the necessary Federal, State, and local permits and contacted most of the affected adjacent property owners. CSLC staff also identified certain potential responsible parties for hazards on public and adjacent private properties and worked with them to remove the hazards.

Typical hazards in Santa Barbara and Ventura Counties
(Abandoned Pipes, Cables, I Beams, Railroad Irons, Well Casings, etc.)

In 2003, the CSLC's contractor removed five deteriorated groins and repaired one groin in the Las Tunas County Beach area in the City of Malibu, Los Angeles County. These six groins of corroded steel sheet piles posed potential hazards to beach users and marine mammals. One of the six groins was still effectively retaining beach sand. It was covered with concrete to eliminate any sharp edges or holes while the other five groins were removed. Funding for the removal/repair of these groins came from a 1993 settlement of litigation between the State and Ticor Title Company.

Deteriorated Steel Groin Hazards
Las Tunas County Beach, Malibu, Los Angeles County

In 2005, the CSLC's contractor removed corroded sheet pile hazards from Coral Casino - Biltmore Hotel (Site 13) and 850 corroded railroad irons from Padaro Lane – Santa Clause Lane (Site 17). The CSLC absorbed the costs of its staff time while the contractor's mobilization, hazard removal, and demobilization costs were paid by the responsible party for each site.

Corroded Sheet Piles, Site 13
Coral Casino -Biltmore Hotel

Corroded Railroad Irons, Site 17
Padaro Lane - Santa Clause Lane

In 2006, the CSLC and its contractor eliminated four abandoned oil well drill sites at Goleta Beach (Site 11). Each well site consisted of four foundation caissons, a wellhead casing, and H-piles associated with former decking structures. The H-piles were extracted and the foundation caissons and wellhead casings were cut at or below the cobble zone-bedrock contact. All costs, including staff time, were paid by the responsible party.

Remnant Caisson Foundations, Site 11, Goleta Beach

For the remaining hazards at the identified sites, the CSLC staff was not able to locate a responsible party. The CSLC will require a source of funding to employ a construction - demolition contractor to complete the SBCHRP. Although every effort is made to completely extract each hazard, sometimes hazards can only be excavated and cut below the existing beach level. In such

circumstances, the CSLC staff will revisit these sites after future winter storms to see if hazards have reappeared that will need to be removed.

The proposed activities will be at the identified sites along the coastline from Tajigas Creek west of El Capitan State Beach in Santa Barbara County down the coast to Ventura River near the City of Ventura (Table 1 and Figure 1). The purpose of the SBCHRP is to eliminate derelict structures located within or adjacent to State lands along the coastline of Santa Barbara and Ventura Counties. Other hazards, when discovered, may be incorporated in this project. Should a responsible party be identified for any hazard site, it shall be pursued for funding separately from this project.

The SBCHRP is an on-going effort. Since most of the hazards are located in the surf zone, a specific schedule for removal can not be predicted. The work will occur when the beach hazards are exposed by natural conditions such as winter storms or seasonal sand migration. The hazards removal activity will typically be conducted during the winter months when annual sand movement is offshore and the wave action causes erosion of the beach sand.

The hazards removal activity proposed to be carried out under this project will help restore portions of the beach to its natural state. The beach will be made safer for people, marine mammals, and other near shore sea life. The SBCHRP will benefit the natural environment along the beach for leisure, fishing, commercial uses, or for emergency purposes. The restoration of the coast line to its natural condition will enhance the land use. The potential of hazardous materials being released into the ocean's natural environment by the abandoned well casings, wellheads, and pipelines could be minimized by properly testing these hazards for hazardous materials and subsequent removal using safe removal practices.

Measurable Goals and Objectives:

The goal of the SBCHRP is to remove hazards that pose a potential threat to the public, marine mammals, and other near shore sea life and to restore the beach to a more natural condition. Several of these hazards are located on lands that are used for commerce, navigation, fishing, and recreation, or reserved for open space and habitat for flora and fauna. Removal of these hazards will benefit the natural environment and contribute to the restoration of coastal areas. The objectives of the SBCHRP are to conduct the steps necessary to eliminate or mitigate risks to health and safety of the public, marine mammals, and other near shore sea life and to restore the beach to a more natural condition. Progress towards meeting the goal will be measured by the number of sites made safe for public use and the completion of the detailed objectives.

Objective 1: Secure all the required permits from United States Army Corps of Engineers, the California Coastal Commission, State Water Resources Control Board, and local agencies, as applicable.

Objective 2: Bid and award contracts for Mitigation Monitoring, Environmental Review, and Construction - Demolition work.

Objective 3: Revisit all sites and assess current condition of the hazards and the optimum removal methodologies.

Objective 4: Establish a priority list for sites on which work will be conducted dependent upon beach conditions.

Objective 5: Fully remove hazards (if possible) from designated sites.

Objective 6: Prepare Mitigation Monitoring compliance reports for each site.

Objective 7: Prepare Closure report for completion of hazards removal effort at each site.

Objective 8: Maintain surveillance of completed sites for possible re-appearance of hazards. If hazards do re-appear, remove them as funds are available.

Objective 9: Survey the coastline to determine if hazards appear at additional sites. Remove them as funds are available.

Deliverables and Schedule:

Completed by	Deliverable
February 2009	Obtain permits from Coastal Commission, US Army Corps of Engineers, and State Water Resources Control Board
April 2009	Award Hazards Removal Contract
April 2009	Award Mitigation Monitoring Contract
May 2009	Revisit all the sites and assess current conditions and hazards removal methodologies
May 2009	Establish priority list for sites to be worked on
May 2009 through End of Program	Start removing the hazards. Note: This task will typically be performed during low tide conditions preferably immediately after a storm causing erosion of sand from the beach.
May 2009 through End of Program	Prepare Mitigation Monitoring Compliance reports. Note: This task will be performed during hazards removal activity for each site.
May 2009 through End of Program	Prepare Closure Reports. Note: This task will be performed at the completion of hazards removal activity for each site.
April 2010	Renew, as required, existing contracts for hazards removal project
May 2009 through End of Program	Perform site surveillance for all sites and perform hazards removal activity as necessary.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS:

This hazards removal activity is independent of other federal programs in place and thus no coordination with other federal programs is contemplated at this time. No effort was made to secure funding for this program from other federal agencies.

CALIFORNIA OCEAN PROTECTION COUNCIL (COPC):

This project will support several of the goals and objectives addressed in the COPC's Five-Year Strategic Plan – 2006, including:

Governance Goal:

Objective 2 – Interagency Collaboration – The hazards removal from California beaches is a high priority item. Several State Agencies, counties, and local organizations have been working together to accomplish this task. The SBCHRP will cause the removal of hazards that pose a potential threat to the public, marine mammals, and other near shore sea life and to restore the beach to a more natural condition. Several of these hazards are located on lands that are used for commerce, navigation, fishing, and recreation, or reserved for open space and habitat for flora and fauna. In addition, safe beaches will also promote coastal and ocean activities that will provide economic opportunities for the State. California's coastal resources are critical to the State's economic and environmental security and integral to the State's high quality of life and culture.

Objective 3 – Enforcement – During abandonment of structures along the California coastline, CSLC staff, in coordination with other State and local agencies, ascertains that the abandoned structures are removed safely and completely such that the possibility of creating a hazardous condition is avoided. Also, the new coastal projects are approved with a condition that the project owner will be responsible for complete removal of the structures at termination of the lease.

CONSISTENCY WITH CIAP AUTHORIZED USES:

The SBCHRP meets the definition of activities for the conservation, protection, or restoration of coastal areas, including wetlands. The funds will be used for activities to remove man-made hazards from the California beaches and make the beaches safer for marine mammals and the public.

Request for Funding under Coastal Impact Assistance Program
Santa Barbara Channel Hazards Removal Program
Table 1

Site No	Priority	Site Description	Hazard Description	Remarks
1	1	Tejiguas Creek	47 Railroad irons	
4	2	Ellwood West Ellwood Cove	(25) 6" H Piles	
5	3	Ellwood East	(128) 6" H Piles + 20 Wood Piles + (2) 12" Well Casings + 40 feet length of Wood Sheet Piles	
6	4	Santa Barbara Shores (A)	(80) 6" H Piles + (3) 14" Well Casings + 500' of 6" Pipeline.	
10	5	Isla Vista (Seven Well Sites)	(55) 6" H Piles + (4) 6" Well Casings	
16	6	Summerland east end - Padaro Lane	(180) Railroad Iron + (31) 6" H Piles + (1) 8" Well Casing + (3) 12" Well Casing + 600 ft electrical cable (Platform Hilda)	
20	7	Rincon/Mussel Shoals	(30) 6" H Piles	Hazard has reappeared.
22	8	West of Fernald Point	80 H Piles	
15	9	Fernald Point	60 feet long steel sheet pile	
23	10	Rincon Point	5 Railroad Irons	
21	11	Ventura River	(18) 8" H Piles. Stick out 1' - 4' above ground spaced at about 20'.	
17	12	Santa Clause Ln Summerland (E)	(12) 8" H Piles + (850) Railroad Iron	850 Irons have been removed and Union Pacific Railroad paid for the removal.
19	13	Casitas Pier East side	(10) 12" H Piles	
See Remarks	14	Remaining Seven Sites	Various. There are a total of 24 sites and no work is proposed for sites 3, 11, 12, and 13.	Sites 2, 7, 8, 9, 14, 18, and 24

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN
PROJECT PROPOSAL

DEPARTMENT OF PARKS AND RECREATION

PROJECT TITLE: Treatment and Management of Unpaved Roads in Coastal Watersheds

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Statewide-California Coastal State Park System Units
Duration:	2009-2011
Total Estimated Project Cost:	$812,000
Total CIAP Funds	$722,000
Amount of Match:	$90,000 (State Parks Stewardship and Resource maintenance funds)
CIAP Spending Estimate Per Year:	2009 - $220,000 2010 - $270,000 2011 - $232,000

Project Background and Description

Significance of State Park System

California is world-renowned for its natural landscapes and ecological diversity--the basis for the state's spectacular scenic beauty. By design, lands preserved in the State Park System are the best remaining examples of California's natural heritage richness.

- Major parks in all ten ecological regions and landscape provinces in the state,
- 16 parks with national and international recognition,
- 14 marine parks and reserves,
- 65% of all 202 major habitat types in California,
- 770 native wildlife species (40 native only to California),
- 6,300 native plant species (2,100 native only to California).

Resource Management Demands

Lands protected in the State Park System are critical to the long-term sustainability of much of California's natural biological diversity. As more and more of California's wildlands are converted to other land uses, state parks lands have become even more valuable; however, few parklands are pristine. In many cases important natural resource values were significantly altered prior to park acquisition. Present influences are causing additional decline in ecological health. For this

reason, this project proposes to address the contribution of unpaved roads to ecosystem degradation.

Natural resource management challenges facing the Department are met by a comprehensive, science-based approach of protection, restoration, maintenance and monitoring.

The California Department of Parks and Recreation proposes to establish a program to inventory and treat unpaved roads that are contributing sediment and causing erosion in priority coastal park system units. Priority parks previously identified as outstanding, representative or with keystone watersheds or that border critical coastal areas and marine protected areas will be inventoried for miles and conditions of unpaved roads.

This project will deal with roads in a natural resource context; modifying routes and conditions to reduce the impact of erosion and runoff from poorly sited or improperly maintained roads. Roads will be narrowed, outsloped, and re-designed to result in a lighter footprint in the state's most treasured natural landscapes.

Decisions for treatments will be made according to road condition and needs for continued use. If unnecessary for park system uses, road prisms will be removed and watersheds restored. If imperative for patrol or park access, the unpaved roads will be inventoried, assessed, and prioritized, depending on imminent environmental threat.

Treatments include outsloping, creation of rolling dips, removal of outboard berms, and culvert removals, to better accommodate natural water flows and hydrologic response to climate conditions.

Training for park management, maintenance and natural resource staff will be developed in tandem with physical road assessments and treatments, in order to build a corps of knowledgeable staff skilled in treatment and management of unpaved roads.

The project will combine inventory, assessments, treatments, and training. Project dollars will be roughly split between physical treatments and the more sustainable training of staff, to carry out the improved road management practices over the long term. About $400,000 is estimated to be directed to physical treatments. This necessarily includes inventory, assessment, and environmental clearances and permits. Approximately 400 miles of park system unpaved roads will be assessed. The actual miles of road treatments cannot be estimated until the characterizations have been made.

Measurable Goals and Objectives

The project will include inventory, assessment, environmental compliance, and implementation of treatments. In addition, the department will train resource and maintenance staff to better identify imminent road-related natural resource problems, and to recognize potential serious erosion and sedimentation conditions, before they detrimentally affect aquatic and riparian natural resource values.

Objective 1: Adopt and refine system-wide "best management practices" for road grading and maintenance techniques for unpaved park system roads in priority coastal park watersheds.

Objective 2: Determine miles of unpaved roads in selected coastal priority park watersheds

Objective 3: Adopt unpaved roads standards for maintenance and repairs.

Objective 4: Develop training modules for park superintendents, maintenance chiefs, and field staff responsible for unpaved roads in priority parks.

Schedule and Deliverables

COMPLETED BY	DELIVERABLES
June 2009	The department will develop the process and procedures for selecting the priority parks to assure that the unpaved road inventory and treatment protocols are applied to the strategically located and critically important coastal watersheds and park system units. A list of park system units to be inventoried for unpaved roads will be developed and the treatment options will be fully described.
June 2010	Inventory and assess unpaved roads in selected park units. Compile environmental conditions data to use in environmental compliance documents. Prepare environmental documents for recommended treatments/actions. Develop training modules for park staff and introduce concepts to broad spectrum of park management staff, including superintendents, maintenance chiefs, and equipment operators.
May 2011	Continue inventories, assessments and environmental conditions documentation. Collaborate with neighboring property owners and stakeholders to establish effective and acceptable treatments and to assure resource sensitivities are protected. Proceed with road treatments and removals. Complete inventories, assessments and environmental conditions documentation. Complete programmed road treatments and removals.
November 2011	Conduct training for park equipment operators, superintendents, maintenance chiefs, and resource staff. Assess effectiveness of unpaved roads treatments, monitor environmental conditions in areas where roads were pulled or treated and promote unpaved road treatment strategies in priority coastal park watersheds. Develop recommendations for future road management actions to improve water quality and natural resource habitats, such as road re-engineering, road re-routes, abandonment, or removals.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

This project will benefit from informal collaboration with other federal protected lands managers, such as the National Park Service, the U. S. Forest Service, U. S. Bureau of Land Management, and Natural Resources Conservation Service. These land managers (and advisors, in the case of the NRCS) have extensive experience in the development of unpaved roads management, maintenance, and removal. We will apply our knowledge and experience to our unique park

system resources and natural resource management protocols, to maximize the effectiveness of our unpaved roads treatments.

No other federal grants or funds are planned to be used for this project; but staff will seek peer input and offer to share in road inventory and treatment methods with other federal and state natural resource management practitioners.

COMPLIANCE WITH OCEAN PROTECTION COUNCIL STRATEGIC PLAN

The proposed project will advance the state toward meeting the goals and objectives of the California Ocean Protection Council's Strategic Plan in each of the following areas:

- **Research and Monitoring**:. The proposed project will inventory, assess, and develop treatments for the most critical coastal watershed road systems. In addition, treatment protocols will be developed and implemented in diverse park system units, representative of the physical and biological span of the state park system. Road treatments will be scoped and documented, using GPS technology. The product will be a GIS layer of roads in selected park units with a segment-by-segment description of each problem roadway and site-specific recommendations for corrective treatment and/or annual maintenance actions. For the road segments treated, monitoring protocols will be established, and implemented. Methods for monitoring will be such that success/effectiveness of treatment can be evaluated.

- **Ocean and Coastal Water Quality**. Identify areas where nonpoint source pollution from unpaved roads contributes to ecosystem degradation. Improve aquatic water quality through a variety of actions, such as road removals, re-contouring, outsloping, berm removals and culvert modifications or removal. Coordinate efforts with the work of the Interagency Coordinating Committee (group of state agencies implementing the state's nonpoint source pollution control program) and the Critical Coastal Areas Committee which collaborates to better coordinate resources and focus efforts on coastal watersheds in critical need of protection from polluted runoff. The statewide CCA Committee has identified an initial list of 101 CCAs along the coast and in San Francisco Bay, and this list will be one of the inputs used by State Parks to identify areas to assess for unpaved road treatments. Implementation of this project will reduce erosion and transport of sediment from roads to streams; thereby improving stream water quality.

- **Physical Processes and Habitat**: Support stewardship and resource management activities that mimic natural conditions and that promote self-sustaining conditions in a dynamic environment. This is particularly important in the face of changing conditions along California's active coast, from climate change and projected sea level rise. The reduction in soil erosion and runoff from roads will not only improve stream water quality, but it will improve habitat conditions in and along streams, contributing to healthy biological resources.

- **Ocean and Coastal Ecosystems:** The proposed restoration and stewardship activities are designed to improve the functioning and healthy condition of the complex and stressed ecosystems along the California coast.

AUTHORIZED USES

This project is consistent with the following CIAP authorized uses:

1. Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands. Specific implementation projects may include such actions as re-contouring critically needed roads, removing non-essential roads, and outsloping road surfaces to reduce erosion and sedimentation. In addition, the project will serve as an instrument to evaluate existing unpaved road networks and project future impacts and maintenance approaches. Methods will be adopted into the Department's resource maintenance program and disseminated to natural resource and maintenance staff through annual Departmental-sponsored training.

2. Mitigation of damage to fish, wildlife, or natural resources. Projects to be undertaken may improve aquatic conditions, reduce negative effects of road maintenance activities and result in removal of barriers for fish and wildlife migration.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN
PROJECT PROPOSAL

DEPARTMENT OF PARKS AND RECREATION

PROJECT TITLE: Marine Life Protection Act Implementation

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location: California coastal and ocean waters (0-3 miles) divided into 5 regions:

- North Coast Study Region (Point Arena to California/Oregon Border)
- North Central Coast Study Region (Pigeon Point to Point Arena)
- Central Coast Study Region (Point Conception to Pigeon Point)
- Southern California Study Region (U.S./Mexico Border to Point Conception)
- San Francisco Bay Study Region (Estuarine/marine waters of the Bay to the Golden Gate Bridge)

Duration: 2009-2010
Total Estimated Project Cost: $208,000
Total CIAP Funds Requested: $188,000
Amount and Source of Match: $20,000 General Fund–based on expenditures by CA Department of Parks and Recreation on MLPA-related planning, enforcement and education/interpretation.

Funding Request by calendar year and study region.

Year	Activity	CIAP Grant Request	Non-federal Match	Total Project Cost
2009	Implementation of MPAs in Central Coast and North Central Coast Region, and planning for South Coast Region.	$94,000	$10,000	$104,000
2010	Planning of MPAs in Study Regions 4 and 5 and implementation South Coast Study Region.	$94,000	$10,000	$104,000
TOTAL		**$188,000**	**$20,000**	**$208,000**

Project Background and Description

In 1999, the California legislature approved the MLPA (Marine Life Protection Act) requiring the California Department of Fish and Game (CDFG) to lead an effort to improve of the array of existing MPAs (marine protected areas) and to create a statewide network of MPAs within state waters. The goals of the MLPA are to help sustain, conserve, and protect marine populations and ecosystems; to help rebuild depleted marine populations; to improve recreational, educational and study opportunities; and to ensure that MPAs have clearly defined objectives, effective management measures, adequate enforcement, and are based on sound scientific principles. These marine protected areas will be designed and managed to take full advantage of the multiple benefits that can be derived from collaborative and coordinated protection of the state's marine life, habitats, and ecosystems.

Between the MLPA's passage in 1999 and the creation of the MLPA Initiative in 2004, there were two implementation efforts. Both attempts suffered from a lack of adequate resources to ensure a robust multi-stakeholder involvement process. After these unsuccessful attempts, state legislators and the CDFG realized that this complex and controversial process required significant resources and time to implement and evaluate successfully.

In August 2004, the California Resources Agency, CDFG, and the Resources Legacy Fund Foundation (RLFF) launched a new effort to implement the MLPA. This new effort is based extensively on stakeholder involvement but does not provide funding for the California Department of Parks and Recreation. Rather than attempting to design a single network for the entire state at one time, the MLPA Initiative is assembling a statewide network of MPAs by 2012, utilizing a series of five regional processes. The funds provided by RLFF allowed for the formation of the MLPA Initiative and provided partial funding to complete the first regional process located in the Central Coast Study Region. However, due to inadequate support-based funding, CDPR was unable to participate in the initial stakeholder process where alternative MPA proposals were developed. CDPR reviewed and provided comments on the proposals but was criticized for coming in too late in the process. The importance of the CDPR being fully involved from the beginning of each regional effort is underscored by the fact that of the nineteen newly adopted MPAs bordering the coastline in the Central Coast Study Region, eleven adjoin CDPR parklands. Funding support from this CIAP project proposal will be used to develop and coordinate implementation strategies with CDFG for these state parklands during 2009 and 2010.

The purpose of this project is to provide the funding necessary for the California Department of Parks and Recreation (CDPR) to carry out its important role in the planning and implementation of the Marine Life Protection Act (MLPA). A key element of CDPR's mission is to protect representative examples of California's exceptional biological diversity, in both the terrestrial and aquatic environments. In 1979, CDPR published its first Underwater Parks Master Plan that established goals for establishing marine parks and reserves. The plan acknowledged the eleven marine areas already established by CDPR at the time and provided recommendations for potential future additions in different marine habitats in the different seascape (marine) provinces. The plan was last updated in 1984. For CDPR, the current MLPA process will be, in effect, updating or superseding the marine portion of its underwater master plan. Additionally, since about 30 percent of the coastline is already in the State Park System, it can be anticipated that many of the new MPAs will border CDPR-managed lands. In those cases, primary public access to intertidal and nearshore marine environments will be from the adjacent state beach or state park. Because of its on-site presence, CDPR will have primary responsibility for providing visitor information on MPAs, marine ecological values, and for enforcement of marine regulations.

Measurable Goals and Objectives

Project funds will be used to support CDPR involvement in each of the study regions.

Specifically, funding will be used to:

1) compile and submit information on natural resources and visitor use to MLPA staff for inclusion in the regional profiles for study regions where the planning has not yet been completed,

2) support the involvement of state park representatives as a regional stakeholder during the planning process, and

3) implement management actions for newly established MPAs through coordination efforts between CDPR and CDFG. This effort will involve collaboration with CDFG to establish strategies and roles and responsibilities for visitor education/interpretation and law enforcement for new MPAs adjacent to state parklands. The first such effort will be to establish working agreements between the two agencies for the state parklands adjoining MPAs in the Central Coast and North Coast Study Regions.

Measurable objectives will be CDPR's active participation in each of the regional study area planning processes, including submission of park-specific natural resource and visitor-use information to CDFG and MLPA staff as deliverables on the schedule that CDFG will be using for each study area.

Timeline for Deliverables

Formal management agreements are expected to be a measurable outcome of the coordination efforts between CDPR and CDFG once new MPAs are adopted adjacent to state parklands.

These agreements will be the primary deliverables for each of the study areas and will be submitted by the end of the calendar year for each implemented study area. Funding from this proposal will not augment field staff capabilities, but will assist in identifying new marine management related needs.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS:
Coordination of the Statewide MLPA Initiative with federal resources and programs is led by the California Resources Agency and California Department of Fish and Game. California State Parks works closely with the National Park Service, Bureau of Land Management, U.S. Geological Survey, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration (NOAA), and its National Marine Fisheries Service.

COMPLIANCE WITH OCEAN PROTECTION COUNCIL STRATEGIC PLAN
This project is very complementary of the goals and objectives of the California Ocean Protection Council's Strategic Plan in the following areas:

Goal 1: Governance. This project directly addresses objective 2 (interagency collaboration), objective 3 (enforcement), and objective 4 (ecosystem based management) in goal 1 of the California Ocean Protection Council's Strategic Plan (2006). To meet the objectives of goal 1, the MLPA Initiative works closely with partner agencies and stakeholders in developing alternative

proposals for MPAs. The MLPA Initiative collaborates with agency partners to ensure that alternative proposals not only meet the mandates of the MLPA but are also consistent with the needs of partner agencies with a stake in ocean and coastal resource management. These collaborations are also formalized through dedicated agency representation seats on advisory bodies such as each regional stakeholder group (for development of proposals) and the MLPA Master Plan Science Advisory Team (for evaluation of proposals). Additionally, the MLPA expressly requires an ecosystem-based approach to develop and manage the statewide network of MPAs. As such, proposals are developed to conserve and protect ecosystems and ecosystem functions. To achieve this goal, the MLPA process focuses on habitats and diversity rather than the more traditional single species or stock management approach. A critical component of MPAs is the adoption of new regulations that govern activities within those areas. Through the process of designing alternative proposals for MPAs, regulations will also be crafted and adopted. Law enforcement of these regulations is a cooperative partnership between CDPR, CDFG, National Park Service, National Marine Sanctuary enforcement, United States Coast Guard and other enforcement agencies.

Goal 4: Physical Processes and Habitat. This project directly addresses objective 1 (habitat restoration) in that the goals of the MLPA include the protection of marine life habitats. Through an ecosystem approach, habitat protection and conservation are at the forefront of the MLPA. Marine protected areas help conserve marine and coastal resources by enhancing ecosystem integrity and conserving biodiversity. Through the designation of state marine reserves, human impacts to the benthic habitats of MPAs will be minimized, if not eliminated. These protected areas can provide insurance against natural disturbances and uncertainty in fisheries or other marine management areas by protecting some resources from harvest and restoring these areas to a more natural state. Studies of climate change, objective 3 (understand impacts of climate change) of goal 4, will benefit through the provision of areas with minimal or no human impact. “No impact” areas will allow for the detection of change to ecosystems and habitat that is not attributed to human impacts. Thus, our ability to study and our understanding of climate change will be directly enhanced through the implementation of the MLPA.

Goal 5: Ocean and Coastal Ecosystems. Two of the objectives of goal 5 include the implementation of a statewide network of MPAs through the MLPA (objective 1) and the establishment of ecologically and economically sustainable fisheries through the Marine Life Management Act (MLMA) (objective 2). Once fully implemented, the network of MPAs will directly protect portions of California’s ocean and coastal ecosystems from various “take” activities which will likely enhance the function and biodiversity of ecosystems in those and nearby areas. The MLMA complements the MLPA by achieving more specific fisheries management goals and pairing those measures with the ecosystem-based management measures of the MLPA.

Goal 6: Education and Outreach. Education and outreach is an integral part of the planning and implementation of the MLPA Initiative. The process undertaken by the MLPA Initiative for planning MPAs provides extensive outreach, education and direct involvement for stakeholders, as well as the general public, during each regional process. Each regional process involves a multitude of stakeholder meetings as well as stakeholder workshops and educational workshops for the general public. The CDPR will also provide educational opportunities, as well as public outreach, after implementation of the MPAs to increase pubic awareness, acceptance, and compliance with the new regulations. This approach will foster support for MPAs and ocean stewardship along the California coast.

AUTHORIZED USES

Authorized Use #1, *Projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands*: The goals of the MLPA specifically require the protection of natural diversity, marine life, and the structure and function of marine ecosystems, including the conservation of marine populations, and protection of marine life habitats. Thus, the implementation of the MLPA will provide direct conservation and protection of coastal marine areas along large portions of the California coastline through MPA designation.

Authorized Use #2, *mitigation of damage to fish, wildlife or natural resources*: Once implemented, the statewide network of MPAs will provide areas where take activities, such as fishing, will be limited or eliminated. These regulations will directly benefit a multitude of fish and wildlife species within the protected areas. Marine protected areas will further provide insurance against uncertainty for various management practices and/or natural disturbances.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN
PROJECT PROPOSAL

DEPARTMENT OF PARKS AND RECREATION

PROJECT TITLE: Coastal Dune Restoration at Morro Dunes Natural Preserve

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	Morro Dunes Natural Preserve, Montaña de Oro State Park
Duration:	2009-2013
Total estimated project cost:	$180,000
Total CIAP funds requested:	$150,000
Amount/source of match:	$30,000 source: In-kind contribution from General Fund (State Park and Recreation Fund).

Total Spending Estimate Per Year

	Total Yearly	CIAP Yearly	DPR Cost Share
2009	$36,000	$30,000	$6,000
2010	$36,000	$30,000	$6,000
2011	$36,000	$30,000	$6,000
2012	$36,000	$30,000	$6,000
2013	$36,000	$30,000	$6,000
TOTAL	**$180,000**	**$150,000**	**$30,000**

Project Background and Description

The purpose of this project is to systematically remove a highly invasive non-native grass from the Morro Dunes Natural Preserve. The Natural Preserve is located within Montaña de Oro State Park and is an incredible example of intact, biologically diverse, and highly productive coastal dune scrub. The Preserve is a rich and unique landscape comprised of a complex dune system, sedge-willow wetlands, beaches, and cultural and historical sites. On a day in late spring, a visitor to the preserve would find the area buzzing with activity and rich with floral scents, most especially of *Lupinus chamissonis* (silver dune lupine). It is home to many rare and endemic plant and animal species, some with significant federal and/or state status. Among the many plants are the federally endangered *Suaeda californica* (Sea Blite), federally and state endangered *Cordylanthus maritimus sp. maritimus* (salt marsh bird's beak) and state threatened *Dithyrea maritima* (beach spectacle pod). The open sand sheets and foredunes have been declared "Critical Habitat" by United States Fish and Wildlife Service (USFWS) for the federally threatened *Charadrius alexandrinus sp. nivosus* (western snowy plover). Between the years of 2000 to 2007 while snowy

plovers have been actively monitored by State Parks, they have had a breeding success rate of approximately 50% at the Preserve.

The Preserve is comprised of a sand spit which is six miles long and as wide as a mile in some places. It is located at the northernmost portion of the park and attaches to land at the southern edge of the town of Los Osos. The area is made up of 619 acres.

Los Osos has been severely invaded by non-native *Ehrharta calycina* (veldt grass) over the last 12 years. Many areas of coastal dune scrub and coastal sage scrub have been reduced to almost nothing but *E. calycina*. It now occurs at a fairly high rate at Montaña de Oro and has already invaded much of the native plant communities. Along the sand spit within the Preserve, however, occurrences are much more scattered. *E. calycina* comprises about 10% of total cover along the sand spit. When grouped with other invasive non-natives such as *Foeniculum vulgare* (fennel), *Delairea odorata* (cape ivy), *Cirsium vulgare* (bull thistle), *Conium maculatum* (poison hemlock), and *Cortaderia selloana* (pampas grass), the total percentage of acreage invaded is roughly 15%.

E. calycina has a seed germination rate of 99% and produces huge numbers of seed. Tests on seed viability have revealed inconclusive results, which makes the longevity of treatment unknown. In a dune community, it can have the artificial effect of dune stabilization. The California Invasive Plant Council gives it a “high” rating with severe ecological impacts and a high invasive potential. It poses a tremendous threat to coastal dune scrub at the sand spit. If it continues to spread, overall diversity would be decimated because once it gets a stronghold in an area, it cannot be eradicated. At best, it can only be controlled and kept from spreading further. State Parks has an incredible opportunity, if we act quickly, to eradicate it from the sandspit due to its relatively low rate of occurrence at this time. It is the goal of State Parks to remove *E. calycina* from the sandspit and define a line within the Natural Preserve from which to keep it from spreading in the future. Once *E. calycina* is removed, this line will need to be maintained in perpetuity. In the process, the other invasives previously named could also be controlled.

The project model would have 5 phases broken up into 1 year increments. The first phase would occur during the spring when *E. calycina* has not yet gone to seed. At least two laborers would be needed, one Environmental Scientist and one seasonal employee. The occurrences of *E. calycina* would be mapped as well as distribution of *C. maritimus sp. maritimus*, *D. maritimus.*, and *S. californica*. The goal the first year would be to achieve 50% removal of *E. calycina* and other weeds. To achieve this goal based on similar projects done on neighboring park lands, this process would take 4 to 6 months and at least 2 treatments would be made over the complete sandspit.

Each subsequent year for 4 years the same effort to remove weeds would be made. During the last year the area would need to be thoroughly mapped again for weed occurrences for the purpose of comparison. Each subsequent year, greater than 50% removal of newly germinated and/or re-sprouting plants would be expected. Complete removal would not be achieved until the seed bank is exhausted; however, 5 years of intensive treatments would bring the level of above ground plant occurrences to <0.1%, if not eradicated. Therefore the line to keep *E. calycina* from crossing and moving north along the sandspit would be at a maintenance level at the five year mark. At this time State Parks would assume financial responsibility for maintaining this line.

Measurable Goals and Deliverables

The goals of this project are to eradicate veldt grass from the sandspit in five years' time; develop a clear line within the Natural Preserve from which veldt grass will be excluded in perpetuity; eradicate or reduce to less than 1% other invasive plants (fennel, bull thistle, cape ivy, poison hemlock and pampas grass); develop a monitoring and invasive removal plan for the natural preserve for the future beyond the length of this grant; and complete a Natural Resource Management Plan for the Preserve within the first two years.

Schedule and Deliverables

COMPLETED BY	DELIVERABLES
April 2009	One complete pass made over sandspit by Environmental Scientist and Aid treating veldt grass with herbicide; map of previously named weed occurrences is updated
June 2009	Second pass over sandspit to treat veldt grass is completed
October 2009	Data from sensitive species mapping project is combined with data from invasive removal project to create map with GIS layers for both
November 2009	Annual report completed; CNDDB updates completed
June 2010	Two passes made over sandspit to treat veldt grass and other incidental weeds
November 2010	Progress updates to annual report completed; Morro Dunes Natural Preserve Natural Resource Management Plan is completed
June 2011	Two passes made over sandspit to treat veldt grass and other incidental weeds
November 2011	Progress updates to annual report completed
June 2012	Two passes made over sandspit to treat veldt grass and other incidental weeds
November 2012	Progress updates to annual report completed
June 2013	Two passes made over sandspit to treat veldt grass and other incidental weeds; weed populations remapped and new GIS layer added for comparison
December 2013	Final report competed with an introduction, material, methods, results, conclusions, recommendations, budget and updated maps

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

Implementation of the project does not require direct coordination with other federal resources and programs; however it is consistent with goals established by USFWS for habitat protection and enhancement for the western snowy plover. The National Estuary Program (NEP) implements restoration projects within the Morro Bay watershed, some of which target *E. calycina*, and our project is also consistent with their goals. Morro Bay NEP's Comprehensive Conservation and Management Plan, which has been approved by The United States Environmental Protection

Agency states: “Unless [veldt grass is] removed or restricted, major ecological damage or even ecosystem collapse may take place.” NEP is in strong support of the project and has expressed interest in the possibility of funding some portion of the project.

Preliminary actions have been taken to seek out other funding sources for the project; however no funding has been made secure at this time.

COMPLIANCE WITH OCEAN PROTECTION COUNCIL STRATEGIC PLAN

This project is very congruent with the goals and objectives of the California Ocean Protection Council’s Strategic Plan in the following areas:

Governance: The NEP, Department of Fish and Game (DFG), Small Wilderness Preservation Area (SWAP), county operated Weed Management Area (WMA), the Land Conservancy and the city of Morro Bay all have an interest in invasive species control and dune restoration in the lands bordering the bay. Our project is designed with their collective interests in mind.

Monitoring: The mapping component of the project would not only quantify invasive species data, but also data on special status species.

Physical Processes and Habitat: The project supports stewardship and restoration of coastal dune processes. Habitat for special status species will be enhanced providing for greater reproductive, foraging, and sheltering success. A highly diverse coastal dune community is improved habitat for rare native plants, encouraging the longevity of those species throughout the Preserve.

Ocean and Coastal Ecosystems: California Ocean Protection Council’s Strategic Plan states that “invasives can swiftly undermine efforts to maintain diversity and productivity of coastal ecosystems.” Additionally, the Plan defines a goal of Ecology Based Management. This goal is to “maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need.” A Natural Preserve is a pristine area designated for the purpose of protecting rare and unique flora and fauna. It is a representative example of the plant or animal communities that existed prior to the impact of civilization to be preserved for future generations. Humans want and need the repose and sense of wonder that is inherently tied to time spent in nature. They also want and need to spend time at the shore’s edge. This very motivation is what has caused coastal dune scrub to be reduced to only a few areas in California of intact, pre-colonization type conditions. State Parks’ goal of preserving and protecting Morro Dunes Natural Preserve from invasive plants complements the California Ocean Protection Council’s Strategic Plan in the area of Ocean and Coastal Ecosystems.

Education and Outreach: State Parks’ mission statement is “To provide for the health, inspiration, and education of the people of California by helping to preserve the state’s extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.” Docent training and educational walks would meet the goal for education and high-quality outdoor recreation.

AUTHORIZED USES

This project is consistent with the following CIAP authorized uses:

1. “Projects and activities for the conservation, protection, and restoration of coastal areas, including wetlands.” A Natural Preserve is set aside to be protected from invasive plants and animals, among other threats. Conservation of such a complete and diverse coastal ecosystem is increasingly important in light of climate change, as well as coastal development. Our goals for this project are attainable and restoration is possible.

2. “Mitigation for damage to fish, wildlife, or natural resources”. Damage to natural resources such as non-native seeds dispersal, soil disturbance and erosion are caused by pedestrian and equestrian visitor use of the Preserve. This project will act as mitigation for such damages by protecting and restoring areas of the native coastal dune ecosystem within the Preserve.

STATE OF CALIFORNIA
COASTAL IMPACT ASSISTANCE PLAN
PROJECT PROPOSAL

DEPARTMENT OF PARKS AND RECREATION

PROJECT TITLE: Glass Beach Perched Dune and Coastal Terrace Restoration

PROJECT CONTACT INFORMATION

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PROJECT SUMMARY

Location:	MacKerricher State Park, Fort Bragg, California
Duration:	2009-2012
Total Estimated Project Cost:	$131,500
Total CIAP Funds Requested	$119,500
Amount/Source of Match:	$12,000 (Department of Parks and Recreation Statewide Trails Program)
CIAP Spending Estimate Per Year:	2009 – $55,000 2010 – $24,500 2011 – $20,000 2012 – $20,000

Project Background and Description

The purpose of the Glass Beach Perched Dune and Coastal Terrace Restoration Project is to restore six acres of coastal bluffs and perched dunes. State Parks will remove non-native plants, propagate and plant native plants, and rehabilitate severely eroded coastal bluffs and perched dunes in order to restore the natural habitat of Glass Beach.

Glass Beach is a 35-acre portion of MacKerricher State Park within the City of Fort Bragg, Mendocino County, California. It is bound by Pudding Creek to the north, the City-owned old Georgia-Pacific Mill to the south, a small subdivision to the east, and the Pacific Ocean to the west. The southern end of Glass Beach was the location for the City of Fort Bragg's trash dump until 1967; the numerous pieces of ocean-worn glass that line the beach give the park its name. The land was purchased by the Mendocino Land Trust with funds from the California State Coastal Conservancy and later conveyed to California State Parks in 2004.

Glass Beach is a rich landscape comprised of sedge-willow wetlands, perched sand dunes, coastal terrace prairies, offshore rocks, beaches, bluffs, and cultural and historical sites. Nearly every plant community there is considered to have a special status by the California Department of Fish and Game's Natural Diversity Data Base (DFG 2006). These communities are a host to a number of rare plants such as the federally- and state-listed Howell's spineflower (*Chorizanthe howellii*) and

the state-listed Point Reyes stickyseed (*Blennosperma nanum* var. *robustum*), and five other special-status plants recognized by the California Department of Fish and Game (DFG 2006).

This recent addition to MacKerricher State Park is a strategic acquisition that links the Coastal Trail through the park to the City's section of the trail. It has preserved views of the coastline and opened up beach access within the city limits of Fort Bragg. A road-to-trail conversion of the Coastal Trail through nearly the entire length of MacKerricher State Park is currently being proposed. This, along with the rehabilitation of the historic Pudding Creek trestle and the proposed Glass Beach Coastal Trail will provide over 4 miles of trail to park visitors. The restoration of the perched dune and coastal terrace will not only enhance the habitat for sensitive plant species but it will also provide a high quality outdoor experience to park visitors.

The leading causes of habitat destruction at Glass Beach are erosion form unauthorized trails and the establishment of non-native plants. While there are numerous opportunities for park visitors to walk along coastal bluff trails at Glass Beach, unauthorized trails have led to a network of footpaths that meander dangerously close to bluff edges. These worn-out paths incise the fragile soils of the bluff, terrace, and perched dunes and they provide no access for wheelchairs. Large areas of bare soil remain where there was toxic cleanup at the dump site and at those areas where the foot traffic has trampled vegetation. Coupled with a matrix of unconsolidated soils, these barren areas are susceptible to severe erosion. The problem is continually exacerbated by the proliferation of new trails that avoid the eroded areas, which later become new eroded areas.

Invasive, non-native ice plant (*Carpobrotus edulis*) is a major threat to a viable persistence of the rare and common native plants of the coastal bluff habitat. From an overlay of aerial photographs, it is evident that ice plant has increased in cover over several decades. Most of the ice plant is growing adjacent to the bluff edge and is directly competing with rare plants for resources. Away from the bluffs, in the coastal terrace prairie, Scotch broom (*Cytisus scoparius*) displaces the native plants, and in the wetland, Himalaya blackberry (*Rubus discolor*) is becoming established.

This project directly fulfills the mission of State Parks: "*To provide for the health, inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.*" The rehabilitated bluff top, with its associated recreational value, the interpretive panels with their educational value, and the habitat restoration with its ecological value are primary elements of the Glass Beach project than can implement State Parks' mission statement in a new land acquisition. Additionally, the ability to collect seeds and grow them in the State Park greenhouse with the aid of volunteers makes use of the greenhouse that was built through a Volunteer Enhancement Fund grant.

Throughout the headlands numerous unauthorized trails will be closed to the public and a series of small check-dams, or retaining walls, will be installed in the incised channels that trail erosion has caused. Native plants will be planted in barren areas and areas where invasive weeds are removed.

Measurable Goals and Objectives

The goals of this project are for State Parks to increase the quality of native habitat on the coastal prairie and perched dunes of Glass Beach; to decrease the spread of exotic plants throughout the park; to halt the rapid rate of erosion along the coastal bluff edge and on the terrace; and to

provide park visitors with a better recreational and educational experience by eliminating unneeded trails and installing interpretive panels.

Objective 1: Close several miles of unauthorized trails in sensitive habitat areas.

Objective 2: Rehabilitate the most severely eroded unauthorized trails with native plants.

Objective 3: Reduce eroding coastal bluffs by installing erosion blanket.

Objective 4: Collect native plant seeds, propagate plants, and revegetate sensitive habitat areas.

Objective 5: Improve coastal bluff and perched dune habitat by removing 5 acres of non-native weeds

Objective 6: Install interpretative panels informing visitors of the natural, physical, cultural, and historical features of Glass Beach.

Schedule and Deliverables

COMPLETED BY	DELIVERABLES
February 2009	Develop concept and write contract for interpretive panels.
March 2009	Write native plant propagation contract.
April 2009	Write contract for weed eradication.
July 2009	Collect native plant seeds and begin propagation.
August 2009	Collect late-blooming seeds for propagation.
October 2009	Weed eradication by State Parks and contractor.
November 2009	Install erosion control blanket and begin bluff stabilization. Close and rehabilitate volunteer trails on bluffs.
April 2010	Install interpretive panels.
May 2010	Follow-up weed removal.
July 2010	Collect native plant seeds and begin propagation.
August 2010	Collect late-blooming seeds for propagation.
November 2010	Revisit all areas of prior weed removal. Remove any re-sprouts. Outplanting of 2009 nursery plants.
December 2010	Revisit rehabilitated barren areas and repair as needed.
February 2011	Follow-up weed removal.
July 2011	Collect native plant seeds and begin propagation.
August 2011	Collect late-blooming seeds for propagation.
November 2011	Revisit all areas of prior weed removal. Remove any re-sprouts. Outplanting of 2010 nursery plants.
December 2011	Revisit rehabilitated barren areas and repair as needed.
February 2012	Follow-up weed removal.
November 2012	Revisit all areas of prior weed removal. Remove any re-sprouts. Outplanting of 2011 nursery plants.

COORDINATION WITH OTHER FEDERAL RESOURCES AND PROGRAMS

Implementation of the project will be coordinated with the U.S. Fish and Wildlife Service (USFWS) in efforts to improve habitat for a federally endangered plant. The USFWS Arcata Office has begun review of the species for potentially de-listing its endangered status. State Parks will work with the USFWS to develop appropriate methods for increasing stands of this species. This cooperation will help the USFWS reach their goal of increased habitat protection and, ultimately, de-listing its status.

Through a Section 6 grant, the USFWS has funded other projects for the same endangered plant species within the same park unit. The USFWS has indicated that this same funding may be available for portions of habitat restoration associated with this project.

CALIFORNIA OCEAN PROTECTION COUNCIL

This project advances the goals of the California Ocean Protection Council under the following items:

Governance Goal

Objective 1 – Funding – California State Parks has undertaken the proposed project through a grant from the California State Coastal Conservancy. Completing the project with potential additional federal funds is an effort to maximize Sate Parks' grant from SCC to protect coastal resources.

Physical Processes and Habitat Structure Goal

Objective 1 – Habitat Restoration – Through active geomorphological and ecological restoration, this project enhances 6 acres of coastal habitat on the California coastline. Shoring sloughing bluffs, filling incised channels from unauthorized trails, removing exotic weeds, and revegetating with native plants restores the valuable coastal habitats of Glass Beach. Within the park, restoration will occur within a 2.5-acre wetland that drains directly into the Pacific Ocean.

Ocean and Coastal Ecosystems Goal

Objective 3 – Control Invasive Species – Invasive exotic weeds (Himalaya blackberry, ice plant, and broom) will be removed from 8 acres of coastal bluff, perched dune, and wetland habitats. Funding will provide the opportunity to replace the weeds with native plants, increasing the native biodiversity of the vegetation communities in the coastal habitat. This funding also augments State Parks' efforts to reduce and control invasive species.

Objective 5 – Encourage Sustainable Economic Activity – The project involves the partnership with a local volunteer organization that will participate in the seed collection, growing, and planting of native plants used for Glass Beach. Volunteer participation will allow for skill-development in all aspects of coastal restoration.

Education and Outreach Goal

Objective 1 – Promote ocean and coastal awareness and stewardship – The elimination of numerous poor-quality coastal trails gives park visitors a safe recreational experience on the coast. It provides the public with educational panels along the trail that interpret the local coastal habitats.

The park is located within the city of Fort Bragg where students from the local schools can easily access by walking.

CIAP Authorized Uses
The major goal of State Parks' Natural Resource Management Program is to acquire, protect, and restore representative examples of California's ecological diversity. This restoration project is consistent with CIAP authorized Uses #1, 2, and 4.

Consistency with Authorized Use #1 (*projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands*).
The proposed project targets the conservation, protection, and restoration of four coastal habitats: perched dune, coastal bluff scrub, riparian and wetlands. The removal of 8 acres of exotic weeds will restore coastal habitats and provide habitat for federally- and state-listed plants. Active restoration will increase the cover of native plants on the perched dunes and degraded areas.

Consistent with Authorized Use #2 (mitigation of damage to fish, wildlife, or natural resources).
The Project will rehabilitate degraded coastal bluffs where unauthorized trails have severely eroded the fragile soils, causing loss of habitat for rare plants. The rehabilitation of old trails will keep visitors away from the most sensitive habitats on the bluff tops.

Consistency with Authorized Use #4 (*implementation of a federally-approved marine, coastal, or comprehensive conservation management plan*).
The proposed project is consistent with the federal recovery plan, Seven Coastal Plants Myrtle's Silverspot Butterfly Recovery Plan (USFWS 1998), wherein a recovery plan for Howell's spineflower is outlined. The restoration elements of this project follow the conservation measures and recovery strategies for Howell's spineflower in the Myrtle's Silverspot Butterfly Recovery Plan.

REFERENCES CITED
U.S. Fish and Wildlife Service (USFWS). 1998. Seven Coastal Plants Myrtle's Silverspot Butterfly Recovery Plan. Portland, Oregon. 141 pp.

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California State Parks. 1995. Trails Handbook. Sacramento.

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