MEMORANDUM

TO: California Ocean Protection Council

FROM: Laura Engeman, Ocean Protection Council

DATE: November 29, 2012

RE: Assembly Bill 2125 (AB 2125) Implementation Progress

ATTACHMENT: Exhibit 1. Projects using California Shoreline Mapping (LiDAR) and Seafloor Mapping Data

AB 2125 Overview

In September 2010, Governor Schwarzenegger signed Assembly Bill 2125 directing the OPC to support state agencies' use and sharing of scientific and geospatial information for coastal- and ocean-relevant decision making. Specifically, it called for OPC to take the following actions:

(1) assess the needs of California's public agencies to gather, manage, use and share information and decision-support tools;
(2) increase the amount of baseline information available to agencies in a publicly accessible, electronic and geospatial format;
(3) support the collaborative management and use of this information; and
(4) help identify and support the creation of decision-support tools that serve the state in implementing ecosystem-based management.

Implementation Progress

Over the past two years, OPC has made significant progress implementing AB 2125. The California Coastal and Marine Geospatial Working Group (CCMG), an interagency committee chaired by OPC staff, has provided valuable assistance and oversight in advancing California's use and distribution of coastal and marine information. New partnerships have been formed with state and non-state entities, taking advantage of technology advances, and developing statewide approaches for managing, housing, and distributing information across agencies and making the data more accessible to the public.

Progress on the requirements of AB 2125 are discussed below.

<u>Coastal and Marine Data Needs Assessment</u>
In 2011, OPC funded Kearns & West to complete an assessment of the coastal and marine geospatial information needs of state agencies. The report was completed within the year and identified strategies for improving access and distribution of geospatial information by state agency staff and the general public. The report recommended building a web portal, known as a geoportal, to facilitate the discovery, downloading and viewing of this type of information

through one central website. It also included specific recommendations for the technical requirements of the geoportal. Study findings now serve as a key guide for the development of the state geoportal and other strategies undertaken by the CCMG.

Development of a Coastal and Marine Geoportal

The completion of the data needs assessment coincided with an announcement by the State Geographic Information Officer[1] (GIO) of plans to develop a geoportal for California's geospatial datasets. The geoportal is envisioned to serve as a central website whereby governmental agencies and the public can locate and download authoritative geospatial information housed in various locations across the state. OPC staff and the CCMG realized there was an opportunity to implement the recommendations of the 2011 coastal and marine data needs assessment by partnering on this project with the GIO. The group has been collaborating with the GIO on the development of the state geoportal to advance California's geographic information capabilities, including a dedicated component for coastal and ocean data discovery, downloading and viewing.

The coastal and marine component of the State Geoportal will help OPC meet a number of AB 2125 objectives including:

(1) increasing the amount of coastal and ocean geospatial information accessible to the public in an electronic format;
(2) expanding the methods that this information can be viewed or downloaded by agency staff and the public; and
(3) serving as a central source for data for and links to decision-support tools relevant to coastal and ocean ecosystem-based management.

The California geoportal was launched in September 2012, and an initial version of the coastal and marine component is available in beta format. The GIO is using federal funding for development of the geoportal and has acquired staff to develop and maintain it at the California Technology Agency. OPC provided $55,300 of additional funding to the GIO's office to support 15-20 hours per week of staff time to work with data providers to prepare coastal and ocean data for inclusion in the portal and to customize the geoportal to meet the specific requirements of coastal and ocean state agencies for access, downloading and viewing. Staff expects to conduct outreach on the portal to agencies and others at the beginning of 2013 to demonstrate its utility and solicit feedback on how it can serve others in the marine and coastal community.

Although the geoportal continues to be developed, we have already made significant progress registering key baseline data sets into the geoportal from the various agencies that house these data. These data sets include seafloor relief from the California Seafloor Mapping Program through ESRI's Ocean Basemap; boundaries of federal and state waters, including marine protected areas maps; and sediment management information such as erosion concerns areas.

[1] The State GIO is the Assistant Secretary for Geospatial Information Services within the California Technology Agency.

Expanding the Use and Availability of the State's Baseline Information on the Coast and Ocean
OPC provided significant funding to collect high resolution elevation and bathymetry data and information about California's seafloor and shoreline that has a wide range of uses for coastal and ocean resource management. OPC staff is working with partners to make this information available to agency staff and the public in a variety of products, including habitat maps and geology maps. These products will also be made available through the state geoportal.

At the same time, these data are increasingly used by other agencies and entities. For example, NOAA Coastal Services Center used the high resolution elevation data (LiDAR) to develop visualizations of how various levels of sea level rise will impact California's coastal communities. Marin County also integrated this data with other elevation data to update their countywide elevation dataset. California's seafloor mapping data has been integrated into Google Earth and ESRI's base maps, and can be viewed in interactive displays at the Monterey Bay Sanctuary Exploration Center which enable the public to explore the bottom of the ocean and learn about mapping technologies. Additional examples of how these datasets are used are listed in Exhibit 1. Finally, OPC staff is working with NOAA, USGS and other partners to merge the bathymetry and elevation data together to create a seamless offshore-onshore high-resolution elevation dataset of the state's coastal zone.

Developing Collaborations and Partnerships with Agencies and Non-Governmental Entities
Creating effective collaborative management of coastal and ocean information is at the heart of establishing a successful state geoportal and the backbone for ensuring that interagency data sharing continues in the future. The CCMG plays a key role in ensuring that the various agencies that house and use coastal and ocean data are providing input on the development of the state geoportal, as well as developing collaborative strategies for managing, housing, and distributing information across agencies and with the public. The CCMG also consists of non-state entities such as the California Ocean Science Trust and the NOAA Coastal Services Center who link the state's efforts with regional and federal data efforts, as well as academic institutions and NGOs that collect and use coastal and information data. This broad collaboration provides multiple benefits to partners and the public, including:

(1) elimination of duplicate datasets;
(2) provision of authoritative data for decision making;
(3) increased transparency in decision making processes; and
(4) cost savings approaches to long term data management and data collection.

By establishing long-term collaborative strategies for supporting the geoportal and other data management strategies with the GIO, the CCMG and other partners, OPC staff is working to ensure investments in implementing AB2125 provide ongoing benefits to the state's agencies and ocean and coastal community.

Exhibit 1. Projects using California Shoreline Mapping (LiDAR) and Seafloor Mapping Data

Project	*Description*
Shoreline Mapping (LiDAR)	
NOAA Coastal Services Center, Sea Level Rise and Coastal Flooding Impacts Viewer	High-resolution elevation data (LiDAR) were used to delineate mean high high water and to develop visualizations of how various levels of sea level rise will impact California's coastal communities.
FEMA, California Coastal Analysis and Mapping Projects	LiDAR data used in flood risk mapping of the effects of 1% annual chance flood event for existing flood hazards, including storm surge, wave run-up, overtopping, and overland wave propagation for coastal communities.
San Francisco Bay Conservation and Development Commission, Metropolitan Transportation Commission, and CalTrans; Adapting to Rising Tides	LiDAR used in analysis of alignment of shoreline protection features in project area to determine which sea level rise scenarios under evaluation would potentially overtop the shoreline.
Marin County, Updated Digital Terrain Model	LiDAR for coastal and San Francisco bay shoreline integrated with other LiDAR datasets to create countywide elevation dataset, and to derive natural and built landscape features.
UC Berkeley for California Energy Commission's California Climate Change Center, Impacts of Predicted Sea-Level Rise and Extreme Storm Events on the Transportation Infrastructure in the San Francisco Bay Region	LiDAR data use to complete an assessment of San Francisco Bay Area transportation networks and sea level rise
Trinity Associates, Humboldt Bay Shoreline Sea Level Rise Mapping	LiDAR used in GIS mapping and analysis of the artificial and natural shoreline conditions, and the vulnerability of adjacent land to sea level rise.
Coastal Ecosystems Institute of Northern California, Humboldt Bay Sea Level Rise Adaptation Plan	The project will complete a sea level rise vulnerability assessment and develop adaptation strategies based on high resolution elevation data to estimate flooding frequency in Humboldt Bay region due to the combination of sea level rise, high tides, storms, and shallow groundwater zone.
Salt River Ecosystem Restoration Project, Eel River Estuary Preserve	LiDAR data for Eel River delta used in each of these restoration projects in hydraulic modeling to develop a suite of alternatives for restoration of estuarine marshes.

Restoration Project, Ocean Ranch Restoration Project	
Moss Landing Marine Lab, Center for Habitat Studies	LiDAR integrated with other datasets to create seamless onshore-offshore geology and seafloor habitat maps.
California Geological Survey	LiDAR used in various topographic analyses and displays, including surface hydrology modeling.
Golden Gate National Recreation Area	Aerial photographs taken during LiDAR collection used to map intertidal algae.
San Francisco Estuary Institute	High resolution elevation data used to map shoreline change in North San Francisco Bay and head-of-tide on SF Bay tributaries, and as a baselayer for mapping coarse sediment in flood control channels.
USGS Pacific Coastal and Marine Science Center, A Seamless, High-Resolution Digital Elevation Model (DEM) of the North-Central California Coast	LiDAR and bathymetry data were integrated to create a high resolution elevation model to support other analyses, including coastal inundation modeling as part of the Our Coast, Our Future project.
UC Berkeley, Modeling sea-level rise effects on tidal wetlands distributions in the San Francisco Bay	High resolution elevation model used to map predicted changes in marsh distribution over the next century in San Francisco Bay.
Ocean Imaging, North Central and South Coast MPA Baseline Monitoring	LiDAR used to improve intertidal and subtidal habitat classifications for project mapping seafloor habitats in and around newly established MPAs in North Central and South Coast regions.
Bureau of Land Management, California Coastal National Monument	LiDAR used to delineate offshore rocks with 12 nautical miles of shore that are part of California Coastal National Monument.
San Francisco Estuary Invasive Spartina Project	Invasive Spartina Project consultants are using the high resolution elevation data to assess appropriate elevations for re-vegetation projects.
San Francisco Bay Living Shorelines: Near-shore Linkages	High resolution elevation data being used to assess appropriate elevations for placement of intertidal oyster and eelgrass restoration treatments.

Seafloor Mapping	
Google, Google Ocean	Seafloor relief included in seamless depiction off California's coast in Google Earth
ESRI, Ocean Basemap	Seafloor relief included in reference base layer for use in creating

	maps in internet map applications
CSU Monterey Bay, UC Santa Cruz, NOAA Southwest Fisheries Science Center	Various research projects on habitat suitability and predicted species distribution.
USGS Pacific Coastal and Marine Science Center, A Seamless, High-Resolution Digital Elevation Model (DEM) of the North-Central California Coast	LiDAR and bathymetry data were integrated to create a high resolution elevation model to support other analyses, including coastal inundation modeling as part of the Our Coast, Our Future project.
Monterey Bay Sanctuary Exploration Center	Seafloor mapping data used in exhibits to enable the public to explore the bottom of the ocean and learn about mapping technologies.