

CCLEAN

Central Coast Long-term Environmental Assessment Network

Summary

CCLEAN is a long-term monitoring program that has been designed to fulfill several regulatory objectives. The Management Plan for the Monterey Bay National Marine Sanctuary includes a Memorandum of Agreement between eight federal, state, and regional agencies (including the Central Coast Regional Water Quality Control Board) to develop an ecosystem-based Water Quality Protection Program for the Sanctuary. The Regional Board has developed a framework for partial fulfillment of this Water Quality Protection Program called the Central Coast Ambient Monitoring Program (CCAMP). This multidisciplinary program includes sampling in watersheds that flow into coastal regions, in estuarine coastal confluences, and at coastal sites. The goal of CCAMP is to “collect, assess, and disseminate scientifically based water quality information to aid decision-makers and the public in maintaining, restoring, and enhancing water quality and associated beneficial uses.” CCLEAN provides the initial nearshore component of CCAMP. It is being funded by the City of Santa Cruz, City of Watsonville, Duke Energy, Monterey Regional Water Pollution Control Agency, and Carmel Area Wastewater District, under the direction of the Regional Board. CCLEAN satisfies the NPDES receiving water monitoring and reporting requirements of program participants.

Within the framework of CCAMP, the goal of the CCLEAN program is to assist stakeholders in maintaining, restoring, and enhancing nearshore water and sediment quality and associated beneficial uses in the Central Coast Region. The specific objectives of the program are as follows:

- Obtain high-quality data describing the status and long-term trends in the quality of nearshore waters, sediments, and associated beneficial uses.
- Determine whether nearshore waters and sediments are in compliance with the Ocean Plan.
- Determine sources of contaminants to nearshore waters.
- Provide legally defensible data on the effects of wastewater discharges in nearshore waters.
- Develop a long-term database on trends in the quality of nearshore waters, sediments and associated beneficial uses.
- Ensure that the nearshore component database is compatible with other regional monitoring efforts and regulatory requirements.

- Ensure that nearshore component data are presented in ways that are understandable and relevant to the needs of stakeholders.

For CCLEAN to successfully achieve these objectives, a minimum of five years' data are probably necessary to determine the status and trends in the quality of nearshore waters, sediments, and associated beneficial uses.

CCLEAN has been designed with substantial input from stakeholders, including permit holders, state and federal regulatory agencies, the Monterey Bay National Marine Sanctuary, the scientific community, and business and public interest groups. The program focuses on measuring possible water quality stressors for four receiving water beneficial uses that were prioritized by the stakeholders for protection. These beneficial uses are as follows:

- marine habitat,
- rare, threatened, or endangered species,
- water contact recreation, and
- wildlife habitat.

Discussions with stakeholders and reviews of reports and scientific publications indicated that there are possible impairments of these beneficial uses related to the following:

- elevated concentrations of persistent organic pollutants (e.g., petroleum hydrocarbons, chlorinated pesticides, polychlorinated biphenyls) in fish from the Monterey Submarine Canyon and sea otters,
- Declines in sea otter populations,
- diseases in sea otters related to high concentrations of persistent organic pollutants,
- bird and mammal deaths due to blooms of toxic phytoplankton,
- disturbance of river and benthic habitats due to suspended sediments in rivers, and
- beach closures due to high bacterial concentrations.

These beneficial use impairments may be caused by four possible water quality stressors, as follows:

- persistent organic pollutants in water and sediment,
- nutrients,
- pathogens, and
- suspended sediments in rivers.

CCLEAN will measure inputs of these possible water quality stressors and effects in nearshore waters by sampling effluent, rivers and streams, mussels, sediments and benthic communities, and nearshore waters. Effluent for each municipal discharger and rivers will be sampled for persistent organic pollutants, nutrients, and suspended sediments using automated equipment to obtain 30-day flow-proportioned samples in the

dry season and in the wet season. Twenty streams and storm drains will be sampled monthly for nutrients, bacteria, and suspended sediments. Satellite imagery will be used to evaluate blooms of phytoplankton associated with discharges of high concentrations of nutrients. Mussels will be sampled at five locations to fill geographic gaps in other programs to measure persistent organic pollutants and bacteria. Sediment and benthic organisms will be sampled for persistent organic pollutants once a year at eight sites within the depositional band that has been identified by U.S. Geological Survey in Monterey Bay. Nearshore background water will be sampled twice per year at four sites for concentrations of persistent organic pollutants, nutrients, and toxic phytoplankton. CCLEAN will be implemented in a phased approach to spread the initiation of new components over different years.