



SWAMP Publishes: An Approach to Interpreting Narrative Objectives for Biostimulatory Substances along the Central Coast (Central Coast Region)

What is it?

Eutrophication is a water quality condition that occurs when excessive nutrients stimulate overgrowth of aquatic algae. The result is often low or widely ranging oxygen concentrations that can seriously impact aquatic life, particularly oxygen sensitive fish species. To protect waterbodies from excess nutrients, the 1994 Central Coast Water Quality Control Plan contains narrative language stating that “waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.” Similar narrative language is used throughout California. Narrative, rather than numeric, objectives were originally adopted based on the recognition that a “one size fits all” numeric nutrient objective may not be appropriate for California’s diverse ecosystems. Nutrient levels vary based on natural ecological factors (such as soil type, land cover, and light availability) and levels associated with environmental degradation in some waterbodies would be within the normal range for other aquatic ecosystems.

The narrative objectives cover a wide range of environmental conditions, but there is limited guidance for interpreting them into numeric targets in specific waterbodies. This often makes it difficult to apply nutrient objectives in a regulatory setting. In effort to address this issue, the Central Coast Water Board developed an innovative approach to screen for impairment caused by biostimulatory substances. In this approach, staff employed SWAMP monitoring data, Basin Plan objectives, U.S. EPA standards, guideline values from literature, and modeled estimates of potential algal growth and resultant oxygen deficits. The result is an approach for determining aquatic life use impairment that relies on numeric values for the nutrient nitrogen and other

measured and predicted indicators (such as pH, dissolved oxygen and chlorophyll a) of nutrient impairment. In 2010 the Central Coast Water Board SWAMP staff published a technical report describing this approach.

Why is it important to the State?

The eutrophication of aquatic ecosystems can result in serious water quality problems such as fish kills and nuisance (or sometimes toxic) algal blooms. Many waterbodies throughout California are at risk due to excess nutrients stemming from human activities. This risk will only increase in the future due to population growth and other pressures. Developing better tools for assessing aquatic ecosystem impairment due to excessive nutrients will help with the effort to protect important water resources throughout the State.

Why is it important to me?

The effects of excessive nutrients in the water range from slippery, algae-encrusted rocks at a favorite swimming hole to highly visible fish kills or beach closings due to toxic algae. The approach will help water quality managers in the Central Coast identify streams where aquatic life is impaired due to nutrient contamination so that the sources of excess nutrients can be identified and controlled. In the future, the approach may also be adapted for other regions of the State.

How will this information be used?

Central Coast Water Board staff has used the approach for regional water quality assessments and to support assessment decisions for the California Integrated Report addressing Clean Water Act Sections 303(d) and 305(b).

The technical report is available at: http://www.swrcb.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb3_biostimulation.pdf