

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT (Peter Krottje)
MEETING DATE: June 18, 2003

ITEM: 13

SUBJECT: **NUTRIENT TMDLS IN THE SAN FRANCISCO BAY REGION—
Status Report**

DISCUSSION: We have prepared a report (Appendix A) describing nutrient problems in Bay Area waterbodies and our approach to resolving these problems through the Total Maximum Daily Load (TMDL) process. Nutrients—specifically the primary plant growth nutrients nitrogen and phosphorus—are essential for life and are ubiquitous in the environment. Because of their key role in ecosystem function, excessive levels of nutrients affect aquatic systems in a wide range of ways. Many types of human activities—particularly those associated with human or animal waste disposal or fertilizer application—can result in excessive loading of nutrients to waterbodies, and for this reason nutrient-related impairment is a widespread problem. Approximately 40 percent of rivers and streams nationwide are listed as impaired by nutrients in a recent USEPA National Water Quality Inventory.

Six Bay Area waterbodies and their tributaries are on the 303(d) list as impaired by excessive nutrients: Napa River, Sonoma Creek, Petaluma River, Walker Creek, Lagunitas Creek, and Tomales Bay. The total watershed area of the listed waterbodies is 718 square miles, or about fifteen percent of the total land area within the jurisdiction of the Regional Board. The listed streams provide habitat for salmon, steelhead, and several other at-risk species, including red-legged frogs and freshwater shrimp. Tomales Bay also provides habitat for at-risk species, and supports an important commercial fishery.

Nutrient-related water quality problems in the Bay Area can be summarized as follows:

- Eutrophication (excessive, nutrient-induced algae growth) is a widespread problem in Bay Area streams. Eutrophication impairs aquatic habitat by depleting dissolved oxygen in the water and by smothering bottom habitat.
- Elevated ammonia concentrations can be acutely toxic to aquatic life. Salmonids are particularly sensitive to ammonia toxicity. Potentially toxic concentrations of ammonia have been observed in some Bay Area waterbodies.
- Nitrate can be toxic to fish and amphibian eggs and juveniles, but the level at which toxicity occurs is not well documented. Some studies

suggest toxicity at concentrations that have been observed in Bay Area waterbodies. Further research is needed to clarify this issue.

We are developing TMDLs aimed at protecting and enhancing native fish and wildlife populations in the listed waterbodies. Specific technical approaches and levels of effort will vary among the listed waterbodies, depending on such factors as degree of impairment and watershed complexity. However, all nutrient TMDLs will share the following components:

- Confirm the nature and degree of impairment.
- Establish numeric water quality targets necessary to support beneficial uses.
- Evaluate nutrient inputs and sources.
- Determine nutrient load reductions necessary to achieve numeric targets.
- Implement measures to control nutrient loads and limit the adverse effects of nutrients in the listed waterbodies.

We are employing a watershed-based approach to develop and carry out implementation plans. Considerable overlap exists between nutrient control activities and implementation measures for sediments and pathogens. For this reason, nutrient implementation planning will be conducted in close coordination with sediment and pathogen TMDL activities.

We realize that the best solutions will be those “owned” by stakeholders, so recognition of stewardship efforts that result in self-determined implementation of best management practices is key. We are encouraging stakeholders and other agencies to incorporate implementation measures to reduce nutrient loading into existing programs.

Our initial focus has been on the Napa River and Sonoma Creek. We are making significant progress in these watersheds and expect to complete major reports next fiscal year presenting results and recommendations. We will provide the Board with regular updates on these and other projects as we work to develop the best possible nutrient TMDLs for our streams.

RECOMMEN-
DATION: No action is necessary at this time.

APPENDIX A: Conceptual Approach for Developing Nutrient TMDLs for San Francisco Bay Area Waterbodies