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**CALIFORNIA'S FRESHWATER NUTRIENT NUMERIC ENDPOINT (NNE) APPROACH:
A CASE STUDY OF THE SANTA MARGARITA RIVER**

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ABSTRACT: The Nutrient Numeric Endpoint (NNE) approach is a new process in California for evaluating the risk of water quality impairment. The intent of the NNE approach is to establish nutrient targets and impairment designations based upon "response variables" such as benthic algal biomass and chlorophyll a content, dissolved oxygen, dissolved organic carbon, macrophyte cover, and water clarity to address whether designated beneficial uses such as freshwater habitat or fish spawning are supported. The NNE develops water quality targets for the response variables rather than targets for the nutrients themselves. The nutrient targets can be used by regulators to establish Total Maximum Daily Loads (TMDL) for impaired water bodies, or they can form the basis for establishing new water quality criteria that are better aligned with ecological conditions.

During 2006 case studies were conducted on five rivers in California, including the Santa Margarita River, to demonstrate the NNE approach.

However that study lacked site specific data for many modal parameters, so reference values were employed instead. The resultant water quality targets were more conservative than the existing water quality objectives in the Basin Plan, and permittees and other stakeholders became alarmed.

This study administered the NNE spreadsheet models to sections of the Santa Margarita River and tributaries using recent, site-specific, empirical data. The results are compared with the 2006 NNE Case study and with the current Basin Plan Water Quality Objectives. Challenges with the NNE approach are discussed, with recommendations on how to improve the models and how to refocus monitoring programs toward obtaining necessary data to support the NNE approach.

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