Abstract #138

An Intensive Field Sampling Program in Support of a Marine Outfall Siting Study

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Biographical Sketch of Author
Jim Simmonds is a supervisor in King County’s Science and Data Management Section, with training and experience in water, sediment, and tissue quality monitoring and risk assessment. He is the project manager for the siting, environmental review, and permitting of the marine outfall component of a new regional wastewater treatment facility. Jim has worked for King County since 1997, previously working as an environmental consultant on a wide range of water quality and risk assessment projects.

Abstract
Population growth in the greater Seattle area has necessitated planning a new wastewater treatment plant with a marine outfall in Puget Sound. King County conducted a marine outfall siting study that included an intensive field sampling program, undertaken to study baseline conditions of the marine environment at several candidate outfall sites as well as throughout central Puget Sound. This sampling program was designed to meet rigorous data quality objectives including low analytical detection limits and robust statistical analysis.

Offshore water column samples and in situ field data were collected over three years to evaluate spatial and temporal differences in concentrations of bacteria, nutrients, dissolved oxygen, trace metals, organic chemicals, and other constituents. Intertidal water samples were collected over two years to evaluate the same constituents. A three-year primary productivity study was conducted to assess nutrient limitation on phytoplankton growth. Sediment samples were collected from candidate outfall sites to examine spatial differences in geophysical characteristics, benthic communities, and concentrations of trace metals and organic. Tissue samples were collected from geoduck clams, a valuable commercial shellfish resource, to determine baseline concentrations of bacteria, trace metals, and organic chemicals.

Results from the field sampling program have been used by project managers and decision-makers to support outfall siting, design, and permitting processes. The results will also be used to design a long-term field sampling program that will monitor the marine environment at the outfall.