



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004OH9B

Title: Evaluating the Utility of Fluorescence In Situ Hybridizations as a Regular Process Monitoring Tool to Improve Reliable Wastewater Treatment

Project Type: Research

Focus Categories: Water Quality, Treatment, Nutrients

Keywords: 16S rRNA; activated sludge; biological nutrient removal; FISH; molecular biology; sewage treatment; wastewater

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: \$25,190

Non-Federal Matching Funds: \$52,401

Congressional District: Ohio 1st Congressional District

Principal Investigator:

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Abstract

The microorganisms in the aeration basin are the most important yet least monitored part of a municipal activated sludge sewage treatment plant. Primarily, this is due to the inability of traditional monitoring technology to identify and quantify individual groups of microorganisms in a timely fashion. Therefore, we propose to develop "base-line" data demonstrating the value of regular process monitoring using a modern genetic tool - fluorescence in situ hybridization (a.k.a. FISH) - to track activated sludge microorganisms in municipal sewage treatment plants operated to remove solids, organics, and excess nitrogen. We expect that the information collected using FISH will empower plant operators to diagnose, alleviate, and most importantly avoid treatment process upsets. With the knowledge gained in this project, the water quality community will be able to move toward adopting state-of-the-art microbial treatment process monitoring technology with confidence. Ultimately this will lead to improved treatment process performance and enhanced protection of environmental water quality, which is a critical component for protecting raw water supplies identified as a research priority by the U.S. Geological Survey.