











## Project Manager Qualifications and Organization Description

### **William A. Arnold**

Associate Professor, Environmental Engineering, Department of Civil Engineering, University of Minnesota

B.S., Chemical Engineering, 1994, Massachusetts Institute of Technology, Cambridge, MA.

M.S., Chemical Engineering, 1995, Yale University, New Haven, CT.

Ph.D., Environmental Engineering, 1999, The Johns Hopkins University, Baltimore, MD.

Dr. William Arnold will be responsible for overall project coordination. He has been studying the fate of pharmaceutical compounds in aquatic environments for ten years. The main focus has been the photolysis rates of pharmaceuticals and personal care products in surface water to determine the persistence of these compounds in the environment. As part of these efforts, reaction products have been identified to determine if photolysis leads to a loss of biological activity of the compounds and/or if reaction products are of additional environmental concern. Recent LCCMR-funded work has focused on harnessing solar photolysis as a polishing step in wastewater treatment. In collaboration with Dr. McNeill, fifteen peer-reviewed papers on pharmaceutical photolysis have been published since 2003. Dr. Arnold is an Associate Fellow of the University of Minnesota Institute on the Environment and a member of the graduate faculty in Water Resources Science. He was the 2003 Minnesota Young Engineer of the Year.

**Dr. Kristopher McNeill** (Associate Professor, Department of Chemistry, University of Minnesota) studies key chemical processes of current environmental problems including surface water pollution by pharmaceuticals, groundwater pollution by chlorocarbons, and the global carbon cycle. He takes a fundamental chemistry-based approach, with a focus on elucidating reaction mechanisms. Dr. McNeill and Dr. Arnold have been collaborating on pharmaceutical photochemistry for ten years. Dr. McNeill is an Fellow of the University of Minnesota Institute on the Environment and a member of the graduate faculty in Water Resources Science.

**Dr. Daniel Engstrom** (Science Museum of Minnesota & Adjunct Professor of Geology, University of Minnesota) conducts research that centers on the use of lake sediment records to understand long-term environmental change, particularly the effects of human activities on water quality, atmospheric chemistry, and biogeochemical processes on a global scale. He is particularly interested in approaches that quantify the magnitude and rates of change and establish mechanistic linkages to modern-day systems. His recent efforts have focused on the historical inputs of mercury (and other heavy metals) and phosphorus into Minnesota's lakes.

### **Organization Description**

The University of Minnesota is one of the largest, most comprehensive, and most prestigious public universities in the United States ([http://www1.umn.edu/twincities/01\\_about.php](http://www1.umn.edu/twincities/01_about.php)). The laboratories and offices of the PI and co-PIs contain all of the necessary fixed and moveable equipment and facilities needed for the proposed studies.