Plan Overview

A Data Management Plan created using DMPTool

Title: ERI: Standardized Assessment of the Fate and Evolution in the Great lakes for Unmapped Antibiotic Resistance Dissemination (SAFEGUARD)

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Funder: National Science Foundation (nsf.gov)

Funding opportunity number: 22-595

Grant: https://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=505888&ods_key=nsf22595

Template: NSF-ENG: Engineering

Project abstract:

The goal of this research project is to identify sources of point and non-point source pollution in Lake Superior's Portage Lake canal using molecular and culture methods. This will be done by measuring fecal indicators, total bacteria, and antibiotic resistance genes in order to discriminate anthropogenic from agricultural and natural wildlife pollution.

Start date: 05-01-2024

End date: 04-30-2026

Last modified: 10-09-2023

Copyright information:

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Experimental data will be generated throughout this project in the form of collected water samples, extracted DNA, and culture isolates, and metadata. Sample data and metadata generated will consist of latitude and longitude, gene copy measurements of antibiotic resistance gene concentrations, fecal indicators, physiochemical water parameters (pH, metals, etc.), E.coli concentrations, reports and reviews, and project summaries.

Materials will be created as hardcopy notes, digital notes, and instrument output. All materials will be transcribed into standard Microsoft Office applications (Word, Excel, and PowerPoint) and PDF documents. Data will be processed in R on university owned computers and will be made publicly available upon publication. Figures will be produced in JPEG or PNG formats.

Data and metadata will be generated in alignment with the current best practices in the field. Metadata will be named and collected using standardized environmental ontology (ENVO). qPCR data will be generated following the Environmental Microbiology Minimum Information Guidelines and reported in alignment with the Minimum Information for Publication of Quantitative Real-Time PCR Experiments. Culture data will be generated according to the Environmental Protection Agency and World Health Organization protocols which insure high confirmation rates from complex environmental samples.

Collected data will be made publicly accessible in table and figure format through the supplementary information of all published works. This will include all sample matched metadata, including gene copy measurements, and culture concentration data. Table format is included to increase accessibility and clarity as interpretation from figures is often inaccurate.

Findings will be published in peer-reviewed journals and presented at conferences by the researchers based on this data. All data will be made public upon publication as figures in the There will be no additional restrictions or permissions required for accessing the data. All code developed during this project for data analysis will be made publicly available through Github after publication.

In addition to peer-review publication, work will be available through Digital Commons @ Michigan Tech as allowed by the publisher. Digital Commons is the university's institutional repository, a platform that highlights the great research and research products produced by the Michigan Tech community, making this work more visible and easily accessible to the world. Digital Commons @ Michigan Tech is a digital repository offering worldwide access to research, scholarship, campus publications and other creative works by members of the Michigan Tech community. This repository is a service of the Van Pelt and Opie Library.

Data re-use is encouraged with citation of the work. All generated data and metadata will be made publicly accessible in table format through the supplementary information of all published works.

The long-term strategy for maintaining and archiving the data obtained by this project will be through the use of scientific journals and conference proceedings. Articles will be written and submitted to these journals and conferences. All relevant handwritten lab notebook data will be digitally transcribed monthly to avoid data loss. In addition, all project data (including any relevant data not published) will be maintained electronically on Michigan Tech's secure computing infrastructure and backed up regularly to the universities Google Drive. All data will be retained for at least the minimum time period (three years following public release). Data likely to be useful to the scientific community will be retained and archived indefinitely.