

2023 Battelle Sediments Conference
B8. Advanced Data Analysis and Decision Tools
Thursday, January 12, 2023
10:55pm - 11:20pm

Digitizing the Haystack: Streamlined Techniques to Pinpoint PRPs

Background/Objectives. Identifying potentially responsible parties (PRPs) at sediment and other sites requires properly determining (1) key contaminants of potential concern (COPCs) at or near the impacted property, (2) other potential industries or specific parties that could have contributed to COPC impacts, and (3) any potential non-point sources.

In addition, it is often important to understand the history of land cover changes (*e.g.*, impervious surfaces, earthwork, dredging) and municipal sewer or stormwater infrastructure at and near a contaminated site to get a full picture of the timing and sources of impacts.

There is wealth of information (often collected over many decades from vast geographic areas) available to help address the above-described issues, including environmental databases, historical and contemporary environmental investigation reports, and other publicly and privately available sources, often comprising thousands of pages, data points, and or megabytes. To properly utilize this information in the PRP identification process, it must be accurately and efficiently reviewed, analyzed, and communicated to shareholders, regulators, and project team members.

Approach/Activities. There are several tools and methods available to help experienced scientists sift through, process, understand, and communicate findings from a large amount of available information, including:

- Automated data-mining procedures performed on environmental databases, reports, and other records, which allow for customized searches based on project-specific factors.
- Programmable text analytics techniques, which help optimize search results so that pertinent information can be efficiently extracted.
- Geographic Information System (GIS) and data-management software, which can help investigators identify and differentiate contaminant sources through spatial and temporal analyses of sampling data, aerial and satellite imagery, and other historical records. In addition, GIS software is an important tool for visualizing and communicating research and analysis results *via* interactive web-based mapping applications.

Results/Lessons Learned. Effective use of computer automation and GIS technology has proved to be an efficient means of accurately identifying, extracting, analyzing, and visualizing information critical to PRP search efforts. This presentation will describe commonly used data sources or repositories, highlight some of the procedures that can be used to process and analyze these data, summarize a few case studies that provide examples of how some of the techniques describes above have been used, and showcase some examples of visuals and other products that help communicate results.