



## WHAT IS ITRC?

The Interstate Technology Regulatory Council (ITRC) is a state-led, public-private coalition dedicated to reducing barriers to the use of innovative environmental technologies. ITRC represents over 700 individuals, across 50 states, working to produce guidance and training on innovative environmental solutions. Bringing together teams of state and federal regulators along with private, academic, and stakeholder experts, ITRC broadens and deepens technical knowledge and reduces barriers to expedient regulatory approval. Since 1995, the collective success of this coalition has generated huge benefits to the environment, inspired new technical innovations, and saved hundreds of millions of dollars.

ITRC is a program of the Environmental Research Institute of the States, managed by the Environmental Council of the States. This partnership is based on a commitment to protect and improve human health and the environment across the United States of America.

## ABOUT GEOSPATIAL ANALYSES

Geospatial analysis can be used to support optimization at any stage of the project life cycle and provide additional confidence in understanding the data set. Geospatial analyses can support enhanced data evaluation and interpretation during site characterization and remediation. For example, more accurate estimates of average concentrations, volumes and masses of contaminated materials can improve cost estimation for remediation

alternatives. Geospatial analyses can also support enhanced communication and decision-making using the graphical presentations and geospatial visualizations generated from the geospatial analysis methods.

In September 2012, the US EPA issued a National Strategy to Expand Superfund Optimization Practices from Site Assessment to Site Completion, bringing attention to the need to formalize optimization practices, and apply optimization concepts throughout all phases of a remediation project. Multiple federal agencies, including Department of Energy (DOE), U.S. Army Corps of Engineers (USACE), and U.S. Air Force Civil Engineer Center (AFCEC), agree on the importance of these approaches and have developed optimization strategies. Geospatial analyses can provide additional lines of evidence to support optimization activities.

## THE GEOSTATISTICS FOR REMEDIATION OPTIMIZATION PROJECT

The Geostatistics for Remediation Optimization (GRO) team was established to develop guidance to help practitioners better apply geospatial analyses in environmental projects. This guidance will help state regulators and other practitioners to understand, evaluate, and make informed decisions about optimization activities at environmental sites using geospatial analyses. Geospatial analyses are tools that can provide enhanced evaluation, interpretation, and communication on data that are related in time or space.



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In some cases, the geospatial analysis methods include statistical analyses involving spatial or spatial and temporal interpretations of environmental data as well as uncertainty evaluations of those data. When such statistical assumptions and metrics are involved, those geospatial analysis methods are often referred to as geostatistical methods. Geospatial analyses can help get the most information from sampling locations and results to avoid sampling redundancy and to adjust remediation efforts through appropriate performance evaluation. Geospatial analyses can be used at environmental sites in all project life cycle stages (release detection, site characterization, remediation, monitoring and closure), for all environmental media (soil, groundwater, vapor, or sediment), and for different sizes and types of sites (for example, Brownfields, UST, RCRA).

## THE GRO WEB-BASED GUIDANCE

The web-based guidance document, Geospatial Analysis for Optimization at Environmental Sites (GRO-1), was published in November 2016 and provides information at several levels of detail to accommodate different users with different informational needs. Four fact sheets have been developed to provide an overview of the value and use of geospatial analysis in supporting optimization activities. The fact sheets provide connections to the more detailed material elsewhere in the guidance.

The guidance includes common optimization questions that are connected with geospatial methods that may be used to support those questions. The questions are organized around the project lifecycle stages. The guidance also has specific information about methods and software for practitioners that will support site-specific implementation of geospatial analyses.

A project manager's tool box provides links to the useful features in the document, such as the choosing methods flow chart, the geospatial work flow, and the review checklist. The review checklist can guide the user to prepare a geospatial analysis or to review a geospatial analysis document to determine if proper information is provided. Another useful feature in the guidance is an overview and comparison of more than 20 software packages available to implement geospatial methods.

## THE GRO INTERNET-BASED TRAINING

The ITRC GRO internet-based training (IBT) course is free. The course is designed to assist practitioners and reviewers in using geospatial analysis for optimization activities and getting familiar with the guidance document.

Following the internet-based training course and using this guidance document, project managers will be better equipped to:

- Evaluate available data and site needs to determine if geospatial analyses are appropriate for a given site
- Identify optimization questions where geospatial methods can contribute to better decision-making for a project and specific lifecycle stage
- Select appropriate geospatial method(s) and software using the geospatial analysis work flow, tables and flow charts in the guidance document for a project and optimization question(s)
- Explain what the geospatial analyses results mean and appropriately apply in decision-making
- Use the project manager's tool box, flow charts for choosing geospatial methods, and review checklist to use geospatial analyses confidently in decision-making

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Link to GRO-1 document:

[GRO-1](#)

Link to GRO IBT Training:

[GRO IBT](#)

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