

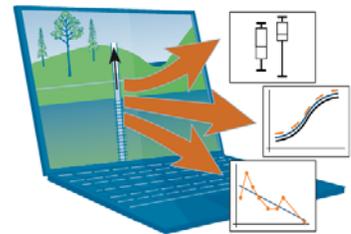


# ITRC Guidance Document Information

## Product Announcement | March 2014

### ***Groundwater Statistics and Monitoring Compliance: Statistical Tools for the Project Life Cycle***

A new web-based guidance document from ITRC describes how statistical tools and methods can benefit environmental site management. This document provides information about using groundwater statistical methods and tools in all project life cycle stages: release detection, site characterization, remediation, monitoring and closure. The document is designed to help project managers make better project decisions. You can access this new guidance document at <http://www.itrcweb.org/GSMC-1>.



## Background

The purpose of this web-based guidance document is to help environmental practitioners to understand, interpret, and use statistical techniques to successfully manage groundwater compliance or cleanup projects. The document is specifically for environmental project managers who must review or use statistical calculations for reports, make recommendations or decisions based on statistics, or demonstrate compliance for groundwater projects. These individuals typically have a technical background and experience in one or more disciplines related to site compliance or cleanup, but do not have specific expertise in statistics or access to in-house statistical expertise. This document is not a tutorial on tests and methods, but rather illustrates how these tests and methods, along with general statistical approaches, can address the practical applications, challenges, and misapplications associated with groundwater statistics.

Groundwater statistical methods have applications throughout the life cycle of environmental projects. This document organizes the discussion of site management around five main stages in an environmental project life cycle: release detection, site characterization, remediation, monitoring, and closure. These tasks correlate with the activities described in various regulatory programs. Although individual projects may vary in their progression through these stages, groundwater statistical tests can support decision making, regardless of how the project is defined.

This document also explores some of the common problem statements that guide decision making throughout environmental projects. These problem statements are presented as study questions. The study questions relate to one another and to specific groundwater evaluation objectives that may be familiar to practitioners during various project life cycle stages. Some questions relate to assessing background concentrations and to assessing contaminant concentrations with respect to criteria (such as regulatory standards). Additional questions are used to evaluate temporal trends in data sets and are relevant to assessing temporal and spatial rates of change for contaminants. Finally, several questions are used to evaluate whether the frequency of sampling and spatial coverage of wells are appropriate, leading to a more optimal monitoring program. The study questions serve as a bridge to connect life cycle activities with relevant statistical tests and methods.

In addition, available tools to conduct these tests and methods are presented in this document. This document provides an overview of USEPA's March 2009 *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (known as the *Unified Guidance*) and other resources and shows how statistics are specifically applied to groundwater data for environmental projects. The GSMC web-based guidance document applies to sites being addressed under various regulatory programs.



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Documents, free Internet-based training, contact information: [www.itrcweb.org](http://www.itrcweb.org)

## How the ITRC Guidance Document Can Help You

The GSMC web-based guidance document offers the following benefits to environmental professionals:

- ▶ Interconnected sections allow rapid access to the materials from different perspectives.
- ▶ Practical overviews explain statistical methods and tests in the context of groundwater data analysis for monitoring compliance and site cleanup.
- ▶ The explanations of groundwater statistics apply to familiar project life cycle stages.
- ▶ Summary information for 23 software tools and packages aids in selecting tools for statistical analyses.
- ▶ An overview of common mistakes in applying statistics to groundwater data analysis helps to prevent these errors on your site.
- ▶ The web-based format offers easy navigation, simplified searching, portability, and sharing.

If you are considering using groundwater statistics at an environmental management site, you can achieve the maximum benefit from this document by taking the following actions:

- ▶ Share this document and FREE Internet-based training with your co-workers, site owners, consultants, and other audiences by providing a link from your website to: <http://www.itrcweb.org/GSMC-1>.
- ▶ Use the ITRC guidance document as a tool to develop or update existing guidance.
- ▶ Report to ITRC any successes or concerns related to this document, training course, or the application of statistical analyses for groundwater data at sites at: <http://www.itrcweb.org/feedback.asp>.
- ▶ Promote the GSMC web-based guidance document when speaking at conferences and meetings, or when developing curricula.

## Resources

ITRC documents and links include the following:

- ▶ *Groundwater Statistics and Monitoring Compliance*, Web-based Guidance Document (GSMC-1), January 2014, <http://www.itrcweb.org/GSMC-1>
- ▶ Additional information and links for groundwater statistics: <http://www.itrcweb.org/Team/Public?teamID=3>

## FREE Internet Training Course

ITRC has developed a FREE Internet-based training course for this product. This training is designed specifically for environmental project managers who review or use statistical calculations for reports, who make recommendations or decisions based on statistics, or who must demonstrate compliance for groundwater projects. The training class will encourage and support project managers and others who are not statisticians to: use the GSMC web-based guidance document, apply key aspects of the statistical approach to groundwater data, and answer common questions on background, compliance, trend analysis and monitoring optimization.

You will also be provided with links to additional resources related to groundwater statistics. Registration opens four to six weeks prior to the class date at: <http://www.itrcweb.org/Training>. You can take the training “live” from the comfort of your own office or access archives of past classes at your convenience. If you have questions after completing the online registration, call (402) 201-2419, or send an e-mail to [training@itrcweb.org](mailto:training@itrcweb.org).

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