



# APPLIED GROUND WATER STATISTICS

An Introductory Course in RCRA Statistics for  
Environmental Professionals

## COURSE DESCRIPTION:

This course is designed to provide a fundamental understanding of ground water statistics necessary to ensure a facility's compliance with federal and state regulations. It is also designed to teach the latest statistical methodologies recommended in the EPA's new Unified Guidance document.

The instructors focus on teaching the underlying concepts and application of environmental statistics. They utilize examples and case studies to bring this dry subject to life. No derivations required.

Sanitas for Ground Water is introduced and used in conjunction with lectures. Participants will work through exercises solving a number of scenarios often encountered in ground water monitoring programs. They will learn to identify and justify the most appropriate statistical analyses for a site's specific characteristics.

Additional time will be provided to discuss participants' individual statistical analysis issues. This course creates an environment where consultants, owner/operators and regulators work as a team to solve real world problems.

currently authoring a comprehensive update to the ground water guidance entitled "Unified Guidance on the Statistical Analysis of Ground-Water Monitoring Data." He also provided expert design and review of the Ground Water Information and Tracking System (GRITS) statistical software package tailored for the analysis of ground water data at RCRA sites. He has also taught seminars at the Waste Testing and Quality Assurance Symposia and presented at the Virginia and Maryland State Landfill Seminars.

**Kristina L. Rayner, B.S.**, Project Manager, Sanitas Technologies

Ms. Kristina Rayner has assisted RCRA and CERCLA facilities across the country in performing ground water statistical analyses. She directs the development and testing of Sanitas™, writes statistical routines implemented in the program, and provides software quality assurance for the environmental division. Ms. Rayner develops and reviews statistical analysis plans and reports that assist facilities in meeting EPA and state regulatory standards.

## WHO SHOULD ATTEND:

This is an introductory course in RCRA statistics that is essential for:

- Ground Water Specialists
- Environmental Engineers
- Regulatory Professionals
- Solid and Hazardous Waste Environmental Compliance Managers
- Others Involved with RCRA Statistics

## PRESENTERS:

**Kirk Cameron, Ph.D.**, President, MacStat Consulting, Ltd. Dr. Cameron has been closely involved with the statistical analysis of ground water and other environmental media since 1990. He has conducted training sessions with EPA, State, and industry personnel who deal with RCRA statistical issues at over 25 locations across the country since 1992.

He has also been significantly involved with developing statistical sampling and analysis guidance for EPA. Dr. Cameron wrote the 1992 Addendum to the Interim Final Guidance document on the statistical analysis of ground

To Register Use Form on Page 2

## COURSE OUTLINE:

### DAY ONE

- Lecture 1:** Overview of Ground Water Quality Statistical Evaluation
- Exercise #1:** Data Import & Introduction to Sanitas Functionality
- Lecture 2:** Statistical Tests & How They Work, Data File Management
- Exercise 2:** Background Data Screening

### DAY TWO

- Exercise 3:** Evaluating Spatial Variation & Screening VOCs
- Lecture #3:** EPA Guidance Methodology
- Lecture #4:** Alternative Methodologies, Retest Protocols, and Power Analyses
- Exercise #4:** Selecting Resample Programs Using Power Curves
- Exercise #5:** Performing Statistical Analyses
- Exercise #6:** Updating Background Data
- Question/Answer Session**
- Course Evaluation**

# APPLIED GROUND WATER STATISTICS

## ADDITIONAL INFORMATION:

**Cost:** \$695 (\$595 with 30 day advance registration). \$495 for State Regulators

**Software:** Computers and software provided. Sanitas™ for Ground Water software (Workshop Version) is available upon request after completion of course.

## REGISTRATION DETAILS:

To register for this workshop, we recommend you **call to reserve a seat** and then fax or mail the registration form - together with your check to Sanitas Technologies. You may also pay by credit card at [www.sanitastech.com](http://www.sanitastech.com) (see the Pay Now button on the Contact tab). **Do not make travel arrangements until notified that class attendance requirements have been met.**

## WORKSHOP FEE:

Workshop enrollment is limited to maintain a high instructor-to-student ratio. We strongly recommend that you register at least four weeks in advance of the workshop date. Your registration will not be confirmed until payment is received (Purchase Orders will not secure a class slot). **Participants will not be admitted to the course without prior payment.** The registration fee covers notebook and class materials. Lunches are not included.

## REGISTRATION CANCELLATIONS:

If you cancel your registration, you will be charged a \$75.00 service fee. To cancel, you must call Sanitas Technologies 913.829.1470 ten (10) working days prior to the starting date of the workshop. **If you cancel less than ten (10) working days prior to the workshop, you will be subject to the full fee.**

## PROGRAM CHANGES & CANCELLATIONS:

Sanitas Technologies reserves the right to make changes in program and scheduled speakers, **or to cancel programs if enrollment criteria are not met**, or when conditions beyond Sanitas Technologies' control prevail. Every effort will be made to contact each enrollee if a program is canceled. If a program is not held for any reason, Sanitas Technologies' liability is limited to the refund of the program fee.

## LOGISTICAL INFORMATION:

Check-in is from 8:00-8:15 a.m. on the first day of the workshop unless otherwise indicated. Directions and lodging information is available upon request.

## FOR ADDITIONAL INFORMATION:

## APPLIED GROUND WATER STATISTICS REGISTRATION FORM

- Sacramento, CA, October 3-4, 2018  
 Kansas City, MO, November 6-7, 2018

Date \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Telephone \_\_\_\_\_

Fax \_\_\_\_\_

E-mail \_\_\_\_\_

- Please check if you would like a map and lodging information sent to you electronically.

**Fee:** \$695 (\$595 if registration form and payment are mailed in 30 days prior to course date). Fee includes a \$75 nonrefundable deposit. Three course slots have been reserved for state regulators at a reduced cost of \$495.

**Make check payable to:** Sanitas Technologies

**Mail registration form and payment to:**

Sanitas Technologies  
PO Box 7486  
Boulder, CO 80306