

Course Registration

Register for a course online OR check off the course you wish to attend and complete the "Registration Information" below. Course space is limited, so please be sure and fax your completed registration form to the contacts listed below.

Register online today!

<http://www.swstechnology.com>

Registration - Abu Dhabi, UAE - February 04 - 07, 2008

Water Quality Data Management using HydroGeo Analyst and AquaChem

Abu Dhabi - Water Quality Data Management

Local Contact:

Amr Hassan
Senior Regional Account Manager
9Th floor, Al Masood Tower, Hamdan Street
P. O. Box 21,
Abu Dhabi, United Arab Emirates
Email: amrhassan@abu-dhabi.oilfield.slb.com
Office: +971 2 610 1240
Mobile: +971 50 818 7238

Venue:

Beach Rotana Hotel & Towers
Tourist Club Area,
P.O.Box 45200, Abu Dhabi, U.A.E.
Tel: (971) 2 6443000 Fax: (971) 2 6442111
Email: beach.hotel@rotana.com
Note: for organizations sending 3 or more participants, a 25 % discount will apply to the total course cost!

NOTE: Pre-registration is necessary. Please do not purchase non-refundable airline tickets more than 21 days prior to the course. WHI reserves the right to amend courses, change speakers, or revise topics as necessary to ensure a quality program. A 100% refund is granted for course cancellations if WHI is notified at least 3 weeks prior to the course. Cancellation with less than three weeks notice will receive a \$500 cancellation charge.

Registration Information

Mr./Ms.: _____

Company: _____ E-mail: _____

Mailing Address: _____

City/State/Country: _____ Postal/Zip Code: _____

Phone: _____ Fax: _____

Payment Information

* Overseas order must be prepaid using either a credit card, or bank transfer. Payment must be received prior to course.

Credit Card:   

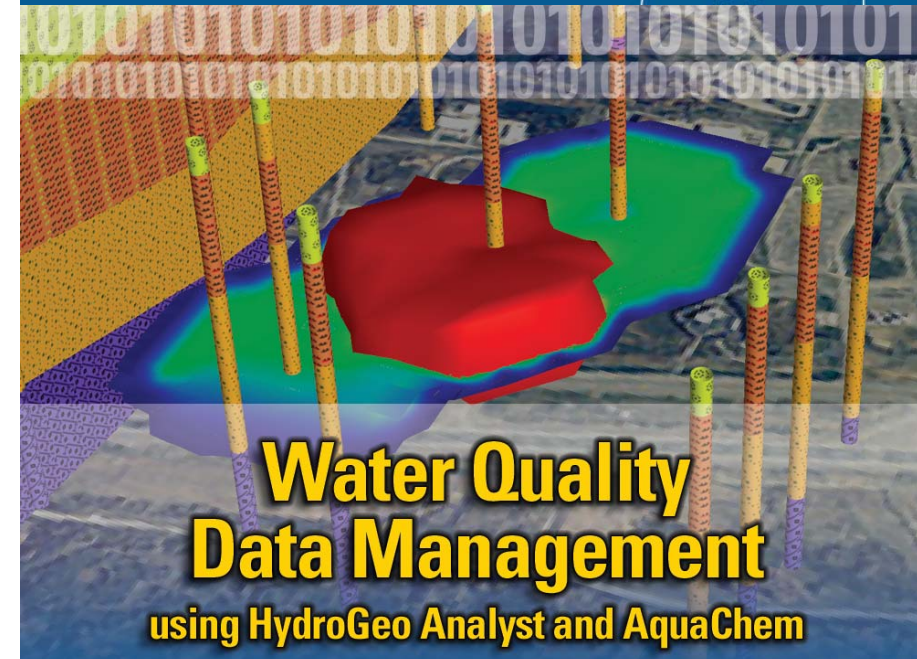
Card Number: _____ Expiration Date: _____

Signature: _____

Purchase Order: # _____ Date: _____

Signature: _____

Bank Transfer: J. P Morgan Chase Bank, United States
A/C 323021581 Chips #002 / ABA# 021000021 Swift Code: CHASUS33
Beneficiary: Schlumberger Water Services SWS



Water Quality Data Management using HydroGeo Analyst and AquaChem

Abu Dhabi, UAE | Feb. 04 – 07, 2008

7 Important Course Topics

- Introduction to integrated data management
- The use of GIS data management in hydrogeology studies
- Data Interpolation within the GIS system
- Interpreting borehole cross-sections to conceptualize the flow system
- Interpreting field data to generate model parameter distributions
- Fundamentals of managing water quality data
- Importing water quality data from various data sources into a relational database

Who should attend this course?

This course was designed to be of interest to any environmental or groundwater professional, novice or experienced, who deals with projects that have a component related to groundwater quality analysis or water quality data management.

What does the course cost?

- WQDM (4 days) \$1650 USD

Where is it held?

Beach Rotana Hotel & Towers
Tourist Club Area,
P. O. Box 45200, Abu Dhabi, U.A.E.
Tel: (971) 2 644 3000
Fax: (971) 2 644 2111
Email: beach.hotel@rotana.com

When do I register?

Register now and take advantage of the **Early Registration Special**. Register 3 months prior to the course date and receive a \$100 USD discount!

How do I register?

- Register online at: www.waterloohydrogeologic.com
Click on **Training** and **Register Now**.
- Or complete the registration form on the back and fax it to us!

Can't make the Course?

Contact us about our "ON-SITE Custom Training" program. We're ready to deliver any one of our popular courses or tailor the course topics to address your specific organizational needs!

Questions? Contact Us!

Schlumberger Water Services SWS
460 Phillip Street - Suite 101
Waterloo, Ontario, Canada N2L 5J2
Tel: +1 519-746-1798 Fax: +1 519-885-5262
Email: sws-training@slb.com
www.swstechnology.com



Course Objectives

From hands-on experience, you will learn...

- How to effectively apply AquaChem to water quality data management projects
- How to create a hydrochemistry database
- Basic understanding of rock/water interactions
- How to quickly generate data plots and prepare professional reports for water data
- What to look for when evaluating data quality
- How to solve modeling problems using PHREEQC
- Hands-on guidance with HGA and AquaChem by expert instructors
- A complete set of course lecture notes and lab exercises, including a CD of lab exercises

Course Schedule Note: Breaks & lunches are not listed

Day 1

Registration: Coffee and Introductory Remarks
Lecture: Introduction to Integrated Data Management
Lecture: GIS Analysis in Hydrogeology Studies
Lecture: Building a Hydrochemistry Database
Exercise: Setting up a Water Quality Database
Lecture: GIS Data Interpolation
Exercise: Interpolating Data in HGA

Day 2

Exercise: Interpolating Data in HGA
Lecture: Cross-Section Analysis
Exercise: Creating User-Defined Cross-Sections
Lecture: 3D Visualization: Reporting & Presentations
Exercise: 3D Visualization in HGA
Lecture: Intro to Water Quality Data Management
Lecture: Introduction to AquaChem

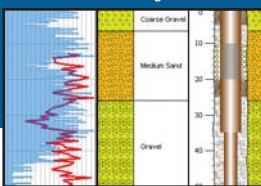
Day 3

Exercise: Introduction to AquaChem
Lecture: QA/QC Techniques - Part 1
Lecture: QA/QC Techniques - Part 2
Lecture: Techniques for Interpreting Data
Exercise: Techniques for Interpreting Data

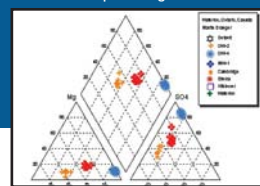
Day 4

Lecture: Statistics in Groundwater Analysis
Lecture: Geochemical Modeling
Lecture: The AquaChem-PHREEQC Interface
Lecture: Closing Remarks and Course Evaluations
Lecture: Publishing Water Quality Results with HGA
Exercise: Publishing Water Quality Results

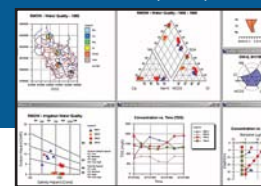
Borehole Log Plots



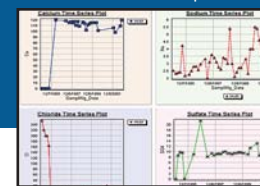
Piper Diagram



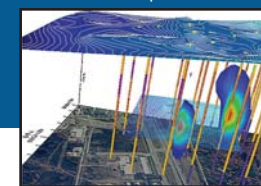
Water Quality Analysis



Time Series Graphs



3D Explorer



Water Quality Data Management Using HydroGeo Analyst and AquaChem

The study of groundwater chemistry data involves the storage and management of large volumes of water quality data, and a large number of numerical and graphical techniques that are not readily available with standard Office software such as MS Excel. This 4-day hands-on course presents an introduction to the management and analysis of water quality data. This process begins with data management to develop a site GIS, using HydroGeo Analyst, that integrates the disparate sources of groundwater data that are common in a hydrogeologic analysis. The data is interpreted and analyzed within the GIS to develop an understanding of the regional water quality in an aquifer. The hydrogeologic conceptualization can then be used as a part of regional water quality analysis. AquaChem offers an extensive but easy-to-use numerical and graphical toolset for efficient analysis of most water chemistry data sets. In this course you will be given detailed background information on how to apply these methods in order to track down the formation history of the studied water samples. You will also learn how to document and present your findings efficiently.

Course Topics

- Introduction to integrated data management
- The use of GIS data management in hydrogeology studies
- Data Interpolation within the GIS system
- Interpreting borehole cross-sections to conceptualize the flow system
- Interpreting field data to generate model parameter distributions
- Fundamentals of managing water quality data
- Importing water quality data from various data sources into a relational database
- Assessing the quality of lab data, identifying trends and performing statistical calculations
- Detecting and interpreting exceedance values
- Identifying water types and aquifer composition
- Plotting spatial patterns of water data
- Introduction to the USGS PHREEQC geochemical modeling code
- Concepts and benefits of relational databases applied to water chemistry data

PHREEQC

For complex geochemical modeling problems, AquaChem offers a seamless interface to the USGS code PHREEQC, the "de facto" standard in this field. You will learn how to apply this software to simple problems in order to quantify your hypothesis of the change in water quality through an aquifer system. Additionally, you will receive an overview of more complex modeling capabilities of PHREEQC.

Managing Water Quality Data

Storing and managing water quality data represents a major challenge, in particular if you have large volumes of data stored in various file formats. Understanding the data and maximizing the use of your data management system will be discussed.

Quality Control and Statistics

Analytical lab results tend to appear accurate and indisputable. However, many sources of error can be introduced to a sample throughout the sample collection and delivery process. This section of the course covers the principles of quality control and the role of a database in this process.

Effective Use of Data Plots

It is difficult to present and understand water quality data when presented in either a tabular or spreadsheet format. Data plots represent a more effective method to detect patterns and identify trends in data. As a plotting tool, AquaChem will be used to create a wide variety of standard water quality data plots.

Geochemical Modeling using PHREEQC

The effects of changing geochemical conditions caused by landfills, wastewater, injection wells, mine tailing, etc. have a nonintuitive effect on dissolved concentrations in groundwater. Geochemical modeling using PHREEQC can be used to help anticipate these changes.

Course Software: HydroGeo Analyst, AquaChem

Course Instructors

Aschalew (Chalew) Debebe, Ph.D., P.Eng. is a Product Manager (Water Resources Engineer) with Waterloo Hydrogeologic Inc. (WHI). He has over 6 years of research and teaching experience in the area of Water Resources Engineering and over 3 years of Software development and management. Chalew has gained a wealth of experience focusing on cost-effective software solutions to real-world problems. For the last few years Chalew has been managing the development of HydroGeo Analyst, the All-In-One Environmental Data Management, Analysis, Visualization and Reporting Software from WHI. Previously, Chalew has developed stand-alone GIS system that interacts with environmental databases. He has also worked on various projects related to environmental impact assessment, modeling and remediation activities.

Lukas Calmbach, Ph.D. has over 10 years experience in environmental data management and is the author of AquaChem, a world-recognized water quality and data management program. Lukas published his thesis on "Isotopical and Chemical Composition of Thermal Springs in the Rhein Valley" which highlights the importance of data analysis and interpretation. As a team leader for the Environmental Protection Agency in Basel, Switzerland, Lukas successfully designed and implemented a regional-scale web-based GIS/data management system.