Pre-congress training course IMWA 2008
Groundwater Modeling for the Mining Industry
May 27 – 30, 2008 Prague, Czech Republic

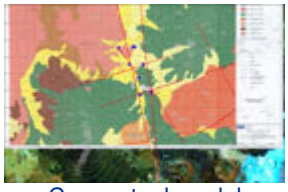
IMWA Congress Short course will be held in Prague in the bulding of Charles University, Faculty of Science. Albertov campus is situated in the walking distance from metro station, close the town historical centre.

Schlumberger Water Services – Open Enrolment Training
SWS Training Course Series: Groundwater Modeling for the Mining Industry
Training Course Schedule

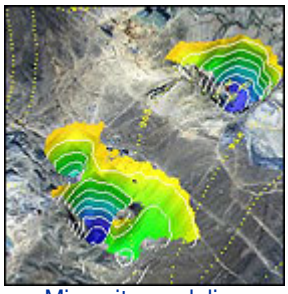
Day 1
Lecture: Course Introduction
Lecture: Groundwater Modeling for Mining Applications
Lecture: Site Characterization and Data Management for Modeling
Exercise: HGA for Mine Data Management
Lecture: Principles of Groundwater Modeling
Exercise: Visual MODFLOW Modeling of Mine sites
Day 2
Lecture: USGS MODPATH for Mine Analysis
Exercise: Regional Groundwater Modeling using MODFLOW
Lecture: USGS ZoneBudget for Mine Analysis
Exercise: Modeling Mine Tunnel Impacts
Day 3
Lecture: Water Quality Data Management
Exercise: Water Quality Data Management using AquaChem
Lecture: Geochemical Modeling with PHREEQC
Exercise: PHREEQC Modeling with AquaChem
Lecture: Principles of Contaminant Transport Modeling
Day 4
Exercise: Deadwood: Modeling Mine Tailings Leachate
Lecture: Groundwater Model Calibration
Course Evaluations
Exercise: Mine Model Calibration
Optional: Modeling Transient Groundwater Mine Impacts

The course fee 1195 Eur,
Registration
http://www.swstechnology.com/training_course.php?ID=8&CourseID=242

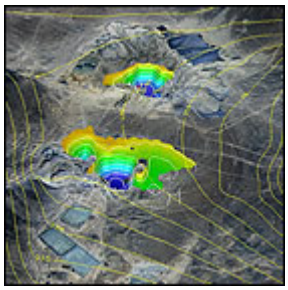
There are increasingly greater amounts of data available to characterize mine sites, and these data can be used in the development, operation and closure of mining operations. However, it is necessary to integrate the disparate sources of data, and to understand the software tools that are available to help make decisions about how to plan and operate a mine site. This 4-day modeling course was designed to present the theory behind site characterization, database management, water quality data analysis, and groundwater flow and solute transport modeling for mine site assessment. The course starts with an introduction to the data that is available to characterize the geologic, hydrogeologic and geochemical conditions at a mine site. Data storage in a referential database (using HydroGeo Analyst) makes it easy to use for the hydrogeologic characterization of the mine site. Water quality database management and geochemical modeling (using Aquachem) are covered to introduce the importance of water quality analysis at a mine site. Groundwater flow modeling is illustrated using Visual MODFLOW as a tool for estimating the amount of groundwater at the site, how it can be dewatered and the optimization of the dewatering process. Model calibration is discussed, and manual and automated model calibration issues are compared with the help of WinPEST. Finally, an overview of solute transport mechanisms within the groundwater environment, and the use of reactive transport modeling to predict potential impacts from mine site waste are illustrated with Visual MODFLOW. This course is ideally suited for hydrogeologists and environmental professionals concerned with assessing mine site development, mine operations and contamination, and mine site decommissioning, who wish to advance their modeling knowledge, and whose responsibilities include model development, review, planning and project management.



Conceptual model development in HGA



Mine site modeling



Dewatering impacts

Site Characterization and Data Management

There is potentially a great deal of information on the hydrogeology, hydrology and geochemistry at a mine site. Site characterization, which integrates this disparate information, is an integral part of the development of a solution for assessing the impacts of mine operations on the surrounding natural environment. HydroGeo analyst is comprehensive data management software designed to efficiently manage all sources of environmental data. HGA is ideal for compiling data, analyzing borehole logs, developing cross-sections of the subsurface environment, mapping spatial data and providing input files for groundwater modeling when assessing the environmental impact of a mine.

Water Quality Data Management

The storage and management of large volumes of water quality data in a suitable format is a major challenge in geochemical interpretation and analysis. This is important in the environmental impact assessment of mine tailings leachate production from waste rock. AquaChem provides a database environment for the storage, analysis and reporting of water quality data at a mine site, and the analysis of geochemical evolution mine tailings leachate using PHREEQC to model dissolved concentrations in groundwater.

Groundwater Modeling

There are numerous applications of groundwater modeling software for the environmental impact assessment of a mine site. Groundwater models can be used to predict the regional groundwater budget for a mine site, the impact of dewatering on surrounding natural features (wetlands, rivers, …), and to determine the time history and volume of groundwater extracted during dewatering operation. Groundwater models can also be used for contaminant transport analysis to predict the evolution of the contaminant plume that may migrate from the mine tailings pond. Finally, in order to make defensible predictions with the model, and to understand the sensitivity and uncertainty in these predictions, WinPEST can be used for automated model parameter estimation. Visual MODFLOW is a graphical user interface that allows you to develop a groundwater flow and solute transport model of the hydrogeologic environment beneath a mine site.

Course Topics

Introduction to groundwater modeling for mining applications

Site characterization and data management using HGA
Principles of groundwater modeling
Developing MODFLOW models to assess regional water balances
Using MODFLOW to assess mining impacts (tunneling, open pits)
Groundwater quality data management at a mine site
The use of AquaChem and PHREEQC for water quality assessment
Contaminant transport modeling using MT3D and RT3D
Groundwater Model Calibration Issues

Course Objectives

From hands-on experience you will learn …

How to use HGA to develop a database of site environmental information (geology, hydrology, contaminants)
How to develop a water quality database using AquaChem
How to model geochemical changes beneath the site using PHREEQC
How to develop a groundwater model using MODFLOW to assess the site water balance
How to simulate contaminant transport using MODFLOW and MT3D/RT3D
How to better calibrate your groundwater model using WinPEST
How to present the results in tables, figures and animations using all of the above programs

You will also receive …

Hands-on guidance with HGA, AquaChem and Visual MODFLOW by expert instructors
A complete set of course lecture notes and lab exercises
A CD of lab exercises and a demo copy of the course software

Earn SWS CEU's

Schlumberger Water Services offers SWS Continuing Education Units (CEUs) toward the successful participation and completion of this professional training course. All of our training courses are developed to ensure the participants are exposed and challenged through various hands-on lab exercises and exposure to theoretical concepts. We pride ourselves in offering a comprehensive learning experience and provide attendees with a Certification of Completion which includes 3.2 CEU's for completing this course.

Registration and General Information

Registration: For your convenience, we accept the following payment methods: bank transfer, money order, certified check or credit card. The registration fee includes the course notebook, materials, instruction and beverage breaks. After payment is received, a letter will be sent to you that confirms your space in the course and provides all the necessary details on transportation and accommodation. Pre-registration is necessary to reserve a space in our limited-enrollment courses and to ensure that a copy of the course materials is available. If you are unable to pre-register, please call or send an email to confirm that space is available in the course.

Or contact:

Schlumberger Water Services
Tel. (519) 746-1798
Fax (519) 885-5262

sws-training@slb.com

When registering, please indicate requirements for handicapped facilities, equipment, materials, or diet. Please advise us of special requirements 30 days prior to the beginning of the course.

Course Cancellation Policy/Substitutions: A 100% refund is granted for course cancellations if SWS is notified at least three weeks before the course. Cancellations made less than three weeks prior to the course will receive a $500 cancellation charge. One substitute is permitted per registrant for the entire course; daily substitutions are not permitted. SWS must be notified prior to the first day of the course when a substitution will occur.

Airline Information: Please do not purchase non-refundable airline tickets more than 21 days prior to the course. Should a course require cancellation WHI is not responsible for non-refundable airline tickets.

Logistical Information: Daily instruction is from 8:30 a.m. to approximately 5:30 p.m. with beverage, lunch and dinner breaks. Complete information on venue location and other logistical details are provided in your registration letter. For additional tourist information, contact your travel agent or the host city's chamber of commerce.

Tax Deduction for Education Expenses: An income tax deduction is permitted for education expenses (registration fee, cost of travel, lodging, and books) undertaken to either maintain/improve skills required in one's employment/business, or meet expressed requirements of an employer imposed as a condition to retain employment, rate status, or rate of compensation. Meals and beverages may be deductible up to 50%.

Guarantee: If you are not completely satisfied with the content of this course, SWS will refund the entire registration fee within 30 days of the program. Please submit in writing the reason(s) you were dissatisfied within 30 days of the course.

Note: SWS reserves the right to amend courses, change speakers, or revise topic outlines