waterloo hydrogeologic
SOFTWARE - CONSULTING - TRAINING

WHI E-News

Waterloo Hydrogeologic, Inc.

January Edition 2005

Protecting Groundwater Is Our Business

Product News

HydroGeo Analyst - Multi-License Discounts - *SAVE $$$*

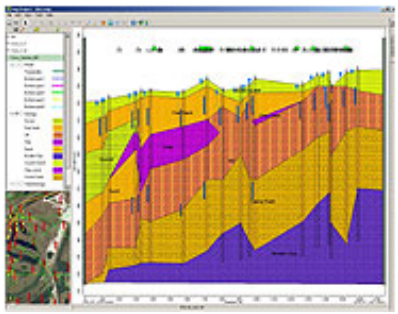
In October 2004, Waterloo Hydrogeologic officially launched HydroGeo Analyst - the first truly ALL-IN-ONE groundwater and borehole data management and visualization system for groundwater professionals!

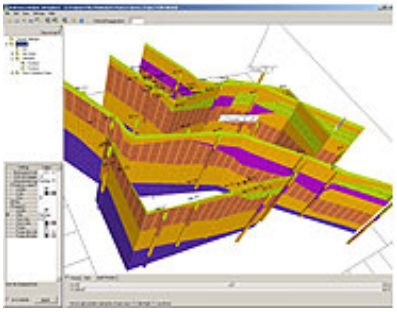
HydroGeo Analyst (HGA) is currently available at our special time-limited, introductory price so don't miss your opportunity to SAVE $$$ today. For projects requiring input from various team experts, take advantage of our Multi-License Discounts!

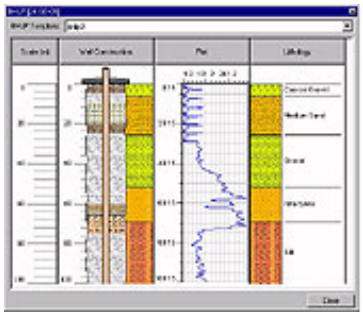
With HGA, you will have the ultimate tool for managing and analyzing YOUR groundwater and borehole data.

HydroGeo Analyst is comprised of:

- **Project Wizard** (database creation, client management, etc.)
- **Data Transfer System** (validating and importing YOUR data)
- **Template Manager** (manage tables, fields, templates)
- **Materials Specification Editor** (manage all soil classifications)
- **Query Builder** (on-the-fly, map-ready data querying)
- **Map Manager** (GIS mapping, contouring, gridding, etc.)
- **Cross-Section Editor** (geologic, hydrogeologic, model layers)
- **HGA 3D-Explorer** (3D visualization and animation of data)
- **Borehole Log Plotter** (borehole log design & plotting)
- **Report Manager** (fully customizable professional reports)







Multi-License Discounts!

Let HydroGeo Analyst be your central hub for communicating groundwater and borehole data to your team and clients. Buy multiple licenses of HGA and instantly give access to your:

» Regulatory Review of Hydrogeology Studies

» The Remediation Course

» The Pollution and Hydrology Course

Tips & Tricks

» Importing Data into HydroGeo Analyst

- Field Data Analysis Team
- Data Entry Team
- GIS and Mapping Team
- Groundwater Modeling Team
- Management & Reporting Team

MULTI-USER LICENSE SAVINGS CHART					
Number of Software Copies				x5	x10
Consultants	13%	17%	32%	40%	50%
Government	15%	33%	44%	50%	60%
Education	NA	NA	NA	85%	90%
% represents savings per license based on number of copies purchased					

Let HGA take your teams to next level in groundwater and borehole data management and visualization technology!

Contact us by phone +1-519-746-1798, email sales@waterloohydrogeologic.com, or visit our website www.waterloohydrogeologic.com and see what you'll SAVE!.

For more information about **HydroGeo Analyst**, visit our website or contact us:
http://www.waterloohydrogeologic.com/software/Hydrogeo_Analyst/Hydrogeo_analyst_ov.htm

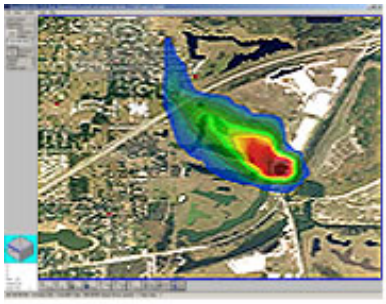
For more information about our software, please visit our website or contact us today:
Website: http://www.waterloohydrogeologic.com/software/software_main.htm
Email: sales@waterloohydrogeologic.com
Phone: (519) 746-1798

TOP

Consulting News

In North America more than 37,000 contaminated sites have been identified, with estimated clean-up costs of $150 billion over the next 50 years. Effective planning, characterization, and remedial design are essential to the success of these projects. Our private and public sector clients rely on WHI's expertise in groundwater modeling and characterization to provide them with the solutions they require in these types of circumstances.

We are currently developing solutions for clients in North America applying advanced models and techniques to evaluate:



- 3D contaminant distribution and visualization
- Design and optimization of remedial systems
- Natural attenuation processes
- Influence of secondary porosity on groundwater flow paths and velocities

It is our opinion that to remediate these sites properly, decisions -and therefore models- should be based on all available data. Our advanced data management, visualization, and analysis tools allow us to develop and compare

different scenarios quickly and efficiently for decision makers. This means getting the right information into the hands of the right people at the right time, for all of our projects.

For additional information on our contaminated site solutions, visit us on the web or review our one-page service profile

For more information related to this topic, or if you would like more information about WHI's Consulting activities and capabilities, please visit our website or contact us today:
Website: www.waterloohydrogeologic.com/consulting/consulting_services.htm
Email: consulting@waterloohydrogeologic.com
Phone: (519) 746-1798

TOP

Training News

WHI's Line-Up of Environmental & Groundwater Modeling Courses!

The 2005 Waterloo Hydrogeologic Open Enrollment schedule has been set. In response to comments from groundwater professionals who have taken our Groundwater Modeling Courses in the past, and from those who would like to attend courses in the future, WHI has combined the strengths of our previous Groundwater Modeling, Advanced Groundwater Modeling, and Model Calibration courses into one Applied Groundwater Flow & Contaminant Transport Modeling course. This course includes updated lecture material, as well as new hands-on laboratories to support the new course material. WHI has also created a new short course entitled GIS Data Management for Groundwater Modelers, which teaches the theory and hands-on application of GIS data integration and interpolation to support groundwater modeling efforts, as well as 3-dimensional visualization of modeling results in both the Visual MODFLOW, HydroGeo Analyst and GIS environments.

Click on the titles below and see which courses are appropriate for you!

» Applied Groundwater Flow & Contaminant Transport Modeling - **NEW**
» Groundwater Contamination & Remediation - **UPDATED**
» Finite Element Groundwater Modeling - **UPDATED**
» Aquifer Test Analysis - **NEW**
» Unsaturated Zone Modeling and Evaluation of Landfill Impacts - **UPDATED**
» The Human Health Risk Assessment Course - **NEW**
» Water Quality Data Management & Modeling - **UPDATED**
» Regulatory Review of Hydrogeology Studies - **UPDATED**
» GIS Data Management for Groundwater Modelers - **NEW**

Who Can Benefit?

» Experienced hydrogeologists with no prior groundwater modeling experience
» Regulators who review modeling reports
» Managers who want to understand what the modelers are doing
» Experienced modelers who want to enhance their skills
» Students who want to acquire new skills
» Lawyers who want to understand some of the technical issues
» Industry professionals who want to understand more about what their consultants are telling them

For further details on any of these courses, please visit our website, or contact Miln Harvey, WHI Training Manager, at (519) 746-1798 x233.

Can't make it to one of our Open Enrollment Courses? Call us about our On-Site Custom courses designed to suit your specific needs!

APPLIED GROUNDWATER FLOW & CONTAMINANT TRANSPORT MODELING

Theory and Hands-on Applications using MODFLOW-2000, MODPATH, MT3D & WinPEST

Simple to complex applications of groundwater flow and contaminant transport models are covered in this 4-day hands-on course. Groundwater resource topics include model development and calibration to groundwater heads and flows, new well development, capture zone delineation, well interference, and stream impact investigations. Contaminant transport topics include model development and calibration to contaminant concentration, source area design, concentration boundary choice, solver comparison, and 3D visualization of flow and transport results. This course is ideally suited for hydrogeologists and modelers with some field investigation and modeling experience who wish to advance their modeling knowledge, and whose responsibilities include model development, review, planning, and project management.

Course Objectives and Benefits

» Apply Visual MODFLOW Pro to 3D groundwater flow and contaminant transport projects
» Use MODFLOW-2000 to develop several groundwater flow models
» Calibrate your groundwater models to observed field data
» Use MODPATH particle tracking features to determine preferential flow paths and delineate capture zones
» Use ZoneBudget to assess subregional water budgets within your groundwater model
» Simulate 3D contaminant transport using RT3D, MT3DMS & MT3D99
» Use WinPEST to improve model calibration and understand model uncertainty

Waterloo, Ontario
Canada
Feb 1 - 4, 2005

Vancouver, BC
Canada
March 8 - 11, 2005

D.F, Mexico, Mexico
April 5 - 8, 2005

Waterloo, Ontario
May 24 - 17, 2005

Register Now

CONTAMINATED SITE RISK ASSESSMENT AND GROUNDWATER MODELING

Transport Processes, Natural Attenuation and Risk Assessment

This course provides a more complete understanding of groundwater contamination and remediation, and the use of fate and transport models and risk assessment software for analysis. Topics that will be covered include contaminant source area characterization, the risk assessment process, the fundamentals of natural attenuation, and risk-based corrective action. This course is suited for groundwater modelers and risk assessors who wish to develop a better understanding of groundwater contamination and remediation, the risk assessment process, and the use of groundwater models to assess risk-based site-specific standards and contaminant remediation.

Course Objectives and Benefits

» Define the Risk Assessment process and Risk-Based Corrective Action
» Enhance your understanding of contaminant transport and natural attenuation processes
» Detail how to quantify the potential risks of exposure to chemical contaminants
» Link fate and transport models to risk-based decision making models
» Quantitatively assess human health and ecological risk from environmental contaminants
» Define site-specific target levels (SSTLs) for site clean-up goals

Madrid, Spain
March 8 - 11 2005

Register Now

FINITE ELEMENT GROUNDWATER MODELING

Advanced Applications for Saturated/Unsaturated Flow & Transport, Density-Dependent Flow, and Heat Transport

Advanced applications of groundwater flow and contaminant transport models using the Finite Element method are covered in this 4-day hands-on course. This course provides a more complete understanding of the use and applicability of finite elements in groundwater modeling, and includes such topics as groundwater flow and transport modeling, principles of unsaturated flow, fracture flow modeling, thermal transport, and density-dependent flow modeling. This course is ideally suited for groundwater modelers who wish to advance their modeling knowledge, and apply finite elements-using FEFLOW- to more complex modeling designs.

Course Objectives and Benefits

» Understand when to use finite-element vs. finite-difference modeling
» Apply FEFLOW to 3D groundwater flow and contaminant transport problems
» Simulate unsaturated zone flow using FEFLOW
» Simulate density-driven groundwater flow (e.g. saltwater intrusion) using FEFLOW
» Simulate fracture flow modeling using FEFLOW, and compare to a research case study
» Introduce the Interface Manager and the concept of model calibration to observed field data

Waterloo, Ontario
Canada
March 15 - 18, 2005

Register Now

REGULATORY REVIEW OF HYDROGEOLOGY STUDIES

Approaches and Insights for Reviewing Modeling Reports

The overall objective of this course is to give regulators a greater understanding of how models work, and what to look for when reviewing a modeling report. Specifically, the objectives are as follows:

» To understand the uses and applications of numerical models;
» To understand the uses and applications of the analytical WHPA model;
» To have a practical basis for reviewing models;
» To identify the points of focus for reviewing a modeling study;
» To recognize when review by a specialist is required.

The content of this course will be applicable to the following areas:

» Alternatives for landfill or septic system design;
» Prediction of contaminant movement and impact from landfills, septic systems, and contaminated sites;
» Selection of remediation alternatives;
» Delineation of well capture zones and groundwater protection areas;
» Assessment of impacts from large groundwater extractions, and pit and quarry development in the context of the Permit To Take Water Program (PTTW) and groundwater interference investigations.

These applications could include review of modeling studies submitted by consultants, evaluation of workplans submitted by owners/proponents, and specification of modeling requirements for tendering hydrogeological studies.

Waterloo, Ontario
Canada
April 26 - 29, 2005

Register Now

WATER QUALITY DATA MANAGEMENT & MODELING

Applications using AquaChem and USGS PHREEQC

The large quantity and range of environmental groundwater data types presents a challenge to professionals who wish to develop a comprehensive interpretation of a suite of data. This course provides hands-on experience in temporal and spatial data interpretation, including the use of convenient computer software for organizing and plotting the data.

» Planning a data collection program
» Interpreting temporal and spatial data densities
» Quality control issues
» Applied geochemical modeling
» How to use AquaChem

Waterloo, Ontario Canada
April 13 - 14, 2005

Register Now

GIS DATA MANAGEMENT FOR GROUNDWATER MODELERS

Understanding Data Sources, Data Analysis and Visualization

This 3-day hands-on course presents an introduction to the management and analysis of groundwater data for Visual MODFLOW modelers. Topics include the data types used in groundwater models, the coordinate systems, datums and map projections in a GIS, the interpolation of data within the GIS (kriging, natural neighbor analysis, …), the development of model layers (cross-sectional analysis of site hydrogeology) and parameter fields for groundwater model construction, and the import and export of different types of data from the GIS system to the groundwater model and back to the GIS system. Other topics that will be covered include 2-D and 3-D visualization of model input and model output. This course is ideally suited for groundwater modelers who wish to develop a comprehensive understanding of the sources of data that are used in groundwater models, the interpolation of this data for modeling, and the interchange of information between the groundwater model and the GIS system.

Course Objectives and Benefits

» Understand the integration between the GIS system and Visual MODFLOW
» Assess the applicability of MapInfo, Surfer and HydroGeo Analyst for developing a GIS
» Use HydroGeo Analyst to develop model cross-sections and layer interfaces
» Use HydroGeo Analyst to interpolate layer elevations and export them to Visual MODFLOW
» Export Visual MODFLOW results to GIS and prepare report figures
» Develop animation files of Visual MODFLOW results and insert them into client presentations

Waterloo, Canada
March 29 - 31, 2005

Register Now

THE REMEDIATION COURSE

Princeton Groundwater's Remediation Course is the most comprehensive course on remediation available. Every aspect of this important subject is covered, from three-dimensional hydrogeochemical characterization, through practical details of all remediation technologies, to computer-simulated remedial alternatives such as Natural Attenuation, Pump & Treat, Funnel & Gate, Interceptor Trenches, and complete Hydraulic Containment using barriers and capping. The course also covers many essential topics, which are not found in any other courses or books. The Remediation Course uniquely integrates the topics of heterogeneous geohydrology, aquifer/source/plume characterization, remediation technologies/strategies/designs, and computer simulation software.
The result is the premier course on remediation.

Course Objective

Denver, CO
March 14 - 18, 2005

The objective of this course is to teach remediation from the key methodologies to collect hydrogeochemical data, through selecting and designing remediation systems based on geological and biological effects and air/water carriers. In addition, participants will use computers to simulate remediation hydrology, groundwater pathways, capture zones,
mass transport, natural attenuation, and alternative remediation designs

Who Should Attend
The course is designed for groundwater geologists, engineers, hydrologists, and microbiologists working as project managers, regulators, or consultants to industry or government. Some technical background and experience in groundwater contamination problems is presumed.

Register Now

The Groundwater Pollution and Hydrology Course

This course is the only one-week course being offered in the U.S. or Europe which comprehensively covers all aspects of groundwater pollution and hydrology from theory to practice. The instructors are recognized as the top five leading experts and teachers in the field and collectively have over 100 years of practical experience. The course is the established standard among groundwater training courses and for this reason has consistently had the largest attendance of all courses offered anywhere in groundwater.

Who Should Attend
The course is designed for groundwater hydrologists, geologists, engineers, chemists, environmental scientists state/federal regulators, project managers, compliance/regulatory program managers for industry and technical experts.

The emphasis is on acquiring an extensive working knowledge of the concepts, principles and professional practices underlying groundwater pollution, hydrology and remediation. Although some areas are necessarily surveyed in the interest of time, technical depth is the norm in the majority of sessions. Like any short course, some experience is helpful but not necessary as the course teaches basic principles before dealing with more advanced topics. The course succeeds in significantly enhancing the technical skills of all the participants without losing the neophytes and without boring those with 15 years of practical experience. This is the highest rated course in the industry - no course teaches so much!

Orlando, Florida
Feb 14 - 18, 2005

San Francisco, CA
Feb 28 - March 4, 2005

Register Now

For our full 2005 training schedule, click here!

To request your free 2005 Training Course Schedule Catalog, click here!

For more information about our course offerings, visit our website or contact us today:
Website: www.waterloohydrogeologic.com/training/training.htm
Email: training@waterloohydrogeologic.com
Phone: (519) 746-1798

TOP

Tips & Tricks

Importing Data into HydroGeo Analyst

HydroGeo Analyst's data-warehousing capabilities make it the ideal software package for consolidating your project information, regardless of the source data format.
The DTS (Data Transfer System) is designed to walk the user through the steps required to import data from Text files, MS-Excel and other Spreadsheets, MS-Access databases, SQL Server Databases, and other formats. However, it is important to understand the basic structure of the HG Analyst database templates, in order to ensure your data is imported correctly without difficulty.

HydroGeo Analyst works based on the "Parent-Child" database structure, where a child table is linked to a parent table by a Primary Key.

In order to import data into a particular table, the following conditions must be satisfied:

1. The parent table data must already exist (i.e. have already been imported or manually entered) before the child table data can be imported
2. The child table data being imported must also include the Primary Key, so that it may be linked to the parent table during the import process.

For example, if you want to import Chemistry Results, you must already have Chemistry Samples existing in your database (since the Chemistry Results table is a child of the Chemistry Samples table, and is linked to it by the sys_sample_code parameter). Additionally, to import Chemistry Samples, you must already have Stations in your database (since the Chemistry Samples table is a child of the Stations table, and is linked to it by the Station ID parameter). Therefore, the correct procedure to import Chemistry Samples into a newly created database would be:

1. Import Stations data
2. Import Chemistry Samples data (using the Station ID primary key)
3. Import Chemistry Results data (using the sys_sample_code primary key)

The following are some simple examples of MS-Excel files that show how to format your data correctly for importing.

STATIONS

ID	NAME	X	Y	TOC
10001	MW-1	513800	48293000	84
10002	MW-2	525600	48221500	81

CHEMISTRY SAMPLES

Station ID	Name	ScreenFrom	ScreenTo	sys_sample_code	datecollected	time
100001	MW-1	320	325	1111-001	01/12/2004	10:00:00 AM
100002	MW-2	322	327	1111-002	01/12/2004	12:00:00 PM

CHEMISTRY RESULTS

Station ID	Name	sys_sample_code	date_analysed	chemical_name	result_value	result_unit	detection_limit
100001	MW-1	1001-001	03/12/2004	Benzene	125	ug/l	5
100001	MW-1	1001-001	03/12/2004	Toluene	0	ug/l	5
100001	MW-1	1001-001	03/12/2004	Ethylbenzene	50	ug/l	5
100001	MW-1	1001-001	03/12/2004	Xylene	50	ug/l	5
100002	MW-2	1001-002	03/12/2004	Benzene	120	ug/l	5
100002	MW-2	1001-002	03/12/2004	Toluene	0	ug/l	5
100002	MW-2	1001-002	03/12/2004	Ethylbenzene	50	ug/l	5
100002	MW-2	1001-002	03/12/2004	Xylene	50	ug/l	5

If you need help customizing current database templates to meet your specific needs, or if you want to concentrate your time on visualizing and interpreting the data rather than on importing your data into HydroGeo Analyst, you may want to consider WHI's Environmentat Information Technology (EIT) Services. WHI's environmental database experts can develop custom database templates to suit your project, develop custom borehole log plots, and we can even import all of your data for you to provide you with a turn-key database!

For more information about HydroGeo Analyst, please contact our Sales department:
Email: info@waterloohydrogeologic.com
Phone: (519) 746-1798
Website: http://www.waterloohydrogeologic.com

For more information about WHI's Environmental Information Technology (EIT) services:
Email: techsupport@waterloohydrogeologic.com
Web: http://www.waterloohydrogeologic.com/support.htm

Thank you for reading this month's edition of WHI E-News! For more information about our products and services please use the links below!

Visit our Website - See what Waterloo Hydrogeologic Inc. has to offer!

Software Division - Check out our groundwater modeling software.

Consulting Division - Visit our Consulting Division on the web to see how we can help you.

Training Division - Visit our Training Division on the web to find a course in your area.

Equipment Division - WHI is now selling groundwater monitoring equipment.

TOP

Waterloo Hydrogeologic, Inc.
Website: www.waterloohydrogeologic.com
Email: info@waterloohydrogeologic.com
Phone: 519-746-1798 Fax: 519-885-5262