

## WHI E-News Topics

2004 August Edition

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Waterloo Hydrogeologic, Inc. is a recognized leader in the development and application of environmental software and services.

**Remediation ToolKit  
SAVE US\$100 before  
August 31, 2004!**

**RISC WorkBench  
SAVE US\$50 before  
August 31, 2004!**

**Surfer  
SAVE US\$50 before  
August 31, 2004!**



We want your articles! Please send your groundwater related article to us today!

## Product News

*Supporting Monitored Natural Attenuation with the Remediation ToolKit!*

### The Challenge:

Can you make sense of all your natural attenuation field data at a single glance? Need a program to store and manage endless amounts of field data? Do you analyze trends in field data to support **Monitored Natural Attenuation (MNA)** as a remedial alternative?

### The Solution:

[Remediation ToolKit](#) offers a complete software solution for specifically predicting trends in natural attenuation. It fully integrates [SEQUENCE](#), [BioTrends](#), and [BioTracker](#) with a built-in Project Data Management System, giving you the required tools for defending MNA at your site. Use it to support all your MNA projects!

*The Remediation ToolKit will help you to quickly...*

- Import your field data
- Monitor trends in concentration data
- Predict site-specific degradation rates
- Identify flowpath trajectories
- Visualize and report results

**For the month of August the Remediation ToolKit - including SEQUENCE, BioTrends, and BioTracker - is ONLY US\$895 (Reg. US\$995)\***

[As defined by the U.S. EPA...](#)

"MNA is a knowledge-based remedy where a proper engineering analysis informs the understanding, monitoring, predicting, and documenting of the natural processes...."

MNA is widely used for the remediation of contaminated sites. Scrupulous attention to site-specific studies is required to document that processes that destroy or immobilize contaminants are well understood and sufficiently documented to ensure an acceptable remedy." [EPASAB-EEC-01-004 - May, 2001](#)

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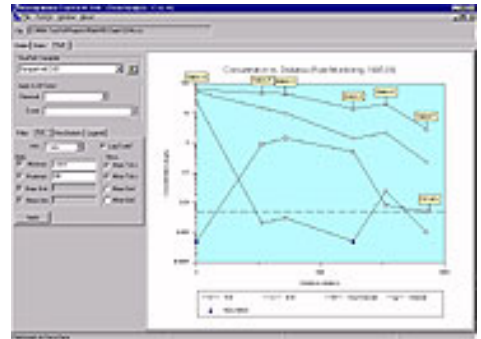
### Summer Savings with RISC WorkBench and Surfer

[RISC WorkBench 4.0](#) is an easy-to-use software package designed for performing fate and transport modeling and human health risk assessments for contaminated sites. RISC WorkBench follows standard procedures outlined in the US EPA's Risk Assessment Guidance for Superfund (US EPA, 1989) to calculate exposure assessment, toxicity assessment, and risk assessment. RISC WorkBench includes both the powerful and easy-to-use BP RISC program, AND EnviroBrowser Pro, a completely customizable database for common environmental parameters used when conducting risk assessments. No other RISK package offers all this!

**Remediation ToolKit  
SAVE US\$100 before  
August 31, 2004!**



SEQUENCE



BioTrend



BioTracker

**RISC WorkBench  
SAVE US\$50 before  
August 31, 2004!**

**Until August 31st, purchase a single-user license of RISC WorkBench for only US\$695 (Reg. US\$745)\***

[Surfer v8.0](#) for Windows is a 2D contouring and surface plotting program that runs under Microsoft Windows. Surfer quickly and easily converts your data into outstanding contour maps and surface plots. And with all the options available in Surfer, you can customize the maps to produce exactly the presentation you want. Producing publication quality maps in Surfer has never been quicker, easier, and more satisfying. Surfer can be used in a wide variety of applications including: Geology, Geography, Agriculture, Meteorology, and Hydrology.

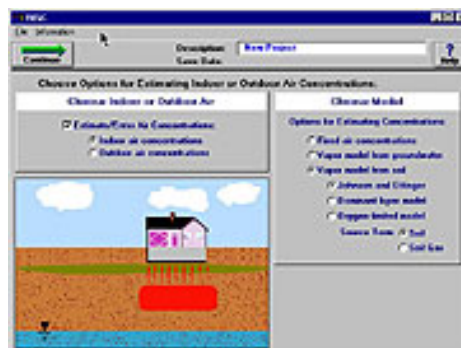
**Until August 31st, purchase a single-user license of Surfer for only US\$525 (Reg. US\$575)\***

\* Contact a WHI Sales Representative for more information on multi-user license savings.

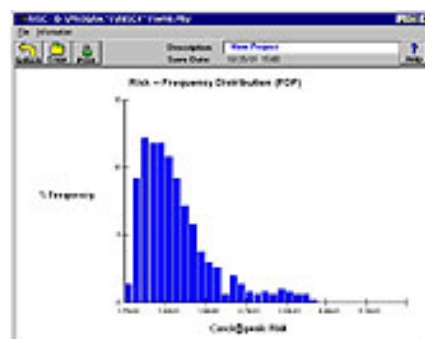
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Or order online



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[Click here to get your demo!](#)

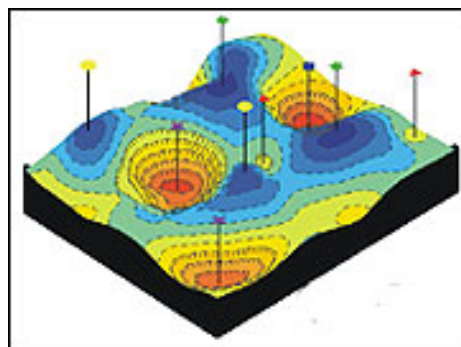


RISC WorkBench

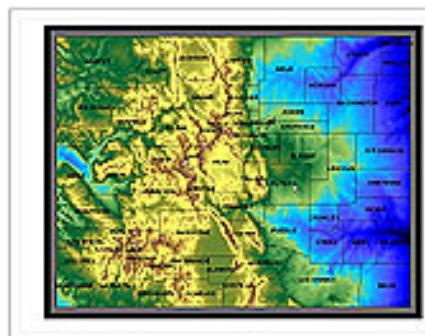


RISC WorkBench

**Surfer**  
**SAVE US\$50 before**  
**August 31, 2004!**



Surfer



Surfer

For more information about the Remediation ToolKit, visit our website or contact us:

[http://www.waterloohydrogeologic.com/software/remediation\\_toolkit/remediation\\_toolkit\\_ov.htm](http://www.waterloohydrogeologic.com/software/remediation_toolkit/remediation_toolkit_ov.htm)

For more information about the RISC WorkBench, visit our website or contact us:

[http://www.waterloohydrogeologic.com/software/risc-workbench/risc-workbench-prod\\_det.htm](http://www.waterloohydrogeologic.com/software/risc-workbench/risc-workbench-prod_det.htm)

For more information about the Surfer, visit our website or contact us:

[http://www.waterloohydrogeologic.com/software/surfer/surfer\\_prod\\_details.htm](http://www.waterloohydrogeologic.com/software/surfer/surfer_prod_details.htm)

For more information about our software, please visit our website or contact us today:

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Email: [sales@waterloohydrogeologic.com](mailto:sales@waterloohydrogeologic.com)

Phone: (519) 746-1798

▲ TOP

## Consulting News

### *Field Characterization During Conceptual Model Development*

Our private and public sector clients rely on WHI's expertise in groundwater modeling and groundwater project management to provide them with the answers they need, whether the project requirements include evaluating remedial alternatives, or developing groundwater management initiatives.

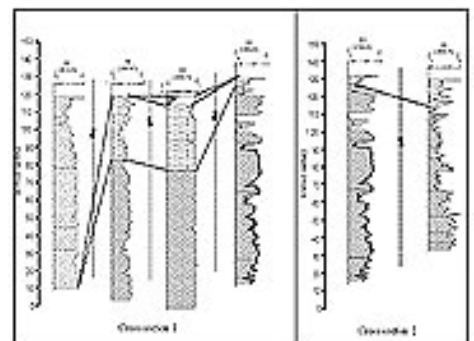
An important component of these studies is the development of a conceptual model that incorporates details on the variability of geology, structure, groundwater flow, contaminant distribution, etc. The conceptual model forms the basis for delineating recharge and discharge areas, aquifer vulnerability, assessing fate and transport, developing monitoring networks, and comparing alternative remedial strategies.

Fractured rock is among the most challenging environments for which to develop a conceptual model. With lithologic and structural variations existing at a variety of scales, the completeness of a data set is even more important than in unconsolidated environments.

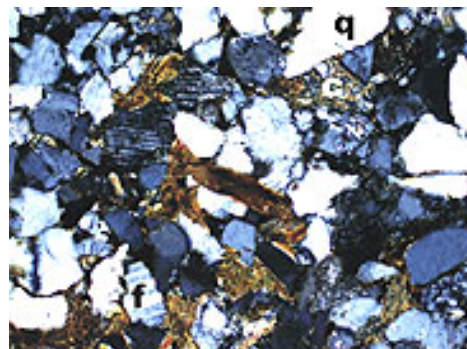
In two recent projects, WHI staff has been involved in field investigations to refine conceptual models of groundwater flow and contaminant source areas in fractured rock environments. In the first, field activities included the collection and analysis of rock core samples to provide detailed, depth-discrete profiles of the total contaminant mass in the system to delineate chlorinated solvent source zones. This involved the collection of continuous rock core from within the source area, and immediate on-site sample selection and preparation for analysis. This approach can be used to identify zones of highest mass retention, resulting in an improved conceptual model at the site. In the second project we are currently collecting rock cores, and geophysically logging a sequence of carbonate rocks to identify the stratigraphic



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controls on sinkhole development and karst formation. This information will address data gaps in the conceptual model of groundwater flow for these aquifers, improve the design of a tracer study, and enable the development of a source protection plan that considers increased vulnerability of the aquifer to contamination in the area of karst features.



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](http://www.waterloohydrogeologic.com/consulting/consulting_services.htm)

Email: [consulting@waterloohydrogeologic.com](mailto:consulting@waterloohydrogeologic.com)

Phone: (519) 746-1798



## Training News

### WHI Now Offering a New Line-Up of Environmental & Groundwater Modeling Courses!

The 2004 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 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 will include 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 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 one of our Open Enrollment Courses? Call us about our On-Site Custom courses designed to suit your specific needs!

Course Title	Dates/Locations
<p><b>APPLIED GROUNDWATER FLOW &amp; CONTAMINANT TRANSPORT MODELING</b></p>  <p>Theory and Hands-on Applications using MODFLOW-2000, MODPATH, MT3D &amp; WinPEST</p> <p>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.</p> <p><b>Course Objectives and Benefits</b></p> <ul style="list-style-type: none"> <li>» Apply Visual MODFLOW Pro to 3D groundwater flow and contaminant transport projects</li> <li>» Use MODFLOW-2000 to develop several groundwater flow models</li> <li>» Calibrate your groundwater models to observed field data</li> <li>» Use MODPATH particle tracking features to determine preferential flow paths and delineate capture zones</li> <li>» Use ZoneBudget to assess subregional water budgets within your groundwater model</li> <li>» Simulate 3D contaminant transport using RT3D, MT3DMS &amp; MT3D99</li> <li>» Use WinPEST to improve model calibration and understand model uncertainty</li> </ul>	<p><a href="#">Waterloo, Ontario Canada Sept 14 - 17, 2004</a></p> <p><a href="#">Santiago, Chile Oct 5 - 8, 2004</a></p> <p><a href="#">Kraków, Poland Oct 11 - 14, 2004</a></p> <p><a href="#">NGWA - AFTM Princeton, NJ Oct 25 - 28, 2004</a></p> <p><a href="#">Braunfels, Germany Oct 26 - 29, 2004</a></p> <p><a href="#">Tokyo, Japan Oct 26 - 29, 2004</a></p> <p><a href="#">Rome, Italy Oct 26 - 29, 2004</a></p>

[Sicily](#)  
[Nov 2 - 5, 2004](#)

[Adelaide, Australia](#)  
[Nov 23 - 26, 2004](#)

[Juarez, Mexico](#)  
[Nov 23 - 26, 2004](#)

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## **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

[Waterloo, Ontario](#)  
[Canada](#)  
[August 10 - 13, 2004](#)

[Ostrava, Czech Republic](#)  
[Sept 7 - 10, 2004](#)

[Gent, Belgium](#)  
[Oct 26 - 29, 2004](#)

[Madrid, Spain](#)  
[Nov. 16 - 19, 2004](#)

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## **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.

[Waterloo, Canada](#)  
[Nov 2 - 5, 2004](#)

## 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

[Register Now](#)

## THE HUMAN HEALTH RISK ASSESSMENT COURSE



### Practical Approaches to Estimating Risk & Developing Site-Specific Target Levels

An introduction to the use of RISC Workbench for completing human health risk assessments is covered in this 2-day course of lectures and hands-on exercises. Topics that will be covered include hazard identification, exposure assessment, dose-response assessment, and risk characterization. Lectures and exercises will be presented in partnership with Lynn Spence, the developer of RISC Workbench. This course is suited for risk assessors who wish to develop a better understanding of the risk assessment process and the use of groundwater models and RISC Workbench software for completing a human-health risk assessment.

[Cambridge, UK](#)  
[Sept 28 - 29, 2004](#)

[Auckland, New Zealand](#)  
[Nov 18 - 19, 2004](#)

### Course Benefits

- » Learn the fundamentals of accepted risk assessment protocols
- » Acquire lots of hands-on experience using the RISC Workbench software
- » Understand the practical aspects of conducting a risk assessment
- » Learn from an experienced risk assessment professional with worldwide experience

[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.

[Waterloo, Canada](#)  
[Dec 14 - 16, 2004](#)

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### **Course Objectives and Benefits**

- » Understand the integration between the GIS system and Visual MODFLOW
- » Assess the applicability of MapInfo, Surfer and HydroAnalyst for developing a GIS
- » Use HydroAnalyst to develop model cross-sections and layer interfaces
- » Use HydroAnalyst 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

## **AQUIFER TEST ANALYSIS**



### **Principles of Pumping Test Design and Techniques for Data Analysis**

A wide variety of techniques can be applied to analyzing aquifer tests. This course covers the theory behind the techniques and provides an opportunity to obtain hands-on experience in analyzing aquifer test data collected from a variety of conditions.

[Waterloo, Canada](#)  
[August 17 - 18, 2004](#)

### **Course Objectives and Benefits**

- » Planning a pumping test
- » Principles of aquifer test analysis
- » Porous and fractured media
- » Isotropic/anisotropic conditions
- » Confined, leaky, and unconfined aquifers

[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, Canada](#)

[Sept 21 - 24, 2004](#)

[Orlando, Florida](#)

[Sept 28 - Oct 1, 2004](#)

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## 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

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

[Oct. 4 - 8, 2004](#)

[Orlando, FL](#)

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government. Some technical background and experience in groundwater contamination problems is presumed.

 [For our full 2004 training schedule, click here!](#)

 [To request your free 2004 Training Course Schedule Catalog, click here!](#)

For more information about our course offerings, visit our website or contact us today:

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Email: [training@waterloohydrogeologic.com](mailto:training@waterloohydrogeologic.com)

Phone: (519) 746-1798

 [TOP](#)

## Tips & Tricks

### *What to do when your contaminant plume does not migrate as expected.*

When using MT3D or RT3D for a contaminant transport simulation, if the plume fails to move as expected (or does not appear at all in your [Visual MODFLOW](#) output), here are a few common causes and their solutions.

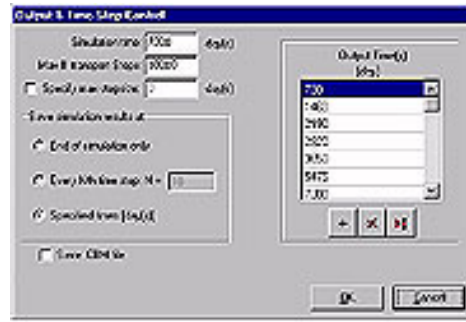
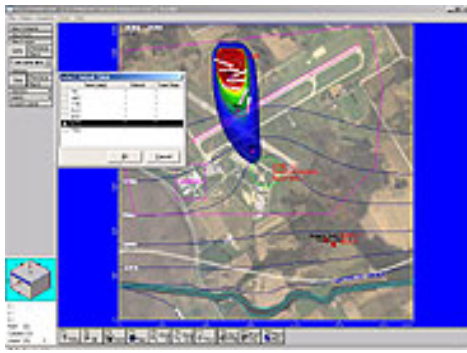
#### **Problem #1: Overlay is not active, or masked by another overlay**

**Solution #1:** As with Head Equipotentials, Particles, and even Basemaps and other overlays, you must make the Concentration overlay active in order to see it. Click the **F9-Overlay** button at the bottom of your screen, and ensure the overlay has been checked off (to make it active). It is also possible that other overlays are masking your concentrations. To resolve this, change the Overlay Order setting to User Defined, then highlight the Concentration overlay, and use the arrow buttons to move it up the list.



#### **Problem #2: Simulation Output time**

**Solution #2:** In Visual MODFLOW, the Simulation Output time can be different for your flow and transport simulations. Check to see that you have defined the correct simulation time(s) in the Run Menu, by selecting MT3D (or RT3D) / Output - Time Steps. Additionally, in the Output Menu of Visual MODFLOW, ensure that you have selected the Concentration overlay as the active overlay, then select the **Time** button in the left toolbar, to change output times as desired.

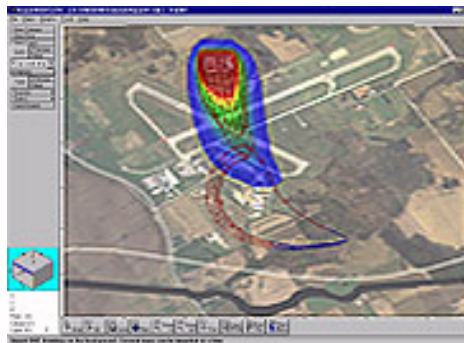


**Problem #3: No concentration input assigned, or not assigned properly**

**Solution #3:** Ensure that you have correctly defined at least one cell with an Initial Concentration, or a transport boundary condition of one of the following types: Constant Concentration, Recharge Concentration, Evapotranspiration Concentration, or Point Source. Please NOTE that Concentration values entered for Concentration Observation Wells are used for calibration purposes only; they do not contribute mass to a transport simulation.

**Problem #4: Inadequate flow gradient**

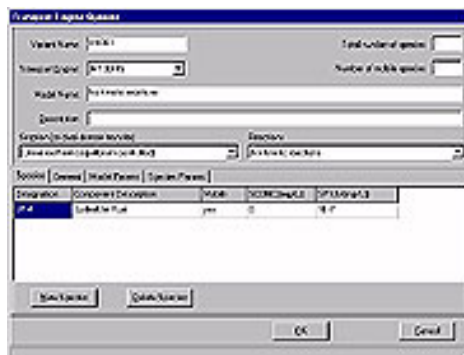
**Solution #4:** Before running your transport simulation, run just the flow simulation (MODFLOW). Using Pathlines or Velocity Vectors, ensure that there is a sufficient flow gradient to cause plume migration.



**Problem #5: Incorrect reaction parameters**

**Solution #5:** Check the reaction options in the Main Menu, by clicking on Setup / Numeric Engines / Transport. Check that the correct Sorption and Reaction options have been selected.

First order decay rates (dissolved and sorbed phases) may have a tremendous impact on the plume mass, since during the simulation, some contaminant mass may be removed from the model. If the decay rate is too high, your plume will show very small concentrations, and/or will not be visible at all at later simulation times.



Decay rates (due to biodegradation or other mass-removal processes) can be taken from literature values, but this should

be done with caution, as this parameter is highly site-specific for most compounds. A good reference on decay rates used in natural attenuation studies can be found in:

Wiedemeier et al., 1999: Technical Protocol for Implementing the Intrinsic Remediation with Long-Term Monitoring Option for Natural Attenuation of Dissolved Phase Fuel Contamination in Ground Water. Air Force Center for Environmental Excellence, Brooks, AFB.

This document can be downloaded from:

<http://www.afcee.brooks.af.mil/products/techtrans/monitorednaturalattenuation/protocols.asp>

The decay rate ( $\lambda$ , or sometimes called  $K_d$ , with units of 1/day), is typically obtained from half-life values, converted into appropriate units using the following relationship:

$$\lambda = \ln(2)/t_{1/2}$$

Where  $t_{1/2}$  = half-life of the compound

In addition, check that your  $K_d$  value is correctly defined in the Species Parameters tab. A very large  $K_d$  value will result in an extremely high retardation factor, which can result in lack of contaminant movement through your model.

For typical organic compounds (such as TCE, DCE, PCE, BTEX, etc.) where linear, reversible sorption can be assumed, retardation will be calculated using the following formula:

$$\text{Retardation} = 1 + (\text{Bulk Density/porosity}) * (K_d)$$

Where  $K_d$  = Partition coefficient

For hydrophobic organics,  $K_d$  can be determined using the relationship below:

$$K_d = K_{oc} * f_{oc}$$

$K_{oc}$  - octanol-carbon coefficient

$f_{oc}$  - organic carbon fraction in the aquifer

A more detailed overview on  $K_d$ 's can be found in:

US-EPA, 1999. Understanding variation in Partition Coefficient,  $K_d$ , values. EPA 402-R-99-004A&B. US-EPA Office of Air and Radiation.

This document can be downloaded from:

<http://www.epa.gov/radiation/cleanup/partition.htm>

### **Still not working...?**

If you continue to encounter problems after trying the solutions above, please contact WHI's Technical Support department [techsupport@flowpath.com](mailto:techsupport@flowpath.com) for additional troubleshooting. We will assist you to resolve the problem to the best of our ability. If your model files require modification or advice beyond the 'normal scope' of technical support, then we will provide you with information regarding Extended Modeling Support (EMS) Services.

*For more information on EMS, see the website below:*

<http://www.waterloohydrogeologic.com/support.htm#ext>

For more information about this tip, contact us at:

Email: [techsupport@waterloohydrogeologic.com](mailto:techsupport@waterloohydrogeologic.com)

For more information about [Visual MODFLOW Pro 4.0](#), visit our website or contact us today:

Website: <http://www.waterloohydrogeologic.com>

Email: [sales@waterloohydrogeologic.com](mailto:sales@waterloohydrogeologic.com)

Phone: (519) 746-1798



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[Visit our Website](#) - See what Waterloo Hydrogeologic Inc. has to offer!

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[Software Division](#) - Check out our groundwater modeling software.

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[Consulting Division](#) - Visit our Consulting Division on the web to see how we can help you.

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[Training Division](#) - Visit our Training Division on the web to find a course in your area.

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[Equipment Division](#) - WHI is now selling groundwater monitoring equipment.

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**Waterloo Hydrogeologic, Inc.**

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