



SWS Enews



Water Solutions in Perspective

January 2007

In this edition...

Product News

- [ACQUIRE, VISUALIZE, REPORT: Expand your understanding with Diver* dataloggers and HydroGeo Analyst* software](#)

Consulting Services News

- [Multilevel Monitoring for Groundwater Characterization](#)
- [SWS Exhibiting at Workshops & Conferences Around the World](#)

Training News

- [Upcoming Environmental & Groundwater Modeling Courses](#)

Tips & Tricks

- [Agarwal Recovery Analysis using AquiferTest 4.0!](#)



**Order your 2007
Calendar Today!**

[Click here to order your 2007 Groundwater & Environmental Professionals Calendar!](#)

**NEW - 2007 Software and
Equipment Catalog!**



[Download our 2007 Software and Equipment Catalog!](#)

Product News

ACQUIRE, VISUALIZE, REPORT
Expand your understanding with Diver
dataloggers and HydroGeo Analyst* software*

Long-term management of groundwater resources requires continuous monitoring of the groundwater environment and an efficient method for reporting large volumes of field data. Robust dataloggers and comprehensive data management software offers the means for cost-effective analysis and reporting of groundwater monitoring networks.

Diver* dataloggers and HydroGeo Analyst* (HGA), developed by Schlumberger Water Services, are now available as the **"Monitoring Network Bundle"** - saving you time and money throughout all phases of your groundwater monitoring projects.

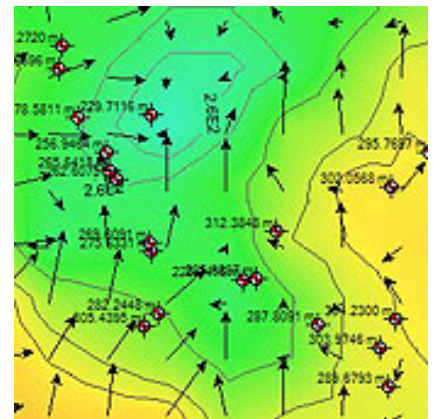


What's included with the Monitoring Network Bundle?

- 20 x Cera-Diver dataloggers
- 1 x Baro-Diver (measures barometric pressure)
- 1 x license of HydroGeo Analyst
- 2000ft of Diver Direct Cable (DDC)
- 1 x DDC to PC Interface cable
- 1 x LoggerDataManager software
- 1 x Pocket-Diver Manager* acquisition, storage, and transfer PDA software

Monitoring Network Bundle benefits:

- Diver dataloggers offer a robust, proven technology for collecting groundwater information
- Deployed Divers minimize the need for continuous site visit's - a major cost savings!
- Quick and easy import of Diver data (water elevation, temperature, conductivity*) into HGA
- Graphically display time series data (water levels) for trend analysis
- Interpolate, contour and map water levels, temperature or conductivity in a true GIS environment or in fully (not fully) three dimensional views - see how your water elevations relate to your base maps!
- In-depth cross-section analysis of water elevations and borehole logs
- Produce standard or customized reports



Monitoring Network

Realize the meaning of your groundwater data using Monitoring Network Bundles!

Learn more about Diver dataloggers - [Click here](#)

Learn more about HydroGeo Analyst - [Click here](#)



Cera-Diver



Baro-Diver

Monitoring Network Bundle Special Includes...

SOFTWARE:

HydroGeo Anayst, Pocket-Diver Manager & LoggerDataManager Software

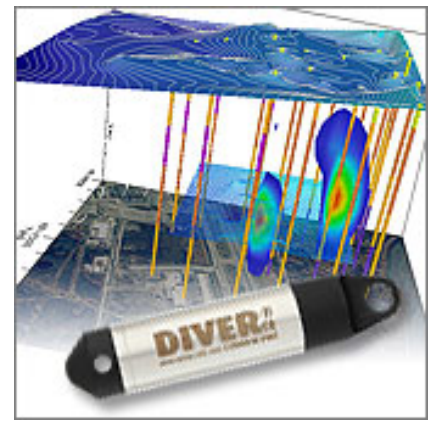
HARDWARE:

20 Cera-Divers + 1 Baro-Diver

ACCESSORIES:

2000m - Diver Direct Cable (DDC), 1- DDC to PC Interface cable

CONTACT US FOR PRICING TODAY!



Monitoring Bundle!
HydroGeo Analyst Software + Diver Dataloggers!

Contact us to quote your Monitoring Network Bundle today!



Fill out our [online form](#) to receive your complimentary Monitoring Services CDROM!



Pocket-Diver software offers direct plug-and-play capabilities and is fully compatible with the Waterloo Software Suite of products. *PDA not included

* - conductivity only available with CTD-Diver

For more information, contact us:

Phone: +1-519-746-1798

Email: sws-diver@slb.com

Website: [Visit website](#)

TOP

Consulting Services News

Multilevel Monitoring for Groundwater Characterization

The Netherlands is considered a low-lying country with very small changes in elevations throughout. Groundwater levels in the majority of the country are less than 5 meters below the surface. Heavily industrialized and with land used predominantly for agricultural activities, the Netherlands has an extensive network of monitoring wells in place to monitor the effects of water extraction and to manage groundwater resources. The country has 11 water supply companies. Each company is responsible for measuring the water levels of their designated monitoring wells on a bi-weekly basis, as part of the licensing agreement issued by the province. These measurements were registered manually at each monitoring well by company staff or volunteers. The data is then submitted digitally or in writing to NITG-TNO, the national groundwater database, where groundwater levels and subsequent effects are stored nationwide.

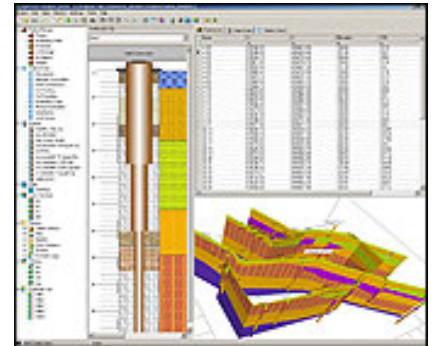
Vitens, the largest water supply company in the Netherlands, started an investigation to identify alternatives for this labor intensive and costly way of collecting data. Vitens has had past experience using Schlumberger Water Services' (SWS) Diver dataloggers on the island of Vlieland, a project developed to optimize the collection of groundwater data.

[Click here](#) to read the full case study.

SWS Exhibiting at Workshops & Conferences Around the World

Upcoming Events

- [AquaTerra 2007](#)
Dates: Feb 7-9, 2007
Location: Amsterdam, Netherlands



[Learn more about our Consulting Services!](#)

For more information, please contact:

Phone: +1-519-746-1798

Email: sws-services@slb.com

Website: www.waterloohydrogeologic.com/consulting/consulting_services.htm

Environmental and Groundwater Modeling Course Line-Up

Waterloo Hydrogeologic has finalized its calendar of training course locations and dates for 2007. We will be offering a full suite of Professional Short Courses on topics ranging from groundwater modeling using finite differences (Visual MODFLOW) and finite elements (FEFLOW), to GIS data management for environmental professionals, aquifer performance test analysis, water quality data management, contaminated site risk assessment and regulatory review of hydrogeology studies. We will also be offering some specific customized courses that were tailored to meet the needs of specific industry sectors. As in other years, we will be offering all of our standard WHI "Open Enrolment" courses at our training facilities in Waterloo, Ontario, Canada as well as at various selected venues around the world.



If you are interested in one of our courses, or if you would like to discuss a customized "On-site Training Course", simply contact our Training Department at sws-training@slb.com and we will work with you to develop a course that provides the content, topics, laboratory exercises and software that you require.

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!



[Download](#) our 2007 Training Course Schedule!

TOP

Applied Groundwater Flow and Contaminant Transport Modeling

Theory and hands-on applications using MODFLOW-2000, MODPATH, MT3D and WinPEST

This 4-day course was designed to present the theory behind groundwater flow and contaminant transport modeling, and the practical application of Visual MODFLOW for developing simple to complex groundwater models. Lectures alternate with hands-on computer exercises to emphasize practical development of real-world modeling solutions.

Learn more about this course:

Details: www.waterloohydrogeologic.com/training/groundwater_training_course_aftm.htm

Registration: www.waterloohydrogeologic.com/training/training_course_registration_us.htm

TOP

Finite Element Groundwater Modeling

Advanced Applications for Sat/Unsat Flow & Transport, Density-Dependent Flow and Heat Transport using FEFLOW

This 4-day course presents the theory behind the Finite Element method for groundwater modeling, and its practical application using FEFLOW. This course provides a more complete understanding of the use 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.

Learn more about this course:

Details: http://www.waterloohydrogeologic.com/training/groundwater_training_course_fem.htm

Registration: www.waterloohydrogeologic.com/training/training_course_registration_us.htm

TOP

Making Sense of Environmental Data with HydroGeo Analyst

Understanding Data Sources, Data Analysis and Visualization

This 3-day course presents an introduction to HGA for the management and analysis of groundwater data typically incorporated into groundwater models. It is ideally suited for groundwater modelers who wish to develop a better understanding of the data sources for groundwater modeling, the interpolation of this data and the exchange of information between the groundwater model (Visual MODFLOW) and the GIS system (HGA).

Learn more about this course:

Details: [Click here to visit our website](#)

Registration: www.waterloohydrogeologic.com/training/training_course_registration_us.htm

Water Quality Data Management & Modeling

Theory and Applications using AquaChem and USGS PHREEQC

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

Learn more about this course:

Details: https://www.waterloohydrogeologic.com/training/groundwater_training_course_WQDM.htm

Registration: www.waterloohydrogeologic.com/training/training_course_registration_us.htm

TOP

Aquifer Performance 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.

Learn more about this course:

Details: http://www.waterloohydrogeologic.com/training/groundwater_training_course_ata.htm

Registration: www.waterloohydrogeologic.com/training/training_course_registration_us.htm

TOP

Regulatory Review of Hydrogeology Studies Studies

Approaches and Insights for Reviewing Modeling Reports

This 4-day course provides an overview of how to review a hydrogeologic study from a regulatory perspective, with attention given to the groundwater modeling component and how it is reported. This has applications in reviewing modeling studies, peer review of consultant workplans, and specification of modeling requirements for tendering groundwater studies.

Learn more about this course:

Details: http://www.waterloohydrogeologic.com/training/course_regulator.htm

Registration: www.waterloohydrogeologic.com/training/training_course_registration_us.htm

Tips & Tricks

Agarwal Recovery Analysis using AquiferTest 4.0!

One of the new features of [AquiferTest v.4.0](#) is the Agarwal Recovery Analysis. This analysis can be applied to any pumping test method, making any standard analysis also a recovery analysis.

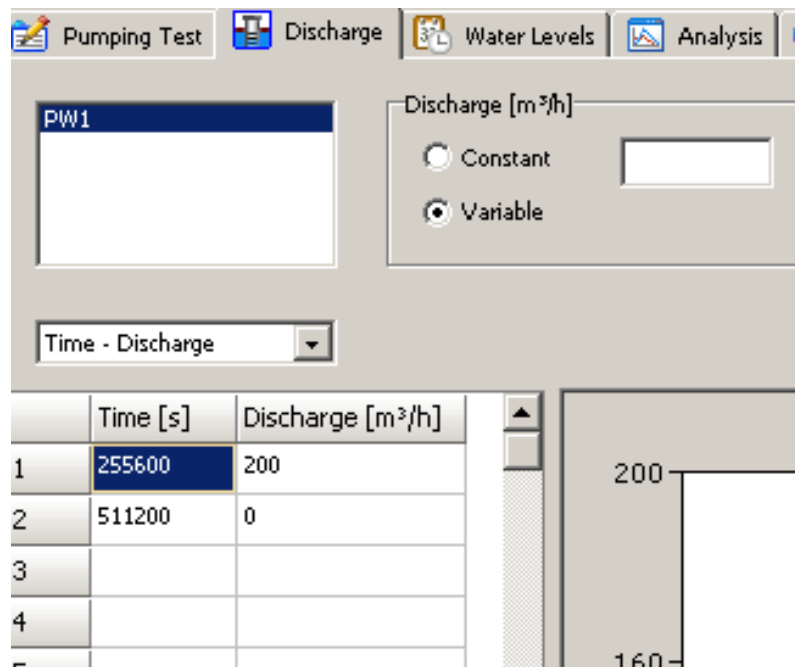
When a pump is shut down after a pumping test, the water level inside the pumping and observation wells begin to rise returning to static water levels - this is known as recovery. Recovery test measurements allow the transmissivity of the aquifer to be calculated thereby providing an independent check on the results of the pumping test.

The steps below represent a brief introduction to creating a recovery analysis using AquiferTest. This example uses the example projects provided with the installation.

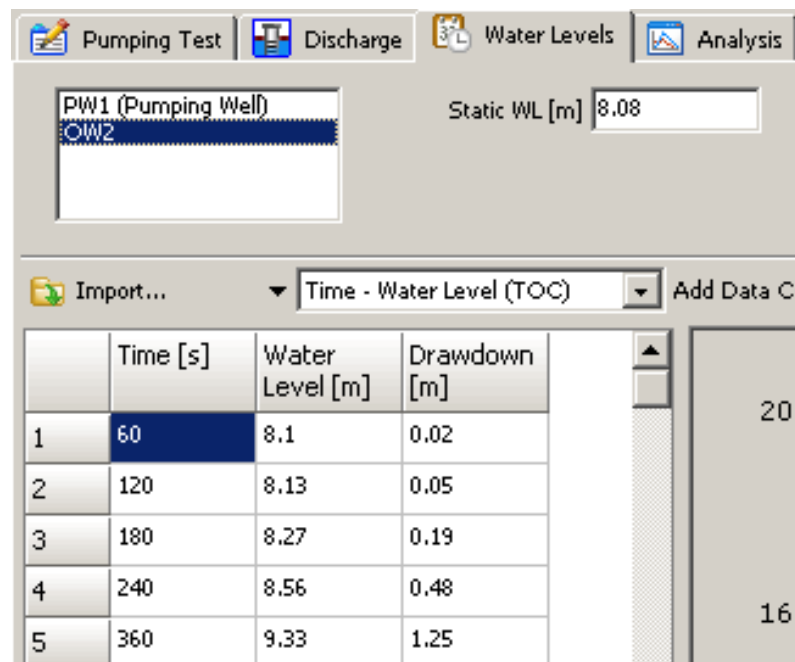
1. Under the pumping test tab enter your project, well and aquifer details.

The screenshot displays the software's configuration window. The 'Units' section is at the top, containing several dropdown menus: 'Site Plan' set to 'm', 'Time' set to 's', 'Transmissivity' set to 'm²/s', 'Dimensions' set to 'm', 'Discharge' set to 'm³/h', and 'Pressure' set to 'bar'. A checkbox labeled 'Convert existing values' is checked. Below this is the 'Aquifer Properties' section, which includes a text input field for 'Thickness [m]', a dropdown menu for 'Type' set to 'Unknown', and a slider for 'Bar. Eff. (BE)'. To the right of these fields is a schematic diagram of a well. The well is shown as a vertical cylinder with a screen at the bottom. The well radius is labeled 'R', the screen length is 'L', and the aquifer thickness is 'b'. The word 'Aquifer' is written next to the diagram.

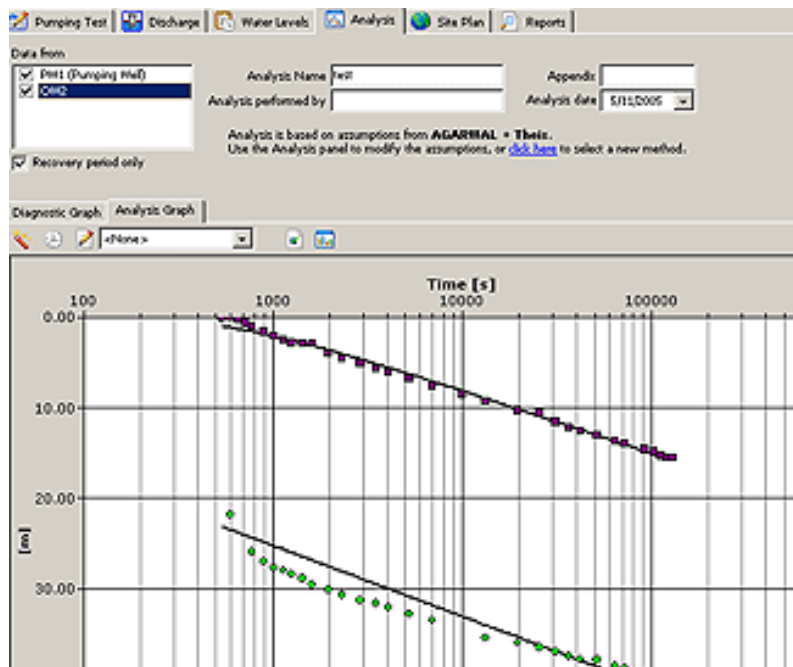
2. In the discharge tab, specify the pumping rate as variable. You must enter the pumping duration including the time when the pump was turned off (discharge = 0).



3. Enter the time-water level data for the observation well(s) in the water levels tab. This can be entered manually or imported from a .TXT or .XLS file.



4. In the analysis tab, select the Theis analysis. If you have entered measurements since the beginning of pumping, select the "Recovery Period Only" option to analyze only the data recorded after the pumping test was stopped.



For more information, please contact:
 Phone: +1-519-746-1798
 Email: sws-support@slb.com
 Website: www.waterloohydrogeologic.com/support.htm

TOP

Thank you for reading Water Solutions in Perspective.

For more information about Waterloo Hydrogeologic, please visit: www.waterloohydrogeologic.com



Waterloo Hydrogeologic, Inc.
 A Schlumberger Company
 460 Phillip Street, Suite 101
 Waterloo, Ontario
 Canada N2L 5J2

Phone: 519-746-1798
 Fax: 519-885-5262
sws-info@slb.com
www.waterloohydrogeologic.com

Your subscription: The preceding message was sent to you as a service by Waterloo Hydrogeologic. If you do not wish to receive future editions of this newsletter, please reply to this message with the word 'Remove' in the subject line.

Can't see the images? If your Outlook email client does not automatically download the images in this newsletter, complete the following instructions to identify the domain from which this newsletter is sent as "safe".

1. On your Outlook menu bar, go to: Actions > Junk E-Mail > Add Sender's Domain to Safe Sender's List.
2. After adding the "waterloohydrogeologic.com" domain, go to Tools > Options > Security tab > Download Pictures section > Change Automatic Download Settings button.
3. Select "Permit downloads in e-mail messages from senders and to recipients defined in the Safe Senders and Safe Recipients Lists used by the Junk E-mail filter."

Copyright© 2006 Waterloo Hydrogeologic, Inc. - A Schlumberger Company. All Rights Reserved. *Mark of Schlumberger