THE CURRENT

NEWS FROM WATERBORNE ENVIRONMENTAL, INC. SPRING 2007

WATERBORNE EXPANDS GIS SERVICES

Use of Mobile Technology for Real-Time Pesticide Application Management

Waterborne Environmental, Inc. and DuPont Crop Protection have jointly pioneered the use of mobile technology to inform operators in the field of nearby restricted areas related to pesticide applications. This device utilizes a handheld computer (i.e., "PDA") connected to a GPS receiver, and running ESRI's ArcPad software (a GIS designed for mobile devices). Standard spatial datasets can be imported, and custom ArcPad software is used to determine if the current location is within (or nearby to) a user-selected data layer, and to notify the user as appropriate.

This system was initially designed for use with railroad right-of-way vegetation management and the identification of the California Ground Water Protection Areas (GWPA). California has established these areas as vulnerable to the movement of pesticides to ground water. Application restrictions apply within these areas and it is important for operators to know when they are approaching or entering a GWPA.

While in operation, the system checks as each GPS signal is received (approx. every second), and compares that location to the user-selected data layer and specified distance to the GWPA. When the current location is approaching one of these areas, a signal is given to the operator. Both an audible and visual signal can be activated. Because of the high noise level within the cab, a visual signal was desired, consisting of a green, yellow, or flashing red light (via a custom "lightbox" placed in a visible location to the operator).

This technology represents a flexible, affordable, and easy-to-use system for pesticide application management. Other specified "restricted areas" can be incorporated (e.g., stream buffers, endangered species locations, specific soil properties, etc.). The handheld computer requires no boot-up and will open directly into the application making it easy for in-field use. Custom ArcPad toolbars can be readily made, to highlight or restrict specific operations. Updates to data are easily performed "in the field", because all the data reside on a removable memory card which can simply be replaced with an updated card. The system will then work with the new data sets, without any "GIS related" tasks being required by the end user.

Many thanks to Al Barefoot at DuPont Crop Protection for his enthusiastic support of this idea. For more information, please contact Chris Holmes at holmesc@waterborne-env.com or (703) 777-0005.

Waterborne Environmental, Inc. has been an authorized ESRI Business Partner since 2000.

GIS Portal Toolkit

In February 2007, Waterborne Environmental, Inc. signed a license agreement with ESRI Inc. that enables Waterborne to conduct training classes and provide implementation services for the ESRI GIS Portal Toolkit.

What is the GIS Portal Toolkit?

The GIS Portal Toolkit is a search engine/portal for geo-spatial information resources. It acts as a brokerage service or collaboration tool in which providers and end users of geospatial information come together in a single environment to facilitate information sharing and data exchange.

The GIS Portal Toolkit is a technology solution for building local, regional, national, and global spatial data infrastructure portals. GIS portals help organize geo-spatial content holdings (map services, digital maps, data, reports, clearing houses, etc), community information, supporting resources, data models, and applications. GIS portals provide the capability to search for information using metadata records for relevant resources and link directly to the sites that host the content. Depending on the nature of the retrieved information, the user can view internet based maps, download data, view static maps, access models, and applications.

The GIS Portal Toolkit provides all required components to create your own GIS Portal. Components included in the Toolkit are: Portal site starter, catalog services (search engine), map viewer and Toolbar for ArcMap. The GIS Portal uses

continued on page 4

CURRENT EVENTS

PRESENTATIONS AND PUBLICATIONS

Don't miss the following papers and posters to be presented at the American Chemical Society National Meeting and Exposition in Chicago, Illinois this March, and at the Society of Environmental Toxicology & Chemistry meeting in Porto, Portugal this May.

ACS National Meeting & Exposition, Chicago, IL, March 25–29, 2007

■ Rural domestic well sensitivity: A case study for a shift from a pure hydrogeologic/detection analysis to a coupled hydrogeologic/detection/contextual study construct. Authors: Paul Miller, Christopher M. Harbourt, Jessica J. Prenger and Paul Hendley.

■ Preserving local variability and large scale spatial structure in semi-national assessments. Authors: Christopher M. Harbourt, Joshua Amos, Paul Miller, Jessica J. Prenger and Paul Hendley.

■ A comparison of REMM and PRZM implemented as a Vegetated Filter Strip model. Authors: Jessica J. Prenger, Nathan J. Snyder, J. Mark Cheplick, W. Martin Williams and Amy M. Ritter.

■ Examining the relative proximity of agriculture to surface water across Europe. Authors: Chris M. Holmes, Mary Matella, Paul Hendley, Paul Sweeney and Steve J. Maund.

■ Using a combination of NASS cropping data and market research information to improve the spatial resolution of pesticide use estimates. Authors: Chris M. Holmes, Paul Hendley and Joshua Amos.

■ GeoSTAC: Enabling efficient environmental assessments. Authors: Adrian M. Wadley, Michael F. Winchell, Chris M. Holmes, Joshua Amos, Raghavan Srinivasan, David J. Healy, Patrick L. Havens and Dee Ann Staats.

SETAC Europe, Porto, Portugal, May 20–24, 2007

■ Analysis of ecological risk posed by pesticides to surface waters in England. Authors: Chris M. Holmes, Ryan C. Williams, Colin D. Brown, Sabine Beulke, Wendy van Beinum, Claire Wells and Emma J. Pemberton.

■ Spatial exposure assessment of pesticides and aquatic habitats in Tarn-et-Garonne, southwest France. Authors: Chris M. Holmes, Ryan C. Williams and Steve Norman.

■ An examination of spatially-referenced methods for the estimation of Predicted Environmental Concentrations of PPPs in surface water from spray drift. Authors: Chris M. Holmes and Thorsten Schad.

Recent Publications

■ Soil Hydraulic Conductivities and their Spatial and Temporal Variations in a Vertisol. Soil Science Society of America Journal. 70:1872–1881, September 2006. Soil Science Society of America (Surajit Dasgupta with B.P. Mohanty and J.M. Köhne).

■ Impacts of Juniper Vegetation and Karst Geology on Subsurface Flow Processes in the Edwards Plateau, Texas. Vadose Zone Journal 5:1076–1085. October 2006. Soil Science Society of America (Surajit Dasgupta with B.P. Mohanty and J.M. Köhne).

■ Agricultural intensity and landscape structure: influences on the macroinvertebrate assemblages of small streams in northern Germany, Environmental Toxicology and Chemistry, Vol 26, No. 2, pp. 346–357, January 2007 (C. Schriever, M. Hansler Ball, C. Holmes, S. Maund and M. Liess).

Recent Technical Posters and Presentations

■ Example modeling approaches for providing data for a probabilistic risk assessment. Invited speaker, 6th Fresenius Ecotox Conference on Aquatic and Terrestrial Ecotoxicology and Risk Assessment. December 4–5, 2006 in Cologne, Germany (J. Mark Cheplick*, Chris M. Holmes and W. Martin Williams).

■ National pyrethroid aquatic exposure analysis (2): Regional sensitivity to drift and erosion entry. Poster presentation, 27th Annual Meeting in North America, Society of Environmental Toxicology & Chemistry, Montreal, Canada, November 2006 (Amy Ritter*, Paul Hendley, Michael G. Dobbs and George J. Sabbagh).

■ Risk assessment: Challenges and solutions for probabilistic approaches. Invited speaker, British Crop Protection Council International Conference & Exhibition, Crop Science & Technology, October 23–24, 2006, Glasgow, Scotland, UK (Chris M. Holmes* and W. Martin Williams).

■ Dispersion modeling of aquatic herbicides. Exposure Modeling Public Meeting, October 3, 2006. Arlington, VA (Amy Ritter and W. Martin Williams*).

■ Development of a simulation model to evaluate, design, and implement vegetated agricultural drainage ditches as a Best Management Practice. Platform presentation, 232nd National Meeting of the American Chemical Society, September 10–14, 2006, San Francisco, CA (W. Martin Williams*, Jennifer R. Trask*, Jeanette Wrysinski and Debra L. Denton).

continued on page 3

** Presenter*

STAFF NEWS

Ronda Hardison joined the Administrative Group in Leesburg, VA. Prior to joining Waterborne, Ronda worked for the Dulles Area Association of Realtors as an administrative assistant. She brings to Waterborne several years of administrative experience.

Deb Johnson, Financial Manager, welcomed her grandson, Ian James Shannon, to the world on February 10, 2007.

Marty Williams' son Peter will be attending the University of Virginia School of Engineering this Fall. His intended area of study is Chemical Engineering.

Lauren Weissenborn, Staff Environmental Scientist, raised over $1,200 on behalf of the Leukemia and Lymphoma Society (LLS). During this time she also trained for a half-marathon with LLS's Team In Training program. She successfully completed the Nike Women's Half-Marathon on October 22, 2006 in San Francisco, CA. Lauren plans to train for more races once the weather gets warmer.

On January 26, 2007, Lauren, along with her team—Ice Force One, won the gold medal at the 2007 Eastern Synchronized Team Skating Championships in Providence, RI. They then competed on February 23, 2006 in the 2007 United States Synchronized Team Skating Championships in Colorado Springs, CO. While there, her team took home the bronze medal in the Masters Division.

Ronda Hardison

Deb Johnson

Lauren Weissenborn

Gerco Hoogeweg

Community Outreach

In December 2006, **Gerco Hoogeweg,** PhD, was a guest speaker at Heritage High School in Leesburg, VA. The high school offers a GIS class to junior and seniors as part of their advanced curriculum. It was in context of this class that Dr. Hoogeweg presented two real-world examples of the use of GIS: the Space Shuttle Columbia Debris Recovery Effort and the 2003 California Wildfires. The Space Shuttle Debris Recovery Effort case study highlighted how GIS benefited search crews in finding debris, and the many different types of maps that were created for this effort. Some of the most spectacular 3D maps showed how sonar data was used to map and search for debris at the bottom of lakes. As part of the California Wildfire presentation, Dr. Hoogeweg showed students how GIS and maps were used to support fire fighters, police, evacuation centers, and the media. The presentation also included application of 3D visualizations showing the fire perimeter and fire progression over time. The latter was of direct interest of the students as they were in the process of mapping the path (tracking) of hurricane Katrina.

Recent Technical Posters and Presentations, *continued from page 2*

■ Pesticide loading analysis for the Sacramento River watershed. Platform presentation, 232nd National Meeting of the American Chemical Society, September 2006, San Francisco, CA (Surajit Dasgupta, J.Mark Cheplick, D. Denton, J. Troyan and W. Martin Williams*).

■ Fate and transport modeling of the potential influence of rice agriculture potential on aquaculture. Poster presentation, 232nd National Meeting of the American Chemical Society, September 2006, San Francisco, CA (Amy M. Ritter*, W. Martin Williams and Chris R. Leake).

■ National pyrethroid aquatic exposure analysis (1): Relative erosion potential summarized by watershed. Poster presentation, 232nd National Meeting of the American Chemical Society, September 2006, San Francisco, CA (J. Mark Cheplick*, Patrick L. Havens, Paul Hendley, Scott H. Jackson and George J. Sabbagh).

■ National pyrethroid aquatic exposure analysis (2): Regional sensitivity to drift and erosion entry. Poster presentation, 232nd National Meeting of the American Chemical Society, September 2006, San Francisco, CA (Amy M. Ritter*, Paul Hendley, Michael G. Dobbs and George J. Sabbagh).

■ National pyrethroid aquatic exposure analysis (3): Combining potential vulnerability from spray drift, erosion and pyrethroid use. Poster presentation, 232nd National Meeting of the American Chemical Society, September 2006, San Francisco, CA (Chris Holmes*, Patrick L. Havens, Paul Hendley, Scott Jackson and George J. Sabbagh).

* *Presenter*

GIS Portal Toolkit, *continued from page 1*

ESRI's ArcIMS and ArcSDE server technology. It is a cost-effective way to get a functional site up and running quickly.

Waterborne GIS staff have over 4 years of experience in implementing the GIS Portal Toolkit world-wide and were involved with the GIS Portal Toolkit since inception of the product.

Services

As part of the new services, Waterborne will offer the following packages for GIS Portal Toolkit services:

- 3-day Standard ESRI GIS Portal Toolkit Training Class. This is the standard ESRI GIS Portal Toolkit training class and is suitable for technical staff and IT professionals with a working knowledge of ESRI's server products.
- 5-day Onsite Implementation Package. This package includes the standard GIS Portal training class, and onsite support during implementation of the GIS Portal. The standard 3-day training class will be adapted to ensure that both IT staff and end users within the organization have an opportunity to participate and learn more about the GIS Portal.

Additional services can be provided based on the client's needs and requirements for the GIS Portal Toolkit. The GIS Portal Toolkit software is provided at no cost as part of the above-mentioned packages. Waterborne offers the GIS Portal Toolkit as a services-based package.

ESRI Technology
AUTHORIZED BUSINESS PARTNER

Waterborne has been an authorized ESRI Business Partner since 2000. For more information contact Gerco Hoogeweg at hoogewegg@waterborne-env.com or (703) 777–0005.

Wedding Bells in India

Surajit Dasgupta, Staff Agricultural Engineer, married Shibani Duta on February 8, 2007 in Kolkata, India.

Jessie Prenger, Staff Agricultural Engineer-Illinois office, and Kaustubh Bhalerao (married July 1, 2006) traveled to Pune, Maharastra, India in December to visit Kaustubh's parents and celebrate their wedding.

Dr. K. Balu's son Ramani will be married to Janani Rangaswami on March 25, 2007 in Chennai (Madras), India. A wedding reception will be held at the Embassy Suites in Winston-Salem, NC on May 12, 2007.

Corporate Headquarters: 897-B Harrison Street, S.E., Leesburg, Virginia 20175 • 703.777.0005 • Fax 703.777.0767 • www.waterborne-env.com

THE CURRENT
NEWS FROM WATERBORNE ENVIRONMENTAL, INC.
897-B Harrison Street, S.E.
Leesburg, VA 20175