

**American Water Resources Association**  
**2010 SUMMER SPECIALTY CONFERENCE**  
**GIS & Water Resources VI**  
**March 29 – 31, 2010**  
Orlando, FL

**Tuesday, March 30**

**3:30 PM – 5:00 PM**

**SESSION 24: Internet-Based Data Sharing**

**HDR USACE Wetland Delineation Toolset – Michael Gilbrook**, HDR Engineering, Inc., Orlando, FL

The HDR USACE Wetland Delineation Toolset (WDT) is used to improve the wetland delineation collection process by combining the current individual tasks into one streamlined process. This streamlined solution uses mobile GIS and GPS tools to capture location information in the field that is then seamlessly synchronized to a database back in the office. The use of the WDT eliminates the time consuming practice of filling in traditional paper forms in the field and transcribing that data into the database in the office. Features \* Collect data on vegetation, soil, and hydrology using handheld mobile GIS devices. \* Uses automated forms and customized lists that assist with field data collection. \* All data collected in field automatically linked to GPS coordinates. \* Automatically imports data collected in field into desktop database. \* Edit data in office with user-friendly database forms. \* Print forms in USACE format for reports and deliverables. Benefits \* Improved Data Collection - Data collection using automated forms and stored in electronic database. \* Improved Quality - Predefined dropdown lists reduce input errors, while integrated programming performs calculations automatically. \* Reduce Costs - Drastically reduces the time of transcribing traditional paper forms into office database. Who Should Attend and What You'll Learn This presentation is intended for wetland scientists that perform, and manage, wetland delineation projects, or GIS professionals that are interested in mobile GIS development. This presentation will introduce those that attend the hands-on application of the WDT by detailing the concepts, components, and workflow of the application.

**H2OInfo - A Web-Based Citizen's Tool for Turning Real-Time Water Quality Monitoring Data into**

**Information - Jeff Siegel**, HNTB Corporation, Chicago, IL (co-authors: Christopher Magruder, Mike Benedict, Troy Deibert)

The Milwaukee Metropolitan Sewerage District (MMSD) recently developed a geospatial-based public web site called "H2OInfo" for interactive reporting and analysis of real-time factors that affect water quality in Southeastern Wisconsin. The web site helps educate the public about regional water quality issues by providing near real-time water quality and precipitation data. The data collected provides a way to measure and track the actual health of the region's streams and rivers. Timely water quality information made available to the public is important for fostering widespread understanding of the impacts of various land uses and stormwater runoff on the region's network of streams, lakes and rivers. H2OInfo provides a unique opportunity and a simple means for citizens to see how the quality of our rivers and lakes are affected by what we do on the land via user-friendly interfaces to the data and carefully planned educational content. The web site provides continuous water quality information using continuous data feeds from real-time remote sensor technology. In cooperation with the United States Geological Survey (USGS), data is collected and transmitted through MMSD's water quality gauging network and displayed on the web site geographically. An interactive map-based user interface, built upon the Google Map Application Programming Interface (API), provides quick and intuitive navigation to MMSD's /USGS's water quality and precipitation network. In conjunction, an interactive graphing display illustrates both water quality data and precipitation totals over a user-defined period of time. The data collected and displayed provides a method to review, research, and analyze real-time water quality parameters over a series of time periods. A number of water quality parameters are provided in the web site including: Conductivity, Dissolved Oxygen, Flow, Turbidity, Stage, and Water Temperature. Precipitation is another important water quality factor and rainfall totals can also be displayed in near real-time. Precipitation totals are

collected through MMSD's weather station network. The web site is accessible at [www.mmsd.com](http://www.mmsd.com) by clicking on the H2OInfo icon.

**USGS GIS Science Support: Development of Geographic Information Systems (GIS) Tools to Support Use of National Water Information System (NWIS) Web Services in ArcMap - David McCulloch, US Geological Survey, Reston, VA**

The USGS enterprise Geographic Information System (GIS) software solution is Environmental Systems Research Institute's (ESRI) ArcGIS. ArcGIS is available to every USGS scientist and provides desktop mapping, geospatial analysis, and geospatial data management to support USGS science. The ArcGIS component, ArcMap, is the primary geospatial display, mapping, and analysis tool used by USGS scientists. Further, the ArcGIS suite provides a powerful, rich programming framework called ArcObjects which allows for the development of essentially unlimited custom applications and tools for ArcGIS. This presentation describes the development of a custom GIS tool that allows ArcMap to consume a web service provided by the USGS National Water Information System (NWIS). The tool has three purposes. First, the tool demonstrates the development flexibility in the ArcGIS framework by consuming lightweight geospatial web services such as the NWIS Sites web service and GeoRSS feeds. Second, the tool provides a simple method for USGS scientists to use NWIS sites as features in USGS enterprise GIS software. Lastly, the tool demonstrates the power and efficiency of using geographic context in a spatially aware client.

**Customized , Open Source GIS Solutions for Increasing Data Accessibility - Mathew Mampara, Dewberry, Washington, DC (co-authors: Milver Valenzuela, Brian Marchionni, Dan Ames)**

While GIS has been embraced by a wide spectrum of professionals interested in viewing and analyzing information in a geospatial context, a significant segment of the potential audience for GIS applications—emergency managers, natural resource planners, and community elected officials have not leveraged GIS to support their critical business processes. Obstacles to adoption mostly relate to cost of GIS packages, and technical knowledge needed to make use of the technology. FEMA has developed the MapViewer Desktop, a free, open-source based GIS package, to assist a broad cross section of National Flood Insurance Program (NFIP) stakeholders to leverage the digital geospatial information developed by the agency and maximize its value for regulatory and planning purposes. The MapViewer Desktop is built on the MapWindow GIS application, a widely used open source GIS for the Microsoft Windows operating platform. The choice of MapWindow is based primarily on its ease of extensibility and modification, exemplified by successful customization for a water resources modeling environment such as EPA's BASINS. As an open source application, with over 6,000 downloads per month, the MapWindow application provide the opportunity for the constant infusion of new capabilities, as added by the developer community. One example capability which had its origin in functionality added to MapWindow by a developer in the MapWindow community is the ability to make use of Web Map Services. The existence of this capability streamlined the time and effort to mature this capability for integration into the MapViewer Desktop application. The MapViewer Desktop uses skins, plug-ins and configuration files to tailor the application to specific target audiences. This flexibility has enabled non-trained individuals to leverage GIS to determine where flood hazards exist in their community and access web-based geospatial data content, such as imagery, hydrography, etc. The application provides a bridge between the hard copy map product that most stakeholders are used to while at the same time encouraging users to see the advantage of viewing and analyzing the data in a more seamless framework. These tools will assist FEMA in achieving its digital vision to move its program to a digital, geospatial delivery method.