

Speaker Abstracts/Biographies

Modern Advances in Groundwater

November 16, 2016

**Minnesota Ground Water Association
Fall Conference**

John Dustman P.G.

President & CEO Summit Envirosolutions, Inc

Presentation

**Tools and Technologies to Create Smart Wellfields and Facilitate Regional
Aquifer Resource Management**

Abstract

Advances in disparate technologies have lessened the cost of instrumenting wells with water-level and chemical sensors, remotely accessing the data, and using analytics to visualize continuous groundwater data. John will demonstrate these capabilities at various sites around the area.

Biography

John Dustman has been working on groundwater issues in Minnesota for over 30 years. He installed his first transducer in 1987 and never looked back. The first telemetric system was installed in 1995 at a tailings impoundment in Montana, and has evolved into patents and software to remotely access, process, and visualize continuous water data. John is currently serving on the Metropolitan Area Water Supply Advisory Committee – Technical Advisory Committee. He holds a B.S. in Geology from Montana State University, where he “minored” in Trout Fishing and Skiing.

Ginny Yingling
Minnesota Department of Health

Presentation

**Poly- and Perfluoroalkyl Substances (PFAS) in Minnesota:
An Update on the Chemicals Formerly Known as PFCs**

Abstract

The Minnesota Department of Health (MDH) and Minnesota Pollution Control Agency (MPCA) began investigating poly- and perfluoroalkyl substances (PFASs) in 2003. Following discovery of PFASs in the east metro, statewide investigations identified other, smaller affected areas in Minneapolis, Brainerd, Bemidji, Duluth, and elsewhere. EPA's recent release of revised Lifetime Health Advisories for perfluoro-octane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) has heightened concerns about these chemicals and public health, created new challenges in protecting public health, and resulted in expanded investigations. This talk will provide an update on the state's investigations, remedial actions taken to reduce the contamination, and current sampling efforts in the east metro and elsewhere.

Biography

Ginny Yingling is a hydrogeologist in the Environmental Health Division of the Minnesota Department of Health (MDH) and is the department's lead investigator of poly- and perfluoroalkyl substances (PFASs). She holds a B.S. from the Pennsylvania State University and a M.S. from the University of Wyoming, both in geology and has over 20 years of experience investigating contaminated groundwater sites in Minnesota, having worked previously at Twin City Testing and in the Superfund and Leaking Underground Storage Tank programs at the Minnesota Pollution Control Agency.

Greg Brick, Ph.D.
Research Analyst, Minnesota DNR

Presentation
The Minnesota Spring Inventory

Abstract

Springs are groundwater discharge points. Except for the southeastern counties springs are poorly documented and in some cases less well known today than they were a century ago. Historically, springs were important as sacred sites, health spas, and for water supply. Biologically, springs are important in providing the moderating temperatures necessary for trout habitat in summer and winter, and unique habitats such as calcareous fens. The DNR's Statewide Spring Inventory is funded by the LCCMR to record the location and other data about Minnesota's springs. This presentation will focus on the hitherto unrecognized diversity of springs in our state and the strategies and new tools being employed to record them.

Biography

Greg Brick has a PhD in geology from the University of Minnesota. Professionally, he was employed as a hydrogeologist at several environmental consulting firms and taught geology at local colleges and universities. His first book, *Iowa Underground: A Guide to the State's Subterranean Treasures*, was published in 2004. His second book, *Subterranean Twin Cities*, published in 2009, won an award from the local chapter of the American Institute of Architects. He mapped the springs of the Minneapolis-St Paul region in 1993.

Dr. Crystal Ng

**Assistant Professor, Department of Earth Sciences,
University of Minnesota, Twin Cities**

Presentation

Learning about Secondary Water Quality Impacts from the Bemidji Oil Spill

Abstract

A crude oil spill site near Bemidji, MN, is a long-term multidisciplinary research site that has provided over 35 years of understanding about hydrocarbon contaminants in the subsurface, including their transport and fate. The site remains a highly active research site, proving itself valuable for not only illuminating hydrocarbon remediation processes in groundwater, but also many other hydrological, geochemical, and microbial conditions co-occurring at the intensively monitored site. Data from the site together with reactive-transport modeling have demonstrated the long-term secondary water quality impacts that can be triggered by the degradation of the primary hydrocarbon contaminant.

Biography

Crystal Ng is a hydrologist who joined the Department of Earth Sciences at the University of Minnesota in 2013. She uses hydrological models, field data, and statistical methods to look at how different aspects affecting the hydrologic cycle – including the atmosphere, plants, soil, microbial activity, and geochemistry – interact with each other. Her current Minnesota-focused projects include investigating the role of groundwater in sulfate transport and fate on the Iron Range, predicting the effect of vegetation change on groundwater recharge statewide, and modeling the release of arsenic in affected aquifers.

Dr. John Bolten

Associate Program Manager, NASA Applied Sciences Program

Presentation

Mapping the Blue Marble:

NASA Research to Improve Monitoring and Forecasting of Water Resources

Abstract

Water resources management can benefit the application of satellite- and aircraft-based remote sensing and hydrologic models. In addition, remote sensing data products provide valuable information during extreme events, such as the droughts in California and flooding in Southeast Asia. Remote sensing assets, such as the NASA Global Precipitation Measurement (GPM) mission, the Soil Moisture Active-Passive (SMAP) mission, the Landsat satellites, and many other satellites and airborne platforms can be used to support the operational water resources community for management practices and decisions. This talk will highlight how satellite, airborne and ground-based sensor networks can be used to measure the quantity or quality of hydrologic resources, and provide information to water managers or water users to improve monitoring and management of water resources.

Biography

John is serving as the Associate Program Manager of Water Resources for the NASA Applied Sciences Program. His research focuses on the application of satellite-based remote sensing and land surface hydrological modeling for improved ecological and water resource management. He is involved in several water resources management efforts in the Middle East, Central and North Africa, Southeast Asia, and United States.

Jim Auen

Operations Manager, Lewis & Clark Regional Water System

Presentation

**Lewis & Clark Regional Water System:
History, Construction, Operations and Future**

Abstract

The Lewis & Clark Regional Water System (L&C) is a unique tri state, potable water project that is dramatically improving the quality of life for hundreds of thousands of people in SE South Dakota, NW Iowa and SW Minnesota. L&C continues to meet the water quality or quantity needs of its member systems in a way the individual systems simply cannot achieve on their own.

Biography

Jim Auen has a B.S. in Biological Sciences with minors in Chemistry and Economics from South Dakota State University. He has been working in the water treatment industry for over 20 years. He has worked for Lewis & Clark RWS since 2007 and is responsible for the water supply, treatment and distribution of potable water. He also works extensively with engineers, contractors and suppliers on the design and construction of pipelines, pump stations and reservoirs.

Perry Jones and Dr. Mindy Erickson
US Geological Survey

Presentation

Groundwater and Surface-water Exchanges at White Bear Lake and other North & East Metro Lakes

Abstract

Several innovative field and data analysis methods were used to better understand groundwater-surface water exchanges and water level fluctuations in White Bear Lake and other northeast Twin Cities Metropolitan Area lakes. Results from stable isotope analyses of water samples, lake-sediment coring, continuous seismic-reflection profiling, and water-level and flow monitoring indicated that groundwater inflow occurs at nearshore sites and lake-water outflow occurs at deep-water sites in White Bear Lake. Continuous seismic-reflection profiling identified deep-water areas of White Bear, Pleasant, Turtle, and Big Marine Lakes having few trapped gases and little organic material, indicating locations where groundwater and lake-water exchanges are more likely. Water-level differences between White Bear Lake and deep-water piezometers, and seepage-flux measurements in deep waters of the lake indicate that groundwater and lake-water exchange is happening in deep waters.

Biography

Perry Jones is a hydrologist with the U. S. Geological Survey (USGS), Minnesota Water Science Center. His research includes groundwater and surface-water exchanges in lakes/wetlands and hydrologic characterization of potential mining areas.

Dr. Mindy Erickson is a hydrologist the U. S. Geological Survey (USGS), Minnesota Water Science Center, and an adjunct faculty member of the University of Minnesota. Her primary research interests are the geochemistry, fate, and transport of organic chemicals and metals in groundwater.