

Table of Contents

2002 NWQMC National Monitoring Conference Proceedings

Workshops

Ground Water Network Design Issues	Surface Water Network Design Issues	Looking Beyond the Border: International Issues of Cooperation and Comparability	Use NEMI First – The Role of NEMI in Monitoring Design	New Technologies
Clean Water Act (CWA)/Safe Drinking Water Act (SDWA) Integration: The Ground Water Link	Capacity Building for State and Regional Councils	Statistical Design and Analysis of Monitoring Programs (with emphasis on 305(b) and 303(d) preliminary listing process)	Bridging the Gap Between Assessment of Condition and Diagnosis of Impairment	

Track 1: Setting the Stage for Monitoring

<p>Collaboration: Meeting Multiple Needs through Monitoring Partnerships</p> <p>Moderator: Peter Tennant, Orsanco</p> <p>Expanding the Network: A Regional Model of Cooperative Surface Water Quality Monitoring, Cassandra Champion, Metropolitan Council Environmental Services, Minnesota</p> <p>Developing and Maintaining a Collaborative, Multi-Watershed Monitoring Network, Mark Doneux, Washington Soil and Water Conservation District, Minnesota</p> <p>Linking Science, Extension, and Education in Water Quality Monitoring, Niamh O'Leary, Wells College</p> <p>Connecticut River Fish Tissue Study, Bethany Card, New England Interstate Water Pollution Control Commission, MA</p>	<p>Volunteer Monitoring Expands Your Reach</p> <p>Moderator: Linda Green, URI Watershed Watch</p> <p>IOWATER, Iowa 's Statewide Volunteer Water Quality Monitoring Program, Richard Leopold, Iowa Department of Natural Resources</p> <p>Cost Effective/Level 4 Citizen Monitoring, Philip Emmling, Environmental Chemistry & Technology Program, University of Wisconsin - Madison</p> <p>The Role of Volunteer Watershed Monitors in TMDL Development and Implementation, Cheryl Snyder, Pennsylvania Department of Environmental Protection</p> <p>Aquatic Monitoring Workshops for Alaska Tribes, Elaine Major, University of Alaska, Anchorage</p>	<p>Watersheds: The Natural Basis for Monitoring Design</p> <p>Moderator: Don Dycus, Tennessee Valley Authority</p> <p>Water Quality Monitoring at the Watershed Level in the Upper Grande Ronde River Basin , Teena Ballard, USDA USFS La Grande Ranger District, Oregon</p> <p>Monitoring Pesticides for TMDL Development in the San Joaquin River Basin , California , Charles Kratzer, USGS Sacramento, California</p> <p>Developing a Scientific Basis for Source Water Protection Policies in the Salt Lake City Watershed Canyons, Lindsay Griffith, Brown and Caldwell - Golden, Colorado</p> <p>Study Design and Tools Used in a Low-Cost Water Quality Assessment for Rivers/Watersheds, Nancy Turyk, University of Wisconsin - Stevens Point</p>	<p>What's New at the State Level: New Ways to Meet Increasing Needs</p> <p>Moderator: Fred Banach, Conn. DEP</p> <p>A 5 Year Strategy for Comprehensive Surface Water Monitoring, Arthur Garceau, Indiana DEM</p> <p>Life on a High Wire: Managing a Monitoring Program to Meet Multiple Goals and Expectations, Gary Kohlhepp, Michigan Department of Environmental Quality</p> <p>Oklahoma 's Beneficial Use Monitoring Program (BUMP), Monty Porter, Oklahoma Water Resources Board, Water Quality Programs Division</p> <p>The South Carolina Estuarine and Coastal Assessment Program (SCECAP), David Chestnut, South Carolina Dept. of Environmental Protection</p>	<p>Monitoring Design on a National Scale</p> <p>Moderator: Gail Mallard, USGS</p> <p>Design of the Trend Network for Rivers and Streams in the National Water Quality Monitoring Assessment (NAWQA) Program, David Mueller, USGS Lakewood, Colorado</p> <p>Consideration of Contaminant Sources, Physical Hydrology, and Policy Implications in a National Design for Monitoring Groundwater Quality, Wayne W. Lapham, US Geological Survey, Middleton, WI</p> <p>National Perspective on Wetland Monitoring and Assessment, Doreen Vetter, U.S. EPA, Washington, D.C.</p> <p>Application of a Probabilistic Sampling Design on a National Level: EPA's National Fish Tissue Study, Leanne Stahl, US EPA Office of Science and Technology Washington, DC</p>
--	---	--	---	--

Track 2/3: Field and Laboratory Methods for Today and Tomorrow

<p>Biological Monitoring</p> <p>Moderator: Mike Miller, WI Dept. of Natural Resources</p> <p>NEMI: Field Methods, Dan Sullivan, USGS</p> <p>Monitoring Needs to Meet Benthic TMDL Requirements, Tamim Younos, Virginia Water Resources Research Center</p> <p>Invertebrate Sample Processing at the U.S. Geological Survey's National Water Quality Laboratory, Stephen Moulton, U.S. Geological Survey</p> <p>In-Situ Monitoring of Phytoplankton on the Cell Level, George Dubelaar, CytoBuoy b.v.</p>	<p>Metals: Sampling and Analysis</p> <p>Moderator: Rock Vitale, Environmental Standards, Inc.</p> <p>Monitoring Dissolved Metals in the Ohio River Using Clean Sampling Techniques, Kimberly Mays, Ohio River Valley Water Sanitation Commission</p> <p>Improvements in Field Methods for Arsenic Monitoring, Dan Kroll, Hach</p> <p>Field Instrumentation and Monitoring for Mercury Isotopes at the Experimental Lakes Area, Ontario, Canada, David Owens, USGS</p> <p>Utilizing Stable Mercury Isotopes for Tracers in Aquatic Ecosystems., Mark Olson, U.S. Geological Survey, Middleton, WI</p>	<p>In-Situ Monitoring</p> <p>Moderator: Jerad Bales, US Geological Survey</p> <p>Continuous Stream Monitoring for a High Quality Water Resource: Silver Creek, Washington County , Minnesota, Robert Fossum, Washington Soil and Water Conservation District</p> <p>Field Sampling and Analytical Methods for Monitoring Volatile Organic Compounds in Karst Springs, Shannon Williams, U.S. Geological Survey</p> <p>Adapting Marine In Situ Photometric Nutrient Monitors for Freshwater Applications, Charles Patton, US Geological Survey, National Water Quality Laboratory</p> <p>Remote Sampling Technology: Proactive Management of Surface Water and Development of Comprehensive Data Sets for "Early Warning" Applications, Christopher Owen, Apprise Technologies, Inc.</p>	<p>Early Warning Monitoring</p> <p>Moderators: Katherine Alben, NY State Dept. of Health & Herb Brass, USEPA</p> <p>Real-time Biomonitoring to Check the Water Quality, Christian Moldaenke, Moldaenke Company</p> <p>Monitoring Strategy for the Dutch National Early Warning Network, Ad Jeuken, RIZA</p> <p>Toward Early -Warning Monitoring for Water-System Security: DOE-USGS Collaboration on Development and Testing of Advanced Sensors, Glenn Patterson, USGS - Water Resources Division</p> <p>Drinking Water Early Warning Detection and Monitoring Technology Evaluation and Demonstration Rajib Sinha, IT Corporation</p>	<p>Enhancing Data Quality and Comparability – Part 1</p> <p>Moderators: Cliff Annis, Merck & Company, Jerry Diamond, Tetra Tech</p> <p>New Efforts to Implement PBMS, Jerry Parr, Catalyst Information Resources, L.L.C.</p> <p>Use of Monitoring Data for Detection Limit Determination- Practical Suggestions for the Limit of Detection Dilemma, William Sonzogni, University of Wisconsin (Wisconsin Public Health Laboratory)</p> <p>Park Service Experience with Developing Monitoring and QA/QC Guidance Consistent with that of other Federal Agencies and States, Roy Irwin, National Park Service, Water Resource Division</p>
--	--	---	---	---

Track 2/3: Field and Laboratory Methods for Today and Tomorrow

<p>Ground Water: Sampling and Analysis</p> <p>Moderator: Rick Copeland, Florida Department of Environmental Protection</p> <p>Immunoassay Monitoring for Atrazine in Texas, Alan Cherepon, Texas Natural Resource Conservation Commission</p> <p>Serious Problems with Ground Water Monitoring Wells: The Confounding Effect of Vertical Ambient Flows, Alper Elci, Environmental eng. & Science Dept., Clemson University</p> <p>Low Purge Volume Sampling Technique for the Collection of Groundwater Samples at Brookhaven National Laboratory, Douglas Paquette, Brookhaven National Laboratory</p> <p>Investigation of Carbon Tetrachloride Contamination in a Deep Aquifer with Westbay Monitoring Wells, Former Fort Ord, California, Michael Taraszki, Harding ESE, Inc.</p>	<p>Nutrients: Sampling and Analysis</p> <p>Moderator: Ron Jones, FL International Univesity</p> <p>Continuous Monitoring of Nutrients and Chlorophyll in North Carolina Estuaries, Jerad Bales, U.S. Geological Survey</p> <p>Sampling Strategies for Determining Nutrient Loads in Streams, Thomas Soerens, University of Arkansas-Civil Engineering</p> <p>Corn Leaf Nitrate Reductase- A Nontoxic Alternative to Cadmium for Photometric Nitrate Determinations in Water Samples, Ellen Campbell, US Geological Survey, National Water Quality Laboratory</p> <p>Alternatives to Kjeldahl Digestion for Determination of Total and Particulate Nitrogen in Water, Charles Patton, US Geological Survey, National Water Quality Laboratory</p>	<p>Screening Tools for Priority Contaminants</p> <p>Moderator: Barry Long, National Park Service</p> <p>Comparison of Indicator Bacteria Densities and their Relation to Turbidity in Kansas Streams, Patrick Rasmussen, U.S. Geological Survey</p> <p>Monitoring of Chlorinated Disinfection By-Products in Drinking Water: Approach Based in Differential Spectroscopy, Gregory Korshin, University of Washington</p> <p>Using Colilert to Monitor the Impacts of Wet Weather Pollution Sources, Mindy Garrison, Ohio River Valley Water Sanitation Commission</p> <p>Determination of Total and Clay Suspended-Sediment Loads From In-Stream Turbidity Data in the North Santiam River Basin, Oregon; 1998-2000, Mark Uhrich, U.S. Geological Survey</p>	<p>Remote Sensing</p> <p>Moderator: Jerry Diamond, Tetra Tech, Inc.</p> <p>Combining Satellite Remote Sensing and Volunteer Secchi Disk Measurement for Lake Transparency Monitoring, Thomas Lillesand, Environmental Remote Sensing Center, University of Wisconsin-Madison</p> <p>Screening to Identify and Prevent Urban Storm Water Problems: Estimating Impervious Area Accurately and Cheaply, James Harrison, USEPA, Region 4</p> <p>Lake Water Clarity Assessment at Broad Geographic Scales Using Satellite Remote Sensing, Steve Kloiber, Metropolitan Council</p> <p>Assessing Nitrogen Contamination Potential Via Remote Sensing, Larry Beard, USDA/NASS/Environmental, Economics & Demographics Branch</p>	<p>Enhancing Data Quality and Comparability – Part 2</p> <p>Moderator: Herb Brass, USEPA,</p> <p>NEMI: Laboratory Analytical Methods, Herb Brass, USEPA, Office of Ground Water and Drinking Water</p> <p>Use of Field Quality-Control Samples in Determining the Quality of Pesticide Data Collected for the USGS National Water-Quality Assessment (NAWQA) Program, Jeffrey Martin, U.S. Geological Survey</p> <p>The Blind Audit Program: An Ongoing QA Initiative of the Chesapeake Bay Water Quality Monitoring Program, Carl Zimmerman, University of Maryland Center for Environmental Science, Chesapeake Biological Lab.</p> <p>Meeting the Demands of Methods 1631 and 245.7 in a Single Instrument with Dual Atomic Fluorescence Detectors, David Pfeil, Leeman Labs, Inc.</p>
--	--	---	--	---

Track 4: Exploring Opportunities in Data Management

<p>Moving Forward with Water Quality Data Elements - Description</p> <p>Moderator: Charlie Peters, USGS</p> <p>Using Common Data Elements to Exchange Data with Confidence, Charles Job, USEPA</p> <p>Biological Water Quality Data Elements, Charles Peters, US Geological Survey, Middleton, WI</p>	<p>Applied Database Systems</p> <p>Moderator: Jeff Schloss, UNH Cooperative Extension</p> <p>MrBST Software Application, Milo Anderson, USEPA, Region 5</p> <p>Assessment of the Water Quality Impacts of Farming Systems by Integrating Databases and Simulation Models, Jerry Hatfield, USDA-ARS National Soil Tilth Laboratory</p> <p>Hydrologic Databases for Federally -Listed T&E Species, Allen White, US FWS Austin, Texas</p> <p>National Park Baseline Water Quality Data Inventory and Analysis Report Series, Mike Matz & Dean Tucker, National Park Service</p>	<p>Data Rich Indicators</p> <p>Moderator: Greg Gross, Minnesota Pollution Control Agency</p> <p>Monitoring the Effectiveness of TMDL Implementation with the Oregon Water Quality Index (OWQI), Curtis Cude, Oregon Dept. of Environmental Quality</p> <p>Indicators for the Great Lakes , The SOLEC Set, Paul Bertram, US EPA Great Lakes National Program Office Chicago, Illinois</p> <p>Designing Monitoring and Assessment Strategies to Include Nearshore Ecosystems of the Great Lakes, John Kelly, U.S. EPA</p> <p>Mapping the Road to Recovery: Integrated Water Quality and Biological Monitoring of Onondaga Lake , New York, Elizabeth Moran, EcoLogic, LLC New York</p>	<p>Tools to Help Link, Explain, and Manage Data</p> <p>Moderator: David Denig-Chakroff, Association of Metropolitan Water Agencies</p> <p>The Milwaukee Metropolitan Sewerage District Corridor Study: A Case Study in the Compilation of Surface Water Related Datasets from Multiple Local, State, and Federal Agencies, Morgan Schneider, U.S. Geological Survey, Water Resources Division</p> <p>Watershed Assessment Tracking and Environmental Results System (WATERS), Tod Dabolt, USEPA, Washington, D.C.</p> <p>Letting Monitoring Data Speak for Themselves, Revital Katznelson, State Water Resources Control Board Oakland, California</p> <p>XML - The Lingua Franca of the Information Age, Abigail Cantor, Process Research Madison, Wisconsin</p>	<p>Data Warehouses and Repositories</p> <p>Moderator: Paul Jehn, Ground Water Protection Council</p> <p>Natural Systems Data Management Methods, Harry House, USGS Middleton, Wisconsin</p> <p>Data Integration and Delivery through a Web-Enabled Environmental Data Warehouse, Steve Kloiber, Metropolitan Council St. Paul, Minnesota</p> <p>Using Modernized STORET to Create a State-wide Data Clearinghouse in Iowa, Mary Skopec, Iowa Department of Natural Resources</p> <p>STORET - Supporting the Business of Environmental Monitoring, Cary Mcelhinney, U.S. EPA, Washington, D.C.</p>
---	--	--	---	---

Track 5: Making Sense of the Data

Considerations for Interpreting Data	Considerations for Developing Nutrient Criteria	Selecting Indicators and Categorizing Results in Environmental Evaluations	Data Evaluation Tools – Statistics, GIS, and Models	Examples and Experiences with Multi-metric Indices
<p>Moderator: Tim Kubiak, US Fish and Wildlife Service; Geoffrey Ekechukwu, US Fish and Wildlife Service</p> <p>The Dynamic Nature of Sediment and Organic Constituents in TSS, Mark Riedel, Coweeta Hydrolic Lab - USDA Forest Service</p> <p>Assessing the Sensitivity of Endangered and Threatened Fish Species Using WET, Jim Dwyer, U.S. Fish and Wildlife Service</p> <p>Ecological Description of Fish Assemblages in the Coast Range Ecoregion of Washington and Oregon, Lillian Herger, USEPA, Region 10</p> <p>Utilization of Thermal Refugia by Salmonids in a Stressed River System: Implications for the Design of Water Quality and Biological Monitoring Programs, George Guillen, U.S. Fish and Wildlife Service, Arcata, CA</p>	<p>Moderator: Don Dycus, Tennessee Valley Authority</p> <p>Evaluating the Link Between Nutrient Concentrations, Periphyton-Growth Rates, and Biological Indicators of Ecosystem Health in Five Streams in Tennessee and Alabama, Anne Hoos, U.S. Geological Survey</p> <p>Nutrient and Algal Dynamics in the Quinebaug River Basin, in Connecticut, Mike Colombo, U.S. Geological Survey</p> <p>Establishing Nutrient Criteria for Alabama Reservoirs, Chris Johnson, Alabama Department of Environmental Management</p> <p>Environmental Water-Quality Zones for Streams: A New Regionalization Scheme, Dale Robertson, U.S. Geological Survey</p>	<p>Moderator: Chuck Spooner, USEPA</p> <p>Evaluation of Monitoring Data from Three Major Rivers in India : Examination of Present Policies and Exploring the Ways to Maximize the Efficiency of Existing Data, Lenin Kamepalli, Dept of Environmental Sciences, J.B. Campus, Bangalore University</p> <p>Oklahoma 's Use Support Assessment Protocols (USAP): An Historical Overview and Their Practical Application, Bill Cauthron, Oklahoma Water Resources Board/WQ Programs Division</p> <p>Development and Application of Indicators for Monitoring Coastal Response to Effluent Diversion in Massachusetts Bay, Carlton Hunt, Battelle</p> <p>Finding the Gaps: An Assessment of Aquatic Biodiversity for the Great Lakes Region, Jana Stewart, U.S. Geological Survey</p>	<p>Moderator: Tony Olsen, USEPA</p> <p>Analyzing Archived Water Monitoring Data For Temporal Patterns, Carl Zipper, Virginia Tech</p> <p>Estimation of Nutrient Loads Using Continuous Water-Quality Monitoring and Regression Analysis Compared to Other Load-Estimation Methods, Victoria Christensen, U.S. Geological Survey</p> <p>A WEB-based GIS Application with a Focus on Source Water Protection Goals of the Safe Drinking Water Act, William Cooter, RTI</p> <p>The Dane County , Wisconsin Groundwater Flow Model - An Important Tool for Water Resource Management, Kenneth Bradbury, Wisconsin Geological and Natural History Survey</p>	<p>Moderator: James Stribling, Tetra Tech. Inc.</p> <p>Vegetation Index of Biotic Integrity (VIBI) for Wetlands: Ecoregional, Hydrogeomorphic and Plant Community Comparisons with Preliminary Wetland Aquatic Life Use Designations, John Mack, Ohio Environmental Protection Agency</p> <p>Development and Testing of a Stream Site Classification for Mississippi, David Bressler, Tetra Tech, Inc.</p> <p>Use of Indices in Evaluating Florida's Ground Water Quality, Rick Copeland, FI Dept. of Environmental Quality</p>

Track 6: Data to Information to Action

<p>Communicating Results that People Can Understand</p> <p>Moderator: Abby Markowitz, Tetra Tech, Inc.</p> <p>"Developing communication strategies involves setting goals and figuring out how to reach them. This interactive session will examine a series of steps we can use to craft effective communication strategies to get us where we want to go: objective, audience, message, format, distribution, and evaluation. Facilitators: Abby Markowitz, Tetra Tech"</p>	<p>Volunteer Monitoring Programs Bridge the Communication Gap</p> <p>Moderator: Linda Green URI Watershed Watch</p> <p>Monitoring for Action, Elizabeth Herron, URI Cooperative Extension</p> <p>FM River Project, Thomas Moe, Energy & Environmental Research Center</p> <p>Volunteer Environmental Monitoring and NPS Pollution Prevention in Texas, Jason Pinchback, Texas Watch</p> <p>Secchi, Bob Carlson, Kent State University</p>	<p>Initiating Action at the Local Level</p> <p>Moderator: Toni Johnson, USGS</p> <p>Amish Water Quality Education, James Hoorman, Ohio State University Extension</p> <p>Coupling Hands-On Geoscience Education with Riparian Restoration in the Red River Basin, North Dakota, Charlene Crocker, Energy & Environment Research Center</p> <p>Communicating Water Quality/Quantity Data to a Small Wisconsin Village Board in time for Informed Decisions, Wes Halverson, University of Wisconsin-Stevens Point</p> <p>Design of Water Quality Information Systems within the Framework of Collaborative Watershed Organizations, Case Study: Big Thompson Watershed Forum, Julianne Brown, Colorado State University</p>	<p>Computerizing the Environmental Movement</p> <p>Moderator: Jeff Loser, US Dept. of Agriculture, Natural Resources Conservation Service, Mary Ambrose, TNRCC</p> <p>Using Internet Information to Protect Water Quality in Missouri, Tabitha Madzura, UOE/Mo Win</p> <p>Dissemination of Beach Water Quality and Notification Nationwide, Tim Gormley, Earth 911</p> <p>Online with IOWATER Monitors, Lynette Seigley, Iowa Department of Natural Resources - Geological Survey Bureau</p> <p>GIS Outreach and Training Approaches for Decision-Makers and Educators to Ensure Data to Action in Local Watersheds, Jeffrey Schloss, University of New Hampshire</p>	<p>Communicating the Big Picture</p> <p>Moderator: Greg Gross, Minnesota Pollution Control Agency</p> <p>Water Quality Management 101 - Communicating the Big Picture with the Basics, Derek Smithee, Oklahoma Water Resources Board</p> <p>Communicating U.S. Geological Survey Water-Quality Data Using Health- Based Screening Levels, Patty Toccalino, Oregon Health and Science University</p> <p>The Glue That Binds: Linking Monitoring Through Communication in the Great Lakes Basin Ric Lawson, Lake Michigan Monitoring Coordination Council</p> <p>Moving from "Data" to "Indicators": Connecting Water with Decision Making, Elisabeth Graffy, U.S. Geological Survey</p>
--	--	---	---	--

Building on the track presentations and discussions, we will use these working sessions to explore the relationship between the monitoring framework and the goals of the Council's four workgroups.

Water Information Strategies	Methods and Data Comparability	Collaboration and Outreach	Watershed Components Interactions
<p>Moderators: Robert Ward, Colorado State University & Peter Tennant, Orsanco</p> <p>The goal of this Council workgroup is to create and communicate goal-oriented monitoring design guidance that results in comparable information, over time and space, being produced in support of management decision making.</p>	<p>Moderator: Herb Brass, USEPA & Charlie Peters, USGS</p> <p>The goal of this Council workgroup is to explore, evaluate, and develop methods and approaches to measurement that facilitate collaboration and promote comparability between water quality monitoring programs.</p>	<p>Moderator: Fred Banach, Connecticut Department of Environmental Protection & Linda Green, URI Watershed Watch</p> <p>The goal of this Council workgroup is to build and support creative partnerships among the many elements of the monitoring community, particularly by supporting the development of state and regional monitoring councils.</p>	<p>Moderator: Jeff Loser, US Dept. of Agriculture, Natural Resources Conservation Service</p> <p>The goal of this Council workgroup is to provide a national forum to demonstrate how the interactions of the ground water resource with other components of the watershed can impact the ecological integrity of the entire system.</p>

Posters

Citizen Action

- Regional Biological Monitoring: A Coordinated Effort by Professional and Volunteer Monitors, **Cassandra Champion**, Metropolitan Council Environmental Services
- Effectively Working with Volunteer Monitors, **Elizabeth Herron**, University of Rhode Island-Cooperative Extension
- Building a comprehensive support system for Cooperative Extension volunteer water quality monitoring efforts, **Kristine Stepenuck**, University of Rhode Island - Cooperative Extension
- Testing Water Quality in Puerto Rico 's Beaches, **Ana Navarro**, UPR Sea Grant College Program
- FM River Project, **Thomas Moe**, Energy & Environmental Research Center

Monitoring Program Design and Implementation

- The National Study of Chemical Residues in Lake Fish Tissue, **Leanne Stahl**, USEPA Office of Science and Technology
- Collection of Nationally Comparable and Defensible Water Quality Data, **Franceska Wilde**, U.S. Geological Survey
- Source Water Protection on the Rhine: The Merits of a Joint Approach, **Peter Stokes**

Field Methods, Experiences

- Laser Diffraction Sediment Sensors Measure In-situ Size Distribution and Concentration with a Fixed Calibration, **Yogesh Agrawal**, Wright State University Department of Geological Sciences
- Continuous DO Monitoring in Urban Waterways in Chicago, **Irwin Polls**, Water Reclamation District of Greater Chicago
- If Water Clarity is the Issue, then Why Not Measure It?, **David Smith**, New York City Department of Environmental Protection
- An Automated Validation and Alert System for Continuous Environmental Monitoring Data, **Kirk Barrett**, Rutgers Meadowlands Environmental Research Institute
- Determination of Total and Clay Suspended Sediment Loads from In-Stream Turbidity Data in North Santiam River Basin, Oregon, **Mark Uhrich**, U.S. Geological Survey
- Continuous Water Temperature Monitoring in Wisconsin, **Cindy Koperski**, Wisconsin Department of Natural Resources
- Field Filtration and Chilling as an Alternative to Acidification and Chilling for Stabilizing Nutrient Concentrations During 30-day Storage Intervals, **Charles Patton**, U.S. Geological Survey, National Water Quality Laboratory
- Biological Early Warning Systems in Drinking Water Production, **Peter Stokes**, WRK Water Works, Netherlands

GIS and Models

- Flood Inundation Modeling in Bangladesh Using GIS, **Mohammad Rahman**, Bangladesh University of Engineering & Technology
- NASS's Ortho-Rectified Cropland Data Layer, **Rick Mueller**, USDA/NASS

Reports of Study Findings

- Predicted Impact of Transgenic Crops on Water Quality and Related Ecosystems in vulnerable Watersheds of the United States, **David Gustafson**, Monsanto
- Sediment Quality Assessment and Monitoring in the St. Johns River Water Management District, Florida, **Gregory Durell**, Battelle Memorial Institute
- Contaminant Profiles in Wastewater Measured in Support of the New Jersey Toxics Reduction Program, **Bo Liu**, Battelle Memorial Institute
- Results from Upper Mississippi River Water Quality Assessment, **David Stoltenberg**, SEPA-Region 5- Water Division
- Data Analysis and Interpretation of the Lower Little Wolf Water Quality Evaluation in Waupaca County, Wisconsin, **Kelly Henderson**, University of WI-Stevens Point / Environmental Task Force Program
- Algal-Nutrient Relations in the Yellowstone River, Montana, **David Peterson**, U.S. Geological Survey

QA/QC

- Standards in Laboratory Quality, **Brooke Connor**, US Geological Survey
- Method Performance Characteristics and the Merging of Biological Assessment Datasets, **James Stribling**, Tetra Tech, Inc.

Biological Assessment

- Assemblage-Level Biological Indicators for Determining Impairment/Non-Impairment Status of Mississippi Streams, **James Stribling**, Tetra Tech, Inc.
- Biological Assessment of the Little Patuxent River, Cattail Creek, and Brighton Dam Watersheds, Howard County, Maryland **Kristen Pavlik**, Tetra Tech, Inc.
- An Introduction to Wetland Bioassessment and the Biological Assessment of Wetlands Workgroup, **Douglass Hoskins**, United States EPA

Effective Data Communication Tools

- Characterizing Ground-Water Quality in Kentucky : From Site Selection to Published Information, **Stephen Fisher**, Kentucky Geological Survey
- Using Brochures to Effectively Communicate Biomonitoring Results: A Quick Yet Informative Way to Look at Your Watershed, **Kristen Pavlik**, Tetra Tech, Inc.
- Picture's Worth 1,000 (or more) Data Points: Using Data Visualization Tools to Present Large Quantities of Water Quality Data, **Chris Buck**, Apprise Technologies, Inc.

Field Trips

Adding Structure to the Monitoring Framework

Moderator: Charlie Peters, USGS

This interactive session will give participants the opportunity to look at a large visual representation of the “monitoring framework” and to brainstorm the missing pieces. This session will help guide the NWQM Council’s current and future efforts to promote and sustain the monitoring framework.

FIELD TRIP

Join us for an afternoon field trip to three locations in the greater Madison area: La Fontaine Springs, Lake Mendota , and Black Earth Creek.

We will explore:

- effects of urbanization on the surface and ground water resource
- approaches to monitoring and reporting beach contamination
- impacts of urban and agricultural land uses on a world class trout stream
- various biological and water quality sampling methods
- new and unique in-situ instruments