NWQMC

*Water: One Resource – Shared Effort – Common Future*

## Eighth National Monitoring Conference

April 30 – May 4, 2012 • Portland, Oregon

# Conference Program

NWQMC

EPA United States Environmental Protection Agency

USGS science for a changing world

NALMS

## Disclaimer

The information and suggestions presented at the National Monitoring Conference are subject to constant change and, therefore, should serve only as a foundation for further investigation. All information, procedures and materials contained or used as part of the Conference should be carefully reviewed and serve only as a guide for use in specific situations. Questions regarding such information, procedures and products should be directed to the specific individuals, companies and/or organizations submitting said items and information.

The opinions expressed by presenters, speakers, discussion panelists, committee members and exhibitors are those of said individuals and are not necessarily those of the National Water Quality Monitoring Council nor the conference sponsors.

Program subject to change.



## Cover Photos

(clockwise from top left)

Port Gamble S'Klallam Tribe habitat biologist Hans Daubenberger lowers a SONAR device into Port Gamble Bay. Photo by Tiffany Royal/Northwest Indian Fisheries Commission.

"Monitoring Benthic Macroinvertebrates in Briggs Woods, Iowa" Photo courtesy of Jacklyn Gautsch with IOWATER

Iowa students measuring dissolved oxygen. Photo courtesy of Christopher Soldat, Grant Wood Area Education Agency

"Eastern Iowa Teachers Collecting IOWATER Equipment at a Training Workshop" Photo Courtesy of Jacklyn Gautsch with IOWATER

NATIONAL WATER QUALITY MONITORING COUNCIL

*Working Together for Clean Water*

NWQMC

## Welcome to the Eighth National Monitoring Conference!

Dear Colleagues:

We are delighted to welcome you to Portland to share accomplishments, developments and new ideas related to water-quality monitoring. The interest in this topic across the Nation is evident in the breadth and scope of this conference, which includes 336 oral presentations, over 150 poster presentations, and 34 extended sessions (workshops, short courses, and panel discussions). Some of the conference topics this year include:

- Emerging technologies in the application of continuous, real-time sensors
- Monitoring approaches and findings from the National Aquatic Resource Surveys
- Strengthening State and Regional Council partnerships to address watershed issues
- Innovations in design of water-quality monitoring and assessment programs
- Advances in promoting and implementing data-sharing programs
- Improving how we communicate science and data to decision-makers and the public
- Tools and resources for building and sustaining volunteer monitoring programs
- Monitoring for mercury, harmful algal blooms, and microbial pathogens
- Monitoring coastal water quality and potential effects from energy development

For the first time, we are linking with the River Network's River Rally to help build connections with this important and active water community. We are also pleased that the USEPA/State National Aquatic Resource Surveys program has woven its national workshop into this conference by sponsoring numerous sessions and workshops. Of course, in addition to presentations and poster sessions, we are also offering field trips, an exhibit reception, and many opportunities to network.

We hope this conference will help you meet your goals to advance water-quality monitoring programs wherever you may live. We hope the connections you make during the conference continue to energize you throughout the year and enrich your determination to make a difference. On behalf of the many individuals who came together to make this conference happen, we wish to express our thanks and hope that you become involved in the National Water Quality Monitoring Council in the future. Together, through the Council or its many State and regional Councils, your participation and involvement does help protect our water resources, and shows the public the importance of water quality.

Sincerely yours,

Susan Holdsworth
Co-Chair, U.S. Environmental Protection Agency

Michael Yurewicz
Co-Chair, U.S. Geological Survey

## Welcome volunteer monitors, friends and colleagues!

The National Water Quality Monitoring Council (Council) Volunteer Monitoring Committee is pleased to welcome you to this 8th National Monitoring Conference. We value all you do for clean water. We hope you'll meet many new people, reconnect with old friends, share your perspectives and knowledge with colleagues and partners, learn about the latest developments in the field, explore areas of interest, and (of course) have some fun. To help you plan your days, here are some conference highlights that focus on volunteer monitoring:

**Volunteer Monitoring Training Track:** This year we have two extended sessions on *Getting Started* (D8, E8) and *Evaluating Volunteer Monitoring Program Success* (F8, G8). Also look for volunteer-focused sessions on communicating data, bacteria monitoring, shale gas monitoring, adaptive monitoring with volunteers, strengthening monitoring programs through collaboration, and much more. Your colleagues are also presenting in many different sessions throughout the conference. And don't forget all the great posters!

**Volunteer Monitoring Exhibitor Booth:** Located in the exhibit hall next to the USEPA table, this booth will be "volunteer monitoring central" for the conference. Drop off materials to share with others, see what others have to share, check out the news board, write down a topic for discussion at our Wednesday gathering, learn about our new volunteer monitoring webpage and resources, or just hang out to meet your colleagues.

**Lunch Tuesday and Wednesday:** Grab your lunch and look for tables labeled VOLUNTEER MONITORING. Time for informal meeting, greeting, and networking!

**Volunteer Monitoring Gathering and Dinner:** Wednesday after the concurrent sessions, we will have our traditional gathering to discuss topics of concern to you. After the meeting, join us for dinner at a nearby restaurant.

**Volunteer Monitoring "Fluid 5K" Run:** On Thursday at lunch time, join this race as either a runner or volunteer. (Don't worry, you'll still get lunch.) Prizes will be awarded! Funds raised will be applied toward VM travel scholarships for the next conference in 2014.

**Bridge Day:** Friday is Bridge Day, purposefully programmed to integrate both 8th National Monitoring Conference and River Rally attendees who are working on the same issues and water resources. This exceptional day has a case studies panel, concurrent sessions, a whole conference break out session, and great lunch speakers. Stay on for the River Rally reception in the evening (extra).

We extend our special thanks to the YSI Foundation, whose generous sponsorship helped more than thirty volunteer coordinators travel to this conference. YSI's many years of support have helped make this conference a rousing success for the nation's volunteer monitoring community.

Once again, welcome!

*The Council Volunteer Monitoring Committee*

# National Water Quality Monitoring Council & River Rally 2012
# Welcome You to Our Collaborative Bridge Day on May 4th

## Why?

We all are attached to our niche in our world, so much so that sometimes, it is easy to forget that there are numerous entities and organizations working on the same issue in the same watershed. We can be quick to make assumptions about others, and even rationalize why we can't or shouldn't work together. Just as our natural world is ever-changing, we too must evolve, widen our focus, and acknowledge that we will be more effective as many versus one.

For a full day, we have the chance to meet new peers, learn from individuals we already know and create new collaborations. Conference organizers have worked hard to leverage this opportunity. We reached out to and polled federal, state, local, tribal agencies, academia, non-profit organizations and industry to create a day that would be of value to all attendees. Welcome to this new National Monitoring Conference & River Rally Bridge Day.

## Opportunities/Learning Objectives

### *Thursday, PM – Social Opportunity: Dine with peers you do and don't (yet) know!*

### *Friday – Concurrent Sessions*

1. Expand your knowledge in specific areas
   Bridge Day sessions were selected to specifically meet your needs:
   - Addressing contaminants and emerging threats
   - Evaluating water protection and restoration efforts
   - Communicating science and data to decision makers and the public
   - Applying innovative monitoring technologies and assessment methods
   - Strengthening monitoring collaborations and partnerships
   - Managing and sharing water quality data

2. Demystify collaborations between Federal/State and Local/ Tribal Agencies and non-profit organizations
   A diverse panel presents case studies that focus on drivers, barriers and lessons learned

### *Friday – Lunch with Great, Relevant Speakers*

### *Friday – Break Out Sessions*

3. Find common ground with peers in your area
   Join us after lunch for regional discussions designed to:
   - Meet organizations in your area
   - Share what you do and what you need
   - Discuss opportunities for future collaboration, and
   - Clarify what others are doing and need.

### *Friday – River Rally Opening*

Welcome by U.S. EPA Administrator Lisa Jackson at the Doubletree Hotel
(Pre-paid attendees only)

# Table of Contents



***"Welcome to Portland, Oregon for the 8th National Water Quality Monitoring Conference. Enjoy the conference and be sure to make time for all that the city has to offer."***

**Dan Saltzman, City Commissioner, City of Portland**

NATIONAL WATER QUALITY MONITORING COUNCIL

*Working Together for Clean Water*

NWQMC

# *Working Together For Clean Water: 2011-2012 Council Highlights*

Water issues are becoming more complex. Resources to monitor, assess, protect and restore our waters are tighter, and the demand for high-quality water continues to grow to support a complex web of human activities and aquatic ecosystem needs. The Council is a vehicle for bringing together the diverse expertise needed to develop collaborative, comparable, and cost-effective approaches for monitoring and assessing our Nation's water quality (http://acwi.gov/monitoring). The approaches are fundamental to the successful management and sustainability of our waters.

Council goals to improve data comparability and reliability; data management, assessment, sharing, and reporting; and collaboration are increasingly achievable as technology and expertise advance in data collection and exchange, assessment, and reporting. As a result, the Council and its partners have made significant advances in its priorities, including data management and information dissemination; compatible web services; State and regional councils; volunteer monitoring; assessment and statistical tools; sensors and real-time monitoring; and integrated land-to-sea assessments through the Network. Multiple Council products and services are now available to help meet water needs across the Nation.

*Created in 1997, the National Water Quality Monitoring Council (Council) is a national forum for coordination of comparable and scientifically defensible methods and strategies to improve water quality monitoring, assessment and reporting. The Council promotes partnerships to foster collaboration, advance the science, and improve management within all elements of the water quality monitoring community. Vital to this role, the Council provides a voice for monitoring practitioners across the Nation and fosters increased understanding and stewardship of our water resources. The Council is chartered as a subgroup of the Advisory Committee on Water Information (ACWI) under the Federal Advisory Committee Act.*


**The Monitoring Framework**

## Council Workgroups

**Methods and Data Comparability Board (Methods Board) –** Provides a forum for evaluating and promoting methods that facilitate comparability among water-quality monitoring and analytical methods. (**Contacts:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869 and April Dupre, dupre.april@epa.gov, (513) 569-7019)

The **Aquatic Sensor Workgroup** is a subcommittee of the Methods Board that has focused on quality control and data management of sensor data. (**Contacts:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869 and Chuck Dvorsky, cdvorsky@tceq.texas.gov, (512) 239-5550)

**Water Information Strategies Workgroup –** Defines and promotes strategies for monitoring designs; data management, access, and exchange; data integration and analysis; and information reporting to address water needs. (**Contacts:** Mary Skopec, mary.skopec@dnr.iowa.gov, (319) 335-1579, Peter Tennant, ptennant@orsanco.org, (513) 231-7719, Doug McLaughlin, douglas.mclaughlin@wmich.edu, (269)-276-3545, Leslie McGeorge, leslie.mcgeorge@dep.state.nj.us, (609) 292-1254, and Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869)

**Collaboration and Outreach Workgroup** – Works to build partnerships that foster collaboration and communication within the water-quality monitoring community. (**Contact:** Cathy Tate, cmtate@usgs.gov, (303) 236-6927, and Barb Horn, Barb.Horn@state.co.us, (970) 382-6667)

**New Workgroups**: 1) A national collaborative network of reference watersheds for freshwater streams (see page 3) and 2) A workgroup to further implement the National Monitoring Network for Coastal Waters and Their Tributaries (see page 4).

## Water Quality Portal – *Web access to over 150 million water-quality data records from States, Tribal Partners, USEPA, and USGS*

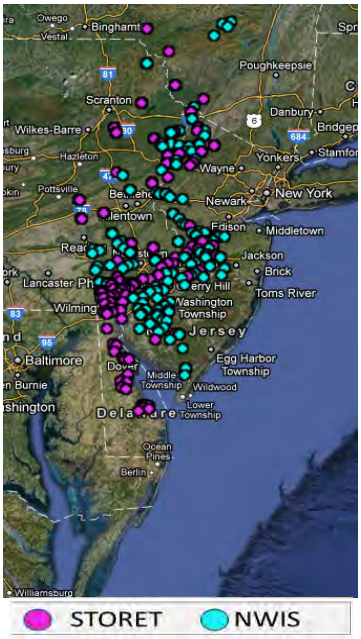
A single user-friendly web interface to water-quality data collected by Federal, State, and tribal partners to serve a wide range of prospective users including scientists, policy-makers, and the public has been released. Called the **W**ater **Q**uality **P**ortal, it contains over 150 million public water-quality data records that can be accessed and downloaded in a variety of formats. The portal accesses chemical, physical, and biological data from the USGS National Water Information System (NWIS) and the USEPA Storage and Retrieval Data Warehouse (STORET).

Data collected by USGS and by States and Tribes (submitted to STORET) conform to a common nomenclature known as the Water Quality Exchange for biological and physical elements, chemical substances, chemical groups, sites, types, and sampling media developed through the Council. The **W**ater **Q**uality **P**ortal uses this common nomenclature between NWIS and STORET to yield a merged dataset from both sources. A variety of filters including geographic and sample parameters are available in the portal to narrow down the retrieval dataset to sites and samples of interest. Output formats available through the portal include comma-separated, tab-separated, MS Excel, Keyhole Markup Language (KML), and Extensible Markup Language (XML).

The USGS/USEPA portal development activities began in 2003, resulting from an interagency *Agreement on the Management of Water Quality Data*, supported by the Advisory Committee on Water Information. The Council continues to sponsor development of the **W**ater **Q**uality **P**ortal's user interface, web services, and compatibility with popular mapping tools. The portal is also designed to support additional data sources that are integrated with the Water Quality Exchange.

Visit the **W**ater **Q**uality **P**ortal on the Web at www.waterqualitydata.us.

(**Contacts:** Nate Booth, nlbooth@usgs.gov, (608) 821-3822, Charles Kovatch, kovatch.charles@epa.gov, (202) 566-0399, and Mike Woodside, mdwoodsi@usgs.gov, (615) 837-4706).




*Map output from the **W**ater **Q**uality **P**ortal showing stream sites where nutrient samples have been collected in the Delaware River Basin since January 2011. The merged dataset includes both NWIS and STORET sites.*

## Council to Establish a National Network of Reference Watersheds for Freshwater Streams

A unique national network of pristine and minimally disturbed watersheds is the focus of a new Council effort to address the need for reliable long-term data and information from watersheds that are minimally disturbed by human activities. The collaborative, multipurpose design will emphasize chemical, physical, and biological aspects of water quality and integrate, to the extent possible, with existing networks. Membership in the network would be voluntary and open to interested individuals and institutions. Outcomes and benefits include: a database of high-quality observations that can be used to establish background conditions for select hydrologic variables and water-quality measures; a benchmark for understanding environmental stressors on aquatic communities; internet access to real-time data and annual data summaries and syntheses that are responsive to current environmental issues; and increased efficiency of monitoring through improved coordination and collaboration. More information at: http://acwi.gov/monitoring/workgroups/wis/National_Reference_Network_for_Streams.pdf (**Contact:** Bill Wilber, wgwilber@usgs.gov, (703) 648-6878 and Jeff Deacon, jrdeacon@usgs.gov, (603) 226-7812).

## Aquatic Sensor Workgroup (ASW)

The ASW expects to submit its recommendations for sensors data elements to the Advisory Committee on Water Information prior to the 8th National Monitoring Conference. This has been a complex effort, and collaboration and input from numerous groups has been key. The AWS has also worked closely with USEPA in support of its goal to include sensors time-series data in a future iteration of its WQX water-quality database.

A partnership between the Council, the Alliance for Coastal Technologies, and USEPA has resulted in a web portal that integrates sensor information with NEMI (see http://www.nemi.gov and http://www.act-us.info/). The sensor workgroup including representatives from all sectors: Federal, State, and local governmental entities and academia have worked alongside organizations that manufacture freshwater sensor manufacturers.

Other products developed through the sensor partnership are available, including a checklist for users related to calibration and record keeping to ensure that data are of known and documented quality; a deployment guide to assist in siting and maintaining sensors in the field; the draft data elements (or metadata) for sensors; and a glossary of terms. A website (http://watersensors.org/) has been built to help disseminate this information and as a clearinghouse of information on emerging sensors information. (**Contacts**: Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869 and Chuck Dvorsky, cdvorsky@tceq.texas.gov, (512) 239-5550).

## National Environmental Methods Index

The National Environmental Methods Index (NEMI), in its 12th year as one of the Council's flagship products, is an online resource of laboratory methods and field protocols, including more than 1,100 methods for chemical, biological, and physical monitoring (see http://www.nemi.gov/). NEMI continues to evolve; new this year is a web portal with access to sensor information and statistical data (see below). (**Contact:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869).

## Water Quality Statistical and Assessment Methods Online Database Available Soon!

An online searchable clearinghouse of methods to analyze water quality data and help support water quality assessments has been announced by the Council's Water Quality Statistics and Assessments workgroup. The effort is being integrated with the Council's popular National Environmental Methods Index (NEMI, http://www.nemi.gov/) and joins sensors and biological methods as recent additions to this growing resource. The user interface is designed to support a variety of queries. Some may be driven by basic water resources questions like "How do I compare the nutrient concentrations at two sites?" or "How do I look for patterns in macro-invertebrate data?" Or users may want to query "Statistical NEMI" (as it is called by the workgroup members) to find information on the latest methods used to evaluate temporal trends. The information in the database will include links to guidance documents and website, downloadable software, and more. Users will also have the option of providing their own methods to the database. (**Contacts:** Doug McLaughlin, douglas.mclaughlin@wmich.edu, (269)-276-3545, Leslie McGeorge, Leslie.McGeorge@dep.state.nj.us, (609) 292-0427 and Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869).

## Council Hosts Its 8th National Monitoring Conference – *Water: One Resource – Shared Effort – Common Future*

A centerpiece forum for communication and collaboration among the monitoring community is the Council's biennial national conference. The 8th National Monitoring Conference in Portland, Oregon includes more than 870 water practitioners from all backgrounds. This national forum provides an exceptional opportunity for Federal, State, local, tribal, volunteer, academic, private, and other water

stakeholders to exchange information and technology related to water monitoring, assessment, research, protection, restoration, and management, as well as to develop new skills and professional networks. For the first time, the Council's conference and River Network's National River Rally are coordinating an overlap day (May 4th) with mutually developed themes and presentations geared toward fostering improved collaboration between government and nonprofit groups working together for clean water (www.rivernetwork.org/). (**Contacts**: Cathy Tate, cmtate@usgs.gov, (303)-236-6927, Jeff Schloss, jeff.schloss@unh.edu, (603) 862-3848 and Alice Mayio, Mayio.Alice@epamail.epa.gov, (202) 566-1184).

## Integrating Volunteer Monitoring – A New Council Resource

Connecting volunteer monitoring groups to existing and new resources as well as to each other and with other monitoring efforts is the purpose of the Council's new volunteer monitoring webpage. The page provides an explanation of why volunteer monitoring is effective and important, provides information and links to the USEPA's National Directory of Volunteer Monitoring Programs and volunteer monitoring list serve, highlights volunteer monitoring success stories, links to a "how-to" library compiled by the National Water Resource project, and lists other key resources. Coming this spring, the website will include an interactive map of where volunteer monitoring programs are located. The website is also the home of the brand new e-newsletter *Volunteer Monitoring News* and provides a link to archived issues of the *Volunteer Monitor Newsletter.* Please visit: http://acwi.gov/monitoring/vm and provide your success story, program location or just share with others. (**Contact:** Barb Horn, Barb.Horn@state.co.us, (970) 382-6667).

## Council Responds to President's Executive Order on National Ocean Policy

As part of President Obama's National Policy for the Stewardship of the Ocean, Our Coasts, and the Great Lakes, the National Ocean Council released a draft Oceans Policy Implementation Plan (http://www.whitehouse.gov/administration/eop/oceans) to address some of the most pressing challenges facing the ocean, our coasts, and the Great Lakes. In one of the milestones mentioned in the draft Plan, the Council is charged with implementing the design of the National Water Quality Monitoring Network. The Council is responding to this charge, led by its partners in USEPA, NOAA, and USGS, by reestablishing a workgroup to explore ways to advance the concepts and design of the National Monitoring Network (Network). The Council is seeking members for this workgroup; if you would like to become involved please let us know. (**Contact:** Dennis Apeti, dennis.apeti@noaa.gov, (301) 713-3003; Bernice Smith, smith.bernicel@epa.gov, (202) 566-1244; or Mike Yurewicz, mcyurewi@usgs.gov, (703) 648-5811).

Current demonstration studies of the Network in San Francisco Bay, Lake Michigan and Delaware Estuary are being completed, and two additional demonstration studies are being implemented in 2012: one in Albemarle Sound, NC (**Contact:** Michelle Moorman, mmoorman@usgs.gov, (919) 571-4013) and one in Puget Sound, WA (**Contact:** Kathy Conn, kconn@usgs.gov, (253) 552-1677).

## The Council Continues to Reach Out to the Water Monitoring Community by:

Publishing the bi-annual online issues of ***National Water Monitoring News***, highlighting recent activities of the national, State, regional, and tribal councils, watershed partnerships, and volunteer monitoring groups; projects, publications, tools, findings or announcements of interest to the water monitoring community. (http://acwi.gov/monitoring/newsletter/).

Hosting ***webinars*** representing a wide range of topics and audiences including State and regional councils, volunteer and tribal monitoring, sensors, NEMI, data exchanges, data elements, and much more!

***Supporting*** the creation and sustaining of partnerships among the water monitoring community, including State, regional, and tribal councils, as well as watershed groups and alliances through webinars and organizing workshops at the National Monitoring Conference. (**Contact:** Cathy Tate, cmtate@usgs.gov, (303) 236-6927, Barb Horn, Barb.Horn@state.co.us, (970) 382-6667).

## Additional information on Council activities

can be found at the Council website, http://acwi.gov/monitoring/ or contact the Council Co-Chairs, Susan Holdsworth, USEPA, holdsworth.susan@epa.gov, (202) 566-1187 and Mike Yurewicz, USGS, mcyurewi@usgs.gov, (703) 648-5811.

# Conference Sponsors

## Thank You!

**To our generous sponsors who have made the Eighth National Monitoring Conference a success!**

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# Elizabeth Jester Fellows Award

Elizabeth Jester Fellows headed the Assessment and Watershed Protection Division in EPA's Office of Water until November 2000. She dedicated her career to natural resources management, environmental protection, and public service. She envisioned the creation of the National Water Quality Monitoring Council (Council) and advocated for the development of a national framework for collecting, assessing, and communicating water quality monitoring information. In her memory, the Council has established the Elizabeth Jester Fellows Award to recognize individuals for outstanding achievement, exemplary service, and distinguished leadership in water quality monitoring and environmental protection.

***In recognition of his contributions to water quality monitoring, the National Water Quality Monitoring Council is pleased to present the 2012 Elizabeth Jester Fellows Award to***

***Charlie A. Peters***
Director, Wisconsin Water Science Center
U.S. Geological Survey
Middleton, Wisconsin

Charlie has held numerous water quality leadership positions in Wisconsin, starting as the study unit chief for the Western Lake Michigan NAWQA study in 1994. When the Interagency Task Force on Monitoring (ITFM) was created, Charlie saw the value of comparable data, leading to stints as the executive secretary and then the co-chair of the Methods Board. Working with Herb Brass of EPA, the Board's role included the creation of the National Environmental Methods Index; the Water Quality Data Elements; laboratory accreditation; and contributions in the areas of nutrients, organic carbon, biological assessments, laboratory accreditation, and performance-based methods.

During this same period, Charlie and others in the Lake Michigan region recognized the need for more effective use of monitoring resources, and the Lake Michigan Monitoring Coordinating Council (LMMCC) was born. The goal was to provide a regional forum based on a large watershed that would coordinate and support scientifically defensible monitoring methods and strategies. This was the first ecosystem based monitoring council in the country and was open to agencies and interested parties at the federal, state, tribal and local level. Charlie is still co-chair of this Council, which has played a large role in coordinating the activities of the President's Great Lakes Restoration Initiative (GLRI). As part of the GLRI, the first and so far only implementation of the National Monitoring Network is a reality on 30 tributary of the Great Lakes. This is a landmark effort and its effects on water quality protection in the Great Lakes are far reaching. He has advanced the practice of data management and the public's access to water quality data in developing an on line, GIS "mapper" for many of the projects of the Great Lakes Restoration Initiative. Charlie provided the leadership and technical expertise to help the LMMCC design a near shore strategy plan for the 2010 Intensive Year of Monitoring for Lake Michigan.

Charlie's efforts in the Great Lakes area not only personify the values of the Monitoring Council, but he has been a tireless leader in adapting those principles to on-the-ground results. For this, he is an extremely deserving recipient of this award.

**Congratulations, Charlie!**

# Barry Alan Long Award

Barry Long was a National Water Quality Monitoring Council (Council) member for 10 years and a hydrologist and water quality specialist with the National Park Service, Bureau of Land Management and the U.S. Forest Service. In June 2000, Barry was diagnosed with acute myeloid leukemia. His colleagues and supporters were moved by the tremendous perseverance, spirit, and courage during his long struggle with the disease. Nevertheless, Barry continued his career as a tactful advocate for the protection of water resources and through his work on the Council, which included organizing the 2010 National Monitoring Conference in Denver, Colorado. Shortly thereafter he succumbed to complications of his disease. In his memory, the Council established the Barry A. Long award to honor an individual who has demonstrated exceptional perseverance, positive spirit, and significant contributions to water resource protection.

***In recognition of his significant contributions to water resource protection, the National Water Quality Monitoring Council is pleased to present the 2012 Barry Alan Long Award to***

***Jay H. Sauber***
Section Chief – Environmental Sciences Section
North Carolina Division of Water Quality
Raleigh, North Carolina

For over 35 years Jay Sauber has dedicated his time and effort to developing and implementing scientifically based water quality assessment tools used for managing water quality in North Carolina. Although Jay's experience spans many of the technical aspects of water quality assessment ranging from waste water treatment process to instream biological and physical chemical monitoring methods, it is Jay's ability to communicate between technical and policy oriented audiences that sets him apart from the many water quality professionals in North Carolina and the United States.

Through Jay's leadership, North Carolina is a national leader in water quality monitoring and assessment. The State collects physical and chemical data from over 300 sites on a monthly basis through its ambient monitoring system (AMS) program. Jay recognized the limitations of upstream and downstream monitoring typically required in National Pollutant Discharge Elimination System (NPDES) permits and was a key leader in establishing monitoring coalitions of NPDES dischargers. In this collaborative effort, members of coalitions voluntarily work together in conducting physical and chemical monitoring on a watershed scale and collectively the data are used in developing basinwide water quality management plans. Today there are seven coalitions that monitor at total of 250 sites that complement the state's AMS program, reducing uncertainty and costs.

He coordinated North Carolina's efforts in the first Clean Lakes Monitoring initiative in the early 1980s and has been a staunch supporter and contributor to all of USEPA's subsequent efforts, as well as North Carolina's development of lake specific monitoring and protection strategies. Additionally, Jay acquired the funding necessary to design and implement North Carolina's probabilistic monitoring program which is now in its sixth year of operation. Jay is a key partner in the collaborative effort between the North Carolina Division of Water Quality (DWQ) and the University of North Carolina at Chapel Hill Institute of Marine Science's Neuse River Estuary Modeling and Monitoring Project (ModMon). The ModMon project supports North Carolina's needs for space and time-intensive monitoring and assessment of water quality and environmental conditions; including nutrient-eutrophication dynamics, algal blooms, hypoxia, fish kills and related issues pertinent to the public's interests and the ability of the DWQ to provide science-based management decisions.

Jay has served on the Board of Directors of the North American Lake Management Society, and received the Society's prestigious Secchi Disk award in 1994. He has served on numerous USEPA advisory committees and workgroups, and currently serves on the North Carolina Ecological Flows Science Advisory Board, established by the North Carolina General Assembly.

**Congratulations, Jay!**

# Vision Award

The National Water Quality Monitoring Council's Vision Award recognizes a monitoring council or group that has demonstrated extraordinary vision and cooperation in the field of water quality monitoring on a local or regional level to enhance the management and protection of aquatic resources.

***In recognition of extraordinary vision, collaboration and leadership in water quality monitoring and environmental protection, the National Water Quality Monitoring Council is pleased to present the 2012 Vision Award to the***

## *Central Plains Center for Bioassessment*

Director Don Huggins and Assistant Director Debra Baker
Kansas Biological Survey
Lawrence, Kansas

The Central Plains Center for Bioassessment plays a pivotal role in monitoring water quality in the Central Plains region through the visionary actions of Don Huggins, Director and Debra Baker, Assistant Director. The Center is committed to providing scientific expertise on aquatic resources in the region as well as bringing together stakeholders, scientists, natural resource managers, and students to monitor streams, lakes, and wetlands.

Don Huggins conceived a center for bioassessment in 1997 for the purpose of collecting existing data and making it available for the region. He did not want researchers and natural resource managers to waste time "reinventing the wheel" by redoing research that had already been done. This led to the creation of a database of past data, including published and unpublished research. Data acquisition went back to 1960 but most of the data spans the early 1980s to the present. Debbie Baker has seen this vision to its fruition; a massive database with macroinvertebrate, fish, and water quality data from four states in the Central Plains (Iowa, Kansas, Missouri, and Nebraska). Anyone can request the data through the Center for free.

The Center has brought together a diverse array of partners to work on various aspects of water monitoring in the Central Plains for over 13 years. They brought together natural resource managers from Iowa, Kansas, Missouri, and Nebraska to discuss sampling methods and to search for a common ground in their methods to facilitate monitoring of water resources that spanned state lines. Then they created Regional Technical Assistance Groups or RTAGS comprised of scientists from academia and from state and federal government organizations. The RTAGs work on nutrient and biological criteria for lakes and streams, on monitoring the Missouri River, on monitoring sedimentation regional aquatic ecosystems, and on the management of taste and odor problems mostly from reservoirs. The Center is always working to raise regional awareness of water quality issues through publications, reports to policy makers, and through outreach. Debbie Baker coordinates environmental outreach to communities in the Central Plains through educational and training workshops, through hosting and/or assisting with volunteer stream monitoring, and through visiting schools and participating in events such as the Lawrence Earth Day celebration.

**Congratulations, Central Plains Center for Bioassessment!**

# Acknowledgments

The Council offers its gratitude to those who served on the 2012 Conference Planning Committee and its Subcommittees. The Council also acknowledges the commitment and hard work of all those who served as abstract review team leaders and members, session moderators, workshop/short course facilitators and trainers, panel organizers and speakers. Many thanks go to all who prepared presentations, posters, and exhibits and volunteered for this conference. Listed below are the numerous individuals who participated in organizing the 2012 conference:

### Conference Planning Committee Chairs

**Cathy Tate**, US Geological Survey

**Alice Mayio**, US Environmental Protection Agency

**Jeff Schloss**, University of New Hampshire

### Conference Planning Committee

**Cathy Tate**, USGS
**Alice Mayio**, USEPA
**Jeff Schloss**, University of NH
**Dave Mueller**, USGS
**Mary Skopec**, IA DNR
**Barb Horn**, Colorado Parks and Wildlife
**Greg Pettit**, OR DEQ
**Wendy Norton**, USGS
**Mike Yurewicz**, USGS
**Dan Sullivan**, USGS
**Greg Arenz**, NALMS
**Katherine Luscher**, River Network
**Gary Kohlhepp**, MI DEQ
**Gunnar Lauenstein**, NOAA
**Danielle Donkersloot**, NJ DEP
**Maggie Craig**, Tetra Tech, Inc.
**Philip Forsberg**, NALMS

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**Duanne Linnertz**, City of Portland BES
**Stuart Rounds**, USGS
**Chris Hathaway**, Lower Columbia River Estuary Partnership
**Curtis Cude**, Oregon Health Authority
**Gretchen Hayslip**, USEPA Region 10

### Sponsor and Exhibitor Committee

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**Philip Forsberg**, NALMS
**Greg Arenz**, NALMS
**Maggie Craig**, Tetra Tech, Inc
**Greg Pettit**, OR DEQ
**Kris Stepenuck**, University of Wisconsin Extension
**Gayle Rominger**, YSI
**Kelley Doster**, YSI
**Lyndsey McDermand**, YSI
**A Special Thank You to YSI**

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**Danielle Donkersloot**, NJ DEP
**Julie Vastine**, Alliance for Aquatic Resource Monitoring
**Alice Mayio**, USEPA
**Jeff Schloss**, University of NH
**Eric Burres**, California Creek Watch
**Elizabeth Herron**, University RI Watershed Watch
**Kris Stepenuck**, University of Wisconsin Extension

### Bridge Day Committee

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**Katherine Luscher**, River Network
**Merritt Frey**, River Network
**Aaron Borisenko**, OR DEQ
**Steve Hanson**, OR DEQ
**Jeff Schloss**, University of NH
**Danielle Donkersloot**, NJ DEP
**Dave Fuller**, Port Gamble S'Klallam Tribe
**Alice Mayio**, USEPA
**Cathy Tate**, USGS
**Greg Pettit**, OR DEQ

### Plenary Committee

**Mike Yurewicz**, USGS
**Wendy Norton**, USGS
**Greg Pettit**, OR DEQ
**Susan Holdsworth**, USEPA
**Katherine Luscher**, River Network
**Barb Horn**, Colorado Parks and Wildlife
**Gunnar Lauenstein**, NOAA
**Dave Fuller**, Port Gamble S'Klallam Tribe

### Awards Committee

**Gary Kohlhepp**, MI DEQ
**Chris Piehler**, LA DEQ
**Gary Rosenlieb**, National Park Service
**Cathy Tate**, USGS

# Conference Information

## Registration

Conference registration is located in the Holladay Lobby.

**Hours:**

| | |
|---|---|
| **Monday, April 30** | 1:00 pm – 7:00 pm |
| **Tuesday, May 1** | 7:00 am – 5:00 pm |
| **Wednesday, May 2** | 7:00 am – 5:00 pm |
| **Thursday, May 3** | 7:00 am – 5:00 pm |
| **Friday, May 4** | 7:00 am – 3:30 pm |

## Meal Functions

All meals listed below are provided to all full conference registrants on Tuesday, Wednesday, Thursday & Friday. Daily registrants receive all meals on the day that they attend the conference.

**Continental Breakfast**

| | | |
|---|---|---|
| **Wednesday, May 2** | 7:00 am – 8:00 am | Oregon Ballroom |
| **Thursday, May 3** | 7:00 am – 8:00 am | Oregon Ballroom |
| **Friday, May 4** | 7:00 am – 8:00 am | Oregon Ballroom |

**Morning Break**

| | | |
|---|---|---|
| **Wednesday, May 2** | 9:30 am – 10:30 am | Oregon Ballroom |
| **Thursday, May 3** | 9:30 am – 10:00 am | Oregon Ballroom |
| **Friday, May 4** | 9:30 am – 10:00 am | Pre-Function A,B & C (Concurrent Session Level) |

**Lunch**

| | | |
|---|---|---|
| **Tuesday, May 1** | 12:30 pm – 1:30 pm | Oregon Ballroom |
| **Wednesday, May 2** | 12:00 pm – 1:30 pm | Oregon Ballroom |
| **Thursday, May 3** | 11:30 am – 1:00 pm | Oregon Ballroom |
| **Friday, May 4** | 11:30 am – 1:30 pm | Oregon Ballroom |

**Afternoon Break**

| | | |
|---|---|---|
| **Tuesday, May 1** | 3:00 pm – 3:30 pm | Oregon Ballroom |
| **Wednesday, May 2** | 3:00 pm – 3:30 pm | Oregon Ballroom |
| **Thursday, May 3** | 2:30 pm – 3:30 pm | Oregon Ballroom |
| **Friday, May 4** | 3:00 pm – 3:30 pm | Pre-Function A,B & C (Concurrent Session Level) |

**Exhibit Reception**

| | | |
|---|---|---|
| **Tuesday, May 1** | 5:00 pm – 7:00 pm | Oregon Ballroom |

# Conference Exhibitors

**Registered Exhibitors as of April 10, 2012.**

**34 North**
604 Henderson Ave. Suite 220-B
San Luis Obispo, CA 93402
www.34north.com
310-305-8289

**Abraxis LLC**
54 Steamwhistle Drive
Warminster, PA 18974-1450
www.abraxiskits.com
215-357-3911

**Acclaim Systems Inc.**
110 E. Pennsylvania Blvd.
Feasterville, PA 19053
www.acclaimsystems.com
770-315-1385

**ACWI / National Water Quality Monitoring Council**
417 National Center
12201 Sunrise Valley Dr
Reston, VA 20192
acwi.gov/monitoring
703-648-6810

**Aquatic Informatics**
Suite 1100 – 570 Granville Street
Vancouver, BC V6C 3P1
Canada
www.aquaticinformatics.com
604-873-2782

**Blue Water Satellite**
440 E. Poe Rd., Suite 201
Bowling Green, OH 43402
www.bluewatersatellite.com
419-728-0060

**C.I.Agent Storm-Water Solutions**
11760 Commonwealth Drive
Louisville, KY 40299
www.ciagent.com
502-267-0101

**Campbell Scientific, Inc.**
815 W. 1800 N.
Logan, UT 84321
www.campbellsci.com
435-227-9120

**EarthSoft, Inc.**
PO Box 1376
Concord, MA 01472
www.earthsoft.com
978-369-2201

**EcoAnalysts, Inc.**
1420 S Blaine St., Ste. 14
Moscow, ID 83843
www.ecoanalysts.com
208-882-2588

**Forston Labs**
320 E. Vine Drive
Fort Collins, CO 80524
www.forstonlabs.com
800-301-1259

**FTS**
1065 Henry Eng Place
Victoria, BC V9B 6B2
Canada
www.ftsinc.com
800-548-4264

**Gold Systems Inc.**
3330 S. 700 E., Suite C
Salt Lake City, UT 84106-4627
www.goldsystems.com
801-485-7445

**GreenWater Lab/CyanoLab**
205 Zeagler Drive, Suite 302
Palatka, FL 32177-3860
www.greenwaterlab.com
386-328-0882

**Hach Hydromet**
4089 North 1800 East
Buhl, ID 83316
www.hach.com
208-543-6697

**In-Situ, Inc.**
221 E. Lincoln Ave
Fort Collins, CO 80524
www.in-situ.com
970-498-1500

**INTERA**
1933 Jadwin, Suite 130
Richland, WA 99354
www.intera.com
509-946-9898

**INW**
8902 122nd Ave NE
Kirkland, WA 98033
www.inwusa.com
425-822-4434

**KISTERS North America**
7777 Greenback Lane
Citrus Heights, CA 95610
www.kisters.net
916-723-1441

**LaMotte Company**
PO Box 329
802 Washington Ave.
Chestertown, MD 21620
www.lamotte.com
800-344-3100

**Measurement Specialties, Inc.**
2113 Wells Branch Parkway, Suite 4400
Austin, TX 78728
www.meas-spec.com
512-302-4333

**Morgan & Associates, Inc.**
405 Parkway, Suite F
Greensboro, NC 27401
www.peroxygensolutions.com
336-272-0127

**North American Lake Management Society (NALMS)**
PO Box 5443
Madison, WI 53705
www.nalms.org
608-233-2836

**PP Systems/bbe Moldaenke**
110 Haverhill Road, Suite 301
Amesbury, MA 01913
www.ppsystems.com
978-834-0505

**Seattle Sensor Systems**
1017 N 31st
Renton, WA 98056
www.seattlesensors.com
425-985-3763

**Sequoia Scientific, Inc.**
2700 Richards Road # 107
Bellevue, WA 98005
www.sequoiasci.com
425-641-0944

**Seveno**
8310 South Valley Highway, 3rd Floor
Englewood, CO 80112
www.seveno.com
303-952-0267

**Solinst Canada Ltd.**
35 Todd Rd.
Georgetown, ON L7G 4R8
Canada
www.solinst.com
905-873-2255

**Stevens Water Monitoring Systems**
12067 NE Glenn Widing Dr., Suite 106
Portland, OR 97220
www.stevenswater.com
503-445-8000

**Teledyne Isco**
4700 Superior Street
Lincoln, NE 68504
www.teledyne.com
402-464-0231

**Turner Designs**
845 W Maude Avenue
Sunnyvale, CA 94085
www.turnerdesigns.com
408-749-0994

**US EPA**
1200 Pennsylvania Avenue NW (4503T)
Washington, DC 20460-0001
www.epa.gov
202-566-1184

**US Geological Survey Hydrologic Instrumentation Facility**
Bldg 2101 Endeavor Blvd
Stennis Space Center, MS 39529
water.usgs.gov/hif/
228-688-3924

**US Geological Survey National Water-Quality Assessment Program (NAWQA)**
12201 Sunrise Valley Drive
Reston, VA 20192
water.usgs.gov/nawqa/
703-648-5702

**Wildermuth Environmental, Inc**
23692 Birtcher Drive
Lake Forest, CA 92630
www.wildermuthenvironmental.com
949-420-3030

**Windsor Solutions, Inc.**
4386 SW Macadam Avenue
Portland, OR 97239
www.windsorsolutions.com
503-675-7833

**YSI, Inc**
1725 Brannum Lane
Yellow Springs, OH 45387
www.ysi.com
360-915-7331

**ZAPS Technologies**
4314 SW Research Way
Corvallis, OR 97333
www.zapstechnologies.com
541-231-5961

# 2012 National Monitoring Conference-at-a-Glance

## Monday, April 30

| | |
|---|---|
| All Day | **EPA National Aquatic Resource Surveys (NARS) Workshops** (by invitation only) |
| 8:00 am – 6:00 pm | **Field Trip: Columbia River Gorge/Hood River Valley/Mt Hood** (meet at the MLK, Jr. Blvd. Convention Center entrance) |
| 8:00 am – 6:00 pm | **Field Trip: Oregon Coast** (meet at the MLK, Jr. Blvd. Convention Center entrance) |
| 8:30 am – 4:30 pm | **Field Trip: Bull Run Watershed/Marmot Dam Removal Site** (meet at the MLK, Jr. Blvd. Convention Center entrance) |
| 10:30 am – 5:30 pm | **Field Trip: Willamette Valley Wine Tour** (meet at the MLK, Jr. Blvd. Convention Center entrance) |
| 4:00 pm – 6:00 pm | **Field Trip: Willamette River Canoe Paddle** (meet at the MLK, Jr. Blvd. Convention Center entrance) |

## Tuesday, May 1

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | A9 |
|---|---|---|---|---|---|---|---|---|---|
| **Extended Sessions A**<br><br>8:00 – 10:30 | Workshop: Bacteria Monitoring 101: A workshop offering you an opportunity to learn how to monitor bacteria in your local waterway<br><br>Rm. C125-126 | Workshop: EPA's National Coastal Condition Assessment: Preliminary National & State Data Analysis<br><br>Rm. A106 | Panel: Continuous & real-time water-quality monitoring: where are we & where are we going? (And why aren't we there yet!)<br><br>Rm. C120-122 | Panel: Taxonomic consistency in water quality programs – views from the laboratory to program managers<br><br>Rm. A105 | Short Course: Using Weighted Regressions on Time, Discharge, & Season (WRTDS) to analyze long-term water quality data sets<br><br>Rm. C124 | Panel: Meeting the Nation's Needs for Water-Quality Information in the Next Decade: Planned Contributions from the NAWQA Program<br><br>Rm. A107-109 | Workshop: Developing a regionally consistent approach to lake bio-monitoring for the Northeast<br><br>Rm. C123 | Workshop: Building, Empowering & Sustaining State, Regional & Tribal Water Monitoring Councils & Water Monitoring Partnerships & Alliances<br><br>Rm. B111-112 | Short Course: Implement-ing Web-based Digital Technologies for Volunteer Monitoring & Watershed Stewardship Organizations & Agencies<br><br>Rm. B110 |
| 10:45 – 12:30 | **Opening Plenary and Award Presentations** (Portland Ballroom) | | | | | | | | |
| 12:30 – 1:30 | **Lunch** (Oregon Ballroom) | | | | | | | | |

| | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
|---|---|---|---|---|---|---|---|---|---|
| **Concurrent Sessions B**<br><br>1:30 – 3:00 | Partnerships for Western Water Concerns<br><br>Rm. A105 | Challenges in Defining Reference Conditions, Session 1<br><br>Rm. A106 | Assessing Water Quality Conditions in Estuaries<br><br>Rm. B117-119 | Watershed Protection: Diverse Perspectives<br><br>Rm. A107-109 | Monitoring & Assessing Groundwater Quality<br><br>Rm. C123 | Source, Fate & Transport of Mercury<br><br>Rm. C120-122 | Effective Communication of Water Quality Science to Stakeholders, Session 1<br><br>Rm. C124 | Workshop: Building, Empowering & Sustaining State, Regional & Tribal Water Monitoring Councils & Water Monitoring Partnerships & Alliances, *Continued*<br><br>Rm. B111-112 | Workshop: New Techniques in Accessing & Analyzing Water-Quality Data<br><br>Rm. B110 |
| 2:00 – 5:00 | **Field Trip: Portland Sustainable Storm Water Walking Tour** (meet at the MLK, Jr. Blvd. Convention Center entrance) | | | | | | | | |
| 3:00 – 3:30 | **Break – Refreshments** (Oregon Ballroom) | | | | | | | | |
| | **C1** | **C2** | **C3** | **C4** | **C5** | **C6** | **C7** | **C8** | **C9** |
| **Concurrent Sessions C**<br><br>3:30 – 5:00 | Expanding the Use of Volunteer Monitoring Information<br><br>Rm. A105 | Site Evaluation Considerat-ions in Probability-based Surveys<br><br>Rm. A106 | Emerging Technologies & Techniques in Real-time Monitoring<br><br>Rm. B117-119 | Assessing Urban Waters<br><br>Rm. A107-109 | Cyanobact-eria Detection & Monitoring Methods<br><br>Rm. C123 | Predicting the Effects of Klamath River Dam Removal<br><br>Rm. C120-122 | Effective Communicat-ion of Water Quality Science to Stakeholders, Session 2<br><br>Rm. C124 | Workshop: Understand, Restore, & Protect Our Waters: National Water Quality Monitoring Council Programs, Initiatives & Products<br><br>Rm. C125-126 | Workshop: A Web-Based Tool for Evaluating Surface-Water Nutrient Conditions<br><br>Rm. B110 |
| 5:00 – 6:30 | **Exhibit Reception** (Oregon Ballroom) | | | | | | | | |

## Wednesday, May 2

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 7:00 – 8:00 | **Breakfast** (Oregon Ballroom) | | | | | | | | |
| | **D1** | **D2** | **D3** | **D4** | **D5** | **D6** | **D7** | **D8** | **D9** |
| **Concurrent Sessions D**<br><br>8:00 – 9:30 | Developing Local, Regional, & National Water Quality Data Exchanges<br><br>Rm. A105 | Challenges in Defining Reference Conditions, Session 2<br><br>Rm. A106 | UV Sensors: Nitrate<br><br>Rm. B117-119 | Assessing Climate Change Impacts on Water<br><br>Rm. A107-109 | Studying Groundwater/ Surface Water Interactions<br><br>Rm. C123 | Transformat-ion & Fate of Mercury in Rivers & Streams<br><br>Rm. C120-122 | Influencing Behavior through Public Education<br><br>Rm. C124 | Workshop: Getting Started: Tools & resources for starting your volunteer monitoring program<br><br>Rm. C125-126 | Workshop: EPA's National Wetland Condition Assessment: What we did, where we are, & what's next<br><br>Rm. B111-112 |
| 9:30 – 10:30 | **Poster Viewing** (Pre-Function Lobbies A, B & C (Concurrent Session Level)) | | | | | | | | |
| | **E1** | **E2** | **E3** | **E4** | **E5** | **E6** | **E7** | **E8** | **E9** |
| **Concurrent Sessions E**<br><br>10:30 – 12:00 | Applied Biological Assessments<br><br>Rm. A105 | The National Lakes Assessment 2007: Continuing Analyses & Statewide Survey Results<br><br>Rm. A106 | Real-time Surrogates<br><br>Rm. B117-119 | Emerging Contamin-ants in Urban Waters<br><br>Rm. A107-109 | Understand-ing Nutrients in Surface Water<br><br>Rm. C123 | Predicting Mercury Levels in Fish & Wildlife<br><br>Rm. C120-122 | Communicat-ion Using Innovative Technologies<br><br>Rm. C124 | Workshop: Getting Started: Tools & resources for starting your volunteer monitoring program, *Continued*<br><br>Rm. C125-126 | Workshop: EPA's National Wetland Condition Assessment: What we did, where we are, & what's next, *Continued*<br><br>Rm. B111-112 |
| 12:00 – 1:30 | **Lunch** (Oregon Ballroom) | | | | | | | | |
| 1:00 – 5:00 | **Field Trip: Tour of Durham Advanced Treatment Facility** (meet at the MLK, Jr. Blvd. Convention Center entrance) | | | | | | | | |

| | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 |
|---|---|---|---|---|---|---|---|---|---|
| **Concurrent Sessions F**<br><br>1:30 – 3:00 | Data Access Through Innovative Web Technologies<br><br>Rm. A105 | Planning & Enhancing the 2012 National Lakes Assessment<br><br>Rm. A106 | Incorporating Innovations into Network Design<br><br>Rm. B117-119 | Tools for Prioritizing Restoration Efforts<br><br>Rm. A107-109 | Monitoring Network Design & Redesign<br><br>Rm. C123 | Monitoring for Impacts of Fracking, Session 1<br><br>Rm. C120-122 | Monitoring & Modeling Cyanobacteria Blooms, Session 1<br><br>Rm. C124 | Workshop: Evaluating Volunteer Monitoring Program Success<br><br>Rm. C125-126 | Workshop: Data Analysis from the National River and Streams Assessment<br><br>Rm. B111-112 |
| 3:00 – 3:30 | **Break – Refreshments** (Oregon Ballroom) | | | | | | | | |
| | **G1** | **G2** | **G3** | **G4** | **G5** | **G6** | **G7** | **G8** | **G9** |
| **Concurrent Sessions G**<br><br>3:30 – 5:00 | Development & Use of Water Quality Indicators<br><br>Rm. A105 | Improving State/Tribal Monitoring Programs Using the National Aquatic Resource Surveys<br><br>Rm. A106 | Continuous Real-time Monitoring: QA from Start to Finish<br><br>Rm. B117-119 | Prioritizing Emerging Contaminants for Monitoring<br><br>Rm. A107-109 | Healthy Drinking Water for Healthy People<br><br>Rm. C123 | Monitoring for Impacts of Fracking, Session 2<br><br>Rm. C120-122 | Monitoring & Modeling Cyanobacteria Blooms, Session 2<br><br>Rm. C124 | Workshop: Evaluating Volunteer Monitoring Program Success, *Continued*<br><br>Rm. C125-126 | Workshop: Data Analysis from the National River and Streams Assessment, *Continued*<br><br>Rm. B111-112 |
| 5:15 | **Volunteer Monitoring Peer Group Gathering** (Room C124) | | | | | | | | |
| 5:15 | **EPA/State Monitoring and Assessment Partnership (MAP) meeting** (Room C125-126) | | | | | | | | |
| 6:00 | **Methods and Data Comparability Board Aquatic Sensor Workgroup meeting & social** (Old Town Pizza – Sign up at the NWQMC exhibit booth.) | | | | | | | | |

## Thursday, May 3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 7:00 – 8:00 | **Breakfast** (Oregon Ballroom) | | | | | | | | |
| | **H1** | **H2** | **H3** | **H4** | **H5** | **H6** | **H7** | **H8** | **H9** |
| **Concurrent Sessions H**<br><br>8:00 – 9:30 | Adaptive Monitoring with Volunteers<br><br>Rm. A105 | Results from State & Regional Wetlands Assessments<br><br>Rm. A106 | Information Systems for Accessing & Assessing Data<br><br>Rm. B117-119 | Emerging Contamin-ants in Fish<br><br>Rm. A107-109 | Understand-ing Nutrients: Groundwater/ Surface Water Interactions<br><br>Rm. C123 | Deepwater Horizon Spill Monitoring<br><br>Rm. C120-122 | Pathogen Source Identification & Management<br><br>Rm. C124 | Short Course: Fascinating Biogeochem-istry—How Diel Cycling Complicates Surface-Water Monitoring<br><br>Rm. C125-126 | Workshop: Design & Indicator Selection for the National River and Streams Assessment 2013-2014<br><br>Rm. B111-112 |
| 9:30 – 10:00 | **Break – Refreshments** (Oregon Ballroom) | | | | | | | | |
| | **I1** | **I2** | **I3** | **I4** | **I5** | **I6** | **I7** | **I8** | **I9** |
| **Concurrent Sessions I**<br><br>10:00 – 11:30 | Effects of Diel Cycling on Stream Conditions<br><br>Rm. A105 | Applications & Analyses using National Aquatic Resource Surveys Data & Geospatial Information<br><br>Rm. A106 | Data Quality Management Tools & Techniques<br><br>Rm. B117-119 | Monitoring for the Effectiveness of TMDLs<br><br>Rm. A107-109 | Monitoring for Nutrient Impacts & Criteria Development<br><br>Rm. C123 | Dam Removal & Associated Water Quality Impacts<br><br>Rm. C120-122 | National Monitoring Network of Coastal Waters and Their Tributaries<br><br>Rm. C124 | Panel: Volunteer Water Quality Monitoring around the World: Global Water Watch Affiliate Experiences in Mexico, South America, & the Philippines<br><br>Rm. C125-126 | Panel: Using Wetlands Monitoring & Assessment Information to Support Decision-Making<br><br>Rm. B111-112 |
| 11:30 – 1:00 | **Lunch** (Oregon Ballroom) | | | | | | | | |
| 12:00 | **The Fluid Five 5K Run** (runners meet at the conference registration desk in the Holladay Lobby at 11:00 am) | | | | | | | | |

| | J1 | J2 | J3 | J4 | J5 | J6 | J7 | J8 | J9 |
|---|---|---|---|---|---|---|---|---|---|
| **Concurrent Sessions J**<br><br>1:00 – 2:30 | Strengthen-ing Monitoring Programs through Non-profit / Non-profit Collaboration<br><br>Rm. A105 | Innovations in Data Capture & Tracking<br><br>Rm. A106 | Innovative Techniques for Monitoring, Session 1<br><br>Rm. B117-119 | Nonpoint Source Monitoring for TMDL Implement-ation<br><br>Rm. A107-109 | Nutrient Source Tracking using Multiple Lines of Evidence<br><br>Rm. C123 | Bioaccumul-ation of Methyl-mercury in Aquatic Ecosystems<br><br>Rm. C120-122 | Standardizing & Enhancing Biological Assessment Methods<br><br>Rm. C124 | Short Course: It Ain't Necessarily So: Urban Legends in Environment al Statistics<br><br>Rm. B111-112 | Panel: Advancing the Implement-ation of a National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries<br><br>Rm. C125-126 |
| 2:30 – 3:30 | **Poster Viewing** (Pre-Function Lobbies A, B & C (Concurrent Session Level)) | | | | | | | | |
| | **K1** | **K2** | **K3** | **K4** | **K5** | **K6** | **K7** | **K8** | **K9** |
| **Concurrent Sessions K**<br><br>3:30 – 5:00 | Evaluating Monitoring Program Needs & Outcomes<br><br>Rm. A105 | Using the National Aquatic Resource Surveys to Support Regional/Stat e/Tribal Information & Decision Needs<br><br>Rm. A106 | Innovative Techniques for Monitoring, Session 2<br><br>Rm. B117-119 | Identifying & Protecting Healthy Watersheds<br><br>Rm. A107-109 | Using Diverse Data Sources for Assessment<br><br>Rm. C123 | Strengthen-ing Monitoring Programs through Government-to-Government Collaboration<br><br>Rm. C120-122 | Monitoring for Microbial Pathogens<br><br>Rm. C124 | Short Course: It Ain't Necessarily So: Urban Legends in Environment al Statistics, *Continued*<br><br>Rm. B111-112 | Workshop: Gulf of Mexico Monitoring – Developing a long-term water quality monitoring framework<br><br>Rm. C125-126 |
| 6:30 | **Willamette River Dinner Cruise** (Participants meet at the Salmon Street Springs Fountain in Tom McCall Waterfront Park (Salmon St. & Naito Parkway/Front Avenue)) | | | | | | | | |

## Friday, May 4

**Bridge Day with River Rally**

**Water: One Resource – Shared Effort – Common Future (Finding Common Ground in the Monitoring Community)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 7:00 – 8:00 | **Breakfast** (Oregon Ballroom) | | | | | | | | |
| | **L1** | **L2** | **L3** | **L4** | **L5** | **L6** | **L7** | **L8** | **L9** |
| **Concurrent Sessions L**<br><br>8:00 – 9:30 | Workshop: Shale Gas Volunteer Monitoring<br><br>Rm. C125-126 | Leveraging State Partners to Assist the National Aquatic Resource Surveys & State Level Data Collection<br><br>Rm. A105 | Workshop: Effective Public Communicat-ion of Water Quality Data<br><br>Rm. A107-109 | Monitoring Effectiveness of BMPs for Urban Stormwater<br><br>Rm. A106 | Data Sharing & Presentation for Diverse User Groups<br><br>Rm. B117-119 | Workshop: Creative Partnerships for Monitoring Restoration Projects<br><br>Rm. B111-112 | Monitoring & Predicting Cyanobact-eria Blooms in Water Supplies<br><br>Rm. C123 | Short Course: Overview of US EPA Policies Regarding Data Solicitation, Screening, & Interpretat-ion for Section 303(d)/ 305(b) Listing & Reporting<br><br>Rm. C124 | Workshop: Navigate the USGS Water Web Sites<br><br>Rm. B110 |
| 9:30 – 10:00 | **Break** (Pre-Function Lobbies A, B & C (Concurrent Session Level)) | | | | | | | | |
| | **M1** | | **M2** | **M3** | **M4** | **M5** | **M6** | **M7** | **M8** |
| **Concurrent Sessions M**<br><br>10:00 – 11:30 | **Bridge Day Plenary Panel**<br><br>Rm. A107-109 | | Evaluating Statewide Probabilistic & Fixed Site Monitoring Programs<br><br>Rm. A105 | Evaluation of New In-situ Sensors<br><br>Rm. A106 | Identifying Causes of Impairment Due to Multiple Stressors<br><br>Rm. B117-119 | Contaminat-ion of Drinking Water Supplies<br><br>Rm. B111-112 | Monitoring Mercury in the Environment: Data Synthesis & Integration<br><br>Rm. C123 | Detection, Fate & Transport of Pesticides<br><br>Rm. C124 | Statistical Approaches for Assessing Water<br><br>Rm. C120-122 |
| 11:30 – 1:30 | **Plenary Luncheon** (Oregon Ballroom) | | | | | | | | |
| **Session N**<br><br>1:30 – 3:00 | **Bridge Day Regional Breakouts** | | | | | | | | |

| 3:00 – 3:30 | **Break** (Pre-Function Lobbies A, B & C (Concurrent Session Level)) | | | | | | | | |
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| | **O1** | **O2** | **O3** | **O4** | **O5** | **O6** | **O7** | **O8** | **O9** |
| **Concurrent Sessions O**<br><br>3:30 – 5:00 | Strengthen-ing Monitoring Programs through Non-profit / Government Collaboration<br><br>Rm. A105 | Panel: Integrated Monitoring: How can we weave more effective webs to better capture & share information?<br><br>Rm. A107-109 | No Money, New Issues. How Do We Address Emerging Threats?<br><br>Rm. A106 | Assessment Approaches For Habitat Protection & Restoration<br><br>Rm. B117-119 | Workshop: Oregon's Groundbreak-ing Rules to Reduce Toxics<br><br>Rm. C125-126 | Workshop: Burning Rivers: Moving Past Thirsty Energy<br><br>Rm. C123 | Workshop: Water Quality Monitoring for Enforcement<br><br>Rm. C124 | ***Cancelled*** | Workshop: Social Indicators + Social Marketing = Cleaner Water!<br><br>Rm. B111-112 |
| 6:30 – 9:00 | **River Rally Opening Reception** (Doubletree Hotel Ballroom) | | | | | | | | |

# Plenary Agendas

## Opening Plenary and Award Presentations, Tuesday, May 1, 2012

10:45 **Welcome to the 8th National Monitoring Conference**
Michael Yurewicz, U.S. Geological Survey, NWQMC Co-Chair

10:55 **Welcome to Portland**
Dan Saltzman, City Commissioner, City of Portland

11:05 **Introduction of Todd Ambs**
Barbara Horn, Colorado Parks and Wildlife

11:10 ***Amateurs Built the Ark, Professionals Built the Titanic – How to Get the Most Out of Volunteer Monitoring Data***
Todd Ambs, President of River Network

11:25 **Introduction of Ellen Gilinsky**
Susan Holdsworth, U.S. Environmental Protection Agency, NWQMC Co-Chair

11:30 ***Forty Years of the Clean Water Act: Progress and Challenges***
Ellen Gilinsky, Senior Policy Advisor, Office of Water, U.S. Environmental Protection Agency

11:55 **Presentation of the Vision Award and the Barry A. Long Award**
Gary Kohlhepp, Michigan Department of Environmental Quality

12:05 **Presentation of the Elizabeth Jester Fellows Award**
Susan Holdsworth, U.S. Environmental Protection Agency, NWQMC Co-Chair

12:10 **Activities of the National Water Quality Monitoring Council, and Charge to Conference Participants**
Susan Holdsworth and Michael Yurewicz, Co-Chairs, NWQMC

12:30 **Adjourn**

## Plenary Luncheon, Friday, May 4, 2012

11:30 **Luncheon starts**

12:00 **Welcome**
Michael Yurewicz, Co-Chair NWQMC

12:10 **Introduction of William Bradbury**
Greg Pettit, Oregon Department of Environmental Quality

12:15 ***Oregon – Effects of Climate Change***
William Bradbury, Northwest Power & Conservation Council

12:35 **Introduction of Eric Quaempts**
Dave Fuller, Port Gamble S'Klallam Tribe

12:40 ***Reestablishing Connections: Rivers to Floodplains, Water Quality to People***
Eric Quaempts, Director of the Confederated Tribes of the Umatilla Indian Reservation, Department of Natural Resources

1:00 **Conference closing, Invitation to the 2014 Conference, and Welcome to the 2012 River Rally**
Susan Holdsworth Co-Chair, NWQMC, and Barbara Horn, Colorado Parks and Wildlife

1:20 **Adjourn**

# Opening Plenary Speakers

## Todd Ambs

*President, River Network*

Todd Ambs is President of River Network. For more than 30 years, Todd has worked in the environmental policy field. From 2003 until becoming President of River Network in May, 2010, Ambs ran the Water Division for the Wisconsin Department of Natural Resources. His extensive experience in both state government and nonprofit organizations includes serving as Executive Director of two statewide river organizations, Policy Director for the Ohio Attorney General and Senior Policy Analyst for the Wisconsin Department of Justice. Todd has served on a number of water-related boards and commissions including the Great Lakes Protection Fund and was the lead negotiator for the State of Wisconsin during the development of the Great Lakes Compact. Todd currently serves on the Coordinating Committee for the Alliance for Water Stewardship.

## Ellen Gilinsky

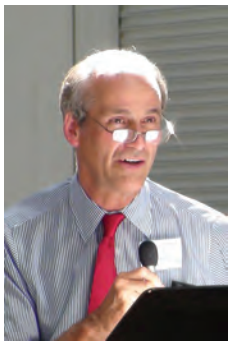
*Senior Policy Advisor to the Acting Assistant Administrator for Water, Office of Water, U.S. Environmental Protection Agency*

Ellen Gilinsky currently serves as Senior Policy Advisor to the Acting Assistant Administrator for Water at the Environmental Protection Agency. Prior to this appointment she spent seven years as the Director of the Water Division at the Virginia Department of Environmental Quality (DEQ), where she supervised a diverse array of programs, from water permitting and monitoring to water supply planning. She also served for five years as manager of the DEQ's Office of Wetlands and Water Protection, helping to craft Virginia's non-tidal wetlands program. In addition, she has worked as an environmental consultant at several regional and national environmental engineering firms, focusing on water issues. Dr. Gilinksy is a Past President of the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), has held a gubernatorial appointment to the State Advisory Board of the Virginia Water Resources Research Center and has been an Adjunct Faculty member at Virginia Commonwealth University in the Departments of Biology and Environmental Studies.

# Plenary Luncheon Speakers

## William Bradbury

*Council member, Northwest Power & Conservation Council*



Bill Bradbury served as the Oregon Secretary of State from 1999 – 2009. He also served in the Oregon Legislature from 1981 – 1995, representing districts on the southern Oregon Coast. Bill left the Oregon Legislature in 1995 and founded and became the Executive Director of For the Sake of the Salmon, a regional non-profit organization which sought to restore salmon stocks and watershed restoration. He has a long public career focused on sustainability – a clean environment, strong economy and involved community. He was among the first fifty citizens trained by Al Gore to present a localized version of "An Inconvenient Truth", and has done more than 275 presentations in Oregon in the last 5 years.

## Eric Quaempts

*Director of the Confederated Tribes of the Umatilla Indian Reservation, Department of Natural Resources*

Eric Quaempts has served as the Director for the Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Department of Natural Resources (DNR) since 2004. Prior to that, Eric spent eight years as a Wildlife Biologist in the CTUIR DNR's Wildlife Program, where he was responsible for wildlife management projects. Eric was formerly with the U.S. Department of Agricultural Forest Service, where he served on interdisciplinary rotational assignments in Forestry, Wildlife, Range, Reforestation, Fisheries, and Fire Management Programs. Eric is the Tribal representative for the Oregon Watershed Enhancement Board. An enrolled member of the Yakama Indian Nation, Eric has spent most of his life living on the Umatilla Indian Reservation, and his professional career has been focused on working on the reservation and in the Ceded Lands of the CTUIR.

# Field Trips

Field trip participants will meet at the Martin Luther King, Jr. Blvd. Convention Center entrance.

## Oregon Coast

Monday, April 30
8:00 am – 6:00 pm | Price: $45

Located approximately 90 miles from Portland, the Oregon Coast is renowned for its beauty and majesty. On this tour our journey will take us through the Tillamook State Forest, where you will hear about its recovery from one of the largest forest fires in Oregon's history. We will travel down the pristine Wilson River home to salmon, trout, and steelhead. We visit Tillamook Bay and hear about the work that local watershed councils, soil and water conservation districts, and the Tillamook National Estuary Program are doing to improve watershed health and coastal habitats. We will travel north along Oregon's Coastal Highway 101 and stop at several scenic locations along the way. If you're coming to Portland you really should see the Oregon Coast. Be prepared for windy, wet, cool weather.

## Columbia River Gorge/ Hood River Valley/ Mt. Hood

Monday, April 30
8:00 am – 6:00 pm | Price: $50

The most popular tourist attraction in the state of Oregon is Multnomah Falls in Oregon's Scenic Columbia River Gorge. We will travel through the spectacular Columbia River Gorge on our way to Hood River Valley with stops at Multnomah Falls and the Bonneville Dam. Hood River Valley located on the northern side of Mt. Hood is a beautiful valley and at the time of our visit the apple blossoms should be in bloom. That alone is worth the trip. However, we will be visiting Hood River to hear about a remarkably successful program known as the Pesticide Stewardship Partnership, as well as related water quality initiatives in the Hood River Valley. Through these programs watershed councils, Soil and Water Conservation Districts, tribes, Oregon State Extension Service, Oregon DEQ, and Oregon Department of agriculture work cooperatively to assess pesticide levels in the watershed and implement best management practices, including enhancing riparian habitat, to reduce pesticides in streams and improve overall water quality. On our journey home, we will visit Oregon's famous Mt. Hood and weather permitting the majestic Timberline Lodge. Be prepared for windy, wet, cool weather.

## Bull Run Watershed/Marmot Dam Removal Site

Monday, April 30
8:30 am – 4:30 pm | Price: $20

Join the Portland Water Bureau and the Sandy River Basin Watershed Council for a visit to two unique sites in the foothills of the Cascade Mountains. The trip will start with a tour of the Bull Run watershed, the federally-protected source of Portland's primary drinking water supply, approximately 26 miles east of the city. Learn about the protection, development, and management of the water system that serves almost one quarter of the population of Oregon. After touring Bull Run, the group will join the Sandy River Basin Watershed Council for a visit to the former Marmot Dam site. Learn about the partnership formed between the Water Bureau and the Council to improve fish populations in the Sandy River Basin. Explore lessons learned from sediment transport studies and discuss specific habitat impacts that occurred as a result of the dam removal. Please wear walking shoes and dress for the weather. Participants will be required to show photo I.D. and sign a liability waiver.

## Willamette Valley Wine Tour

Monday, April 30
10:30 am – 5:30 pm | Price: $50

Taste the Terroir! Terroir (roughly pronounced "tare-whár") is a French term used to describe the relationship between geology, soils, climate, and the differences in wines. It is the "taste of the place." The Northern Willamette Valley is one the finest wine regions in North America for cool climate grapes such as Pinot Noir, Pinot Gris, Pinot Blanc, and Chardonnay. Spend a day learning how geology, soils, hydrology, and climate combine to affect the characteristics and taste of wine by touring three wineries – Cooper Mountain, Elk Cove, and Oswego Hills – that grow grapes on different types of soils. Dr. Scott Burns, a Professor in the Department of Geology at Portland State University who has been studying terroir since the 1970s, will be our guide and lead us through the fascinating story of the geology of the region and how the characteristics of soils and climate relate to each winery's unique terroirs and wines.

## Willamette River Canoe Paddle

Monday, April 30
4:00 pm - 6:00 pm | Price: $15

Unwind from your journey to Portland by working those muscles paddling one of the Lower Columbia River Estuary Program's two 34 foot canoes on Oregon's famous Willamette River. The restoration of water quality in the Willamette River is one of the nation's great environmental success stories. This trip will take you from Willamette Park around Ross Island into the downtown Portland harbor area and back. Ross Island is part of the Oaks Bottom Wildlife Refuge complex. The complex makes up a significant regional fish and wildlife habitat and is one of the most scenic reaches of the lower Willamette River. It has been designated an Important Bird Area by the Audubon Society of Portland because of it use by both migratory and resident birds. There is a bald eagle nest on the City's parcel and a small Great Blue Heron rookery on the island's northern tip. This tour will provide views of downtown Portland and the city bridges from the unique perspective of the river. Spring Chinook salmon will be traveling through the harbor heading to the clear Cascade Mountain streams in which they spawn and Portland anglers should looking for some luck.

## Portland Sustainable Storm Water Walking Tour

Tuesday, May 1
2:00 pm – 5:00 pm

Portland receives international attention for its projects and designs in sustainable storm water management, also referred to as green infrastructure. Rain that isn't properly managed can flow over impervious surfaces, picking up pollutants and depositing them into our rivers and streams and causing combined sewer overflows. Green infrastructure design uses plants and soil to capture and treat storm water at the source. Take a walking tour with city staff to see how Portland is integrating green infrastructure into its built environment and see what the attention is all about.

The tour will include some walking and travel using public transportation. Be prepared for possible cool weather and rain. Please purchase a public transportation pass in advance for a minimum 2.5 hour round trip travel.

## Tour of Durham Advanced Treatment Facility

Wednesday, May 2
1:00 pm – 5:00 pm | Price: $15

Tour one of the most unique and advanced wastewater treatment plants in the United States! Faced with stringent Total Maximum Daily Load requirements for phosphorus and ammonia removal, Clean Water Services had been meeting the needs for advanced wastewater treatment using conventional biological nutrient removal and advanced chemical treatment since 1991. Always working to improve upon their processes, however, Clean Water Services recognized an opportunity to not only remove phosphorus from the waste stream, but to recover it as a useful commodity. The Durham Advanced Wastewater Treatment Facility is the first facility in the United States to recover fertilizer from a natural byproduct of wastewater treatment. Partnering with Ostara Nutrient Recovery Technologies, the phosphorus-recovery facility was constructed and began full-scale commercial operation in May of 2009. The system is expected to produce 250 tons of premium slow-release fertilizer per year, save energy and maintenance costs, increase capacity at the treatment facility, and pay for itself in five years. The tour will go behind the scenes at the treatment facility to show visitors the nutrient recovery facility and describe its mechanisms and performance.

# Social Events

## Exhibit Reception

Tuesday, May 1
5:00 pm – 6:30 pm
Oregon Ballroom

We invite you to join us on Tuesday evening to kick off the conference and welcome you to Portland. Take time to relax, visit with our exhibitors and with fellow attendees. The reception will include hors d'oeuvres and a cash bar.

## The Fluid 5K Run/Walk

Thursday, May 3
12:00 pm
Runners will meet at XXX
Price: $30

Need a break? Participate in the Fluid 5 K run and help support volunteer monitoring. You can run in the race, walk a 3K in that same time or create a cheerleading team to support an existing runner. A cheerleading team? Yes, you always wanted to be a cheerleader, right? Support a runner in the race by adding a donation to their effort, a pledge of sorts and all the runner needs to do is complete the race. The cheerleading team that raises the most additional funds will be rewarded! The pledge form will be available at registration.

## Willamette River Dinner Cruise

Thursday, May 3
6:30 pm – 9:30 pm
Participants meet at the Salmon Street Springs Fountain in Tom McCall Waterfront Park (Salmon St. & Naito Parkway/Front Avenue).
Price: $36

Join us aboard the Portland Spirit for a 2-½ hour sunset dinner cruise on the Willamette River through downtown Portland. Dinner will include your choice of entrée (salmon fillet, pan seared breast of chicken or a vegetarian option) along with coffee or tea, salad, bread and sides followed by a dessert of cheesecake with seasonal berries. A cash bar will be available.

## River Rally Opening Reception

Friday, May 4
6:30 pm – 9:00 pm
Doubletree Hotel Ballroom
Price: $40

Gerald Lewis, Yakama Nation Tribal Councilman will welcome us to the Columbia River Basin and lead River Rally 2012's tribal innovation. Robert F. Kennedy, Jr. will introduce US EPA Administrator Lisa P. Jackson, who will provide the opening keynote address. We'll conclude the evening with Dave Densmore and Alexy Wiley, who will perform poetry and music capturing the spirit of the northwest.

# Extended Sessions

## Session A1: Bacteria Monitoring 101: A Workshop Offering You An Opportunity To Learn How To Monitor Bacteria In Your Local Waterway (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am
Room C125-126

*Organized by Kristine Stepenuck, Wisconsin's Water Action Volunteers, University of Wisconsin-Extension and Wisconsin Department of Natural Resources*

This two and a half hour workshop will introduce participants to *E. coli* and Enterococci monitoring in surface waters. Participants will learn about these indicator organisms' importance and relevance for monitoring recreational waters, about sources of bacterial pollution in surface waters, and how to properly collect a water sample for bacterial analysis. Hands-on training will be provided using IDEXX and 3M™ Petrifilm™ methods. Participants will practice quantifying pre-prepared plates and also learn incubation and proper disposal procedures. Recording and calculating data will also be covered. Each participant will be given a copy of a bacteria monitoring manual that steps them through the entire bacteria monitoring process.

## Session A2: EPA's National Coastal Condition Assessment: Preliminary National and State Data Analysis (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am
Room A106

*Organized by Treda Grayson and Hugh Sullivan, USEPA*

Come hear about the data analysis process and preliminary findings of the 2010 National Coastal Condition Assessment. Workshop participants will have the opportunity to learn about the progress of NCCA data analysis, interact with the individuals engaged in the effort, and become familiar with data analysis approaches used for NCCA data. A series of short presentations will set the stage for group discussions by workshop participants. Presentations include an overview of the NCCA field season, standard and new analysis approaches such as the development of a national indicator of benthic condition, and the analysis of select state NCCA data. Workshop participants will be encouraged to provide feedback on preliminary data presented in the workshop and give some thought to data interpretation and application.

## Session A3: Continuous and Real-Time Water-Quality Monitoring; Where are We and Where are We Going? (And Why Aren't We There Yet!) (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am
Room C120-122

*Organized by Andy Ziegler, USGS*

Andy Ziegler (USGS) will present an overview of continuous real-time water-quality monitoring. The presentation will introduce the sessions on real-time water quality operation and maintenance protocols, sensors, data entry, review, and display, applications of *in situ* measurements as surrogates for water quality, optical sensors, and regulatory perspectives.

Stewart Rounds (USGS) will present an overview of historical applications and what can be done with all of these continuous data.

Keli Goodman (NEON) will present an overview of the current design of the NEON water-quality network to define baseline water conditions in reference watersheds in the US.

Mario Tamburri (ACT) will present testing protocols for new instruments with an emphasis on development of a generic protocol.

Brian Bergamaschi (USGS) will present the outcomes and results of the Consortium of Universities and State Hydrologic Institutes conference on optical sensors and discussion with an emphasis on nitrate and dissolved organic matter.

Ryan Pugh will present on regulatory applications in Newfoundland and Labrador.

## Session A4: Taxonomic Consistency in Water Quality Programs – Views from the Laboratory to Program Managers (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am
Room A105

*Organized by Sarah Spaulding, USGS*

Federal, state, tribal and academic managers and ecologists assess the condition of wetlands, rivers and lakes based on species of fish, invertebrates, and algae. These organisms are an indispensable component of U.S. Environmental Protection Agency's (USEPA) monitoring programs (NLS, NRSA), and the U.S. Geological Survey's (USGS) National Water Quality Assessment (NAWQA) Program. State agencies have adopted recommendations to use more than one biotic assemblage in bioassessment, and many states now monitor multiple assemblages. This panel will include speakers from the microscope bench to national program managers to discuss perspectives, issues and solutions to the challenge of documenting and tracking the response of aquatic species to environmental impacts across short and long term time scales. The session will be of interest to meeting participants that use biological species data. Participants in this session will 1) Gain a perspective of the issues and approaches to evaluate ecological response to environmental change by understanding taxonomic concepts and how they are used. We will discuss the appropriate level of taxonomy for fish, invertebrates and algae – and how to evaluate each depending on study objectives, 2) Understand ecological response vs. taxonomic revision in long term datasets, 3) Be more informed about evaluating laboratories and their services. In particular, understand the metadata that is appropriate for each taxonomic group (lab SOP, bench taxonomist name, specimen condition, life stage, etc.), 4) We will discuss QA/QC procedures and how that information is made public, 5) Finally, participants will have the opportunity to engage in discussions with panel members.

Panel Members:

- Dorene MacCoy, fish ecologist, USGS Idaho Water Science Center
- Aaron Borisenko, Water Quality Manager, Oregon Dept. of Environmental Quality
- Diane Winter, diatom taxonomist, Rithron Associates
- Don Charles, ecologist, Academy of Natural Sciences of Philadephia
- Gary Lester, invertebrate ecologist, Ecoanalysts
- Daren Carlisle, invertebrate ecologist and program manager, USGS NAWQA Program
- Richard Mitchell, program manager, US EPA Office of Water
- Steve Moulton, program manager, USGS NAWQA Program

## Session A5: Using Weighted Regressions on Time, Discharge, and Season (WRTDS) to Analyze Long-term Water Quality Data Sets (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am
Room C124

*Organized by Robert Hirsch, USGS*

This short course is intended to introduce potential users to a new method of analysis of long-term surface water quality data sets. The method is called "Weighted Regressions on Time, Discharge, and Season (WRTDS)." The method has been applied in publications related to long term changes in nutrient concentrations and flux in the Mississippi River Basin and the Chesapeake Bay Watershed. The short course will provide the background on how the method works, what its uses and limitations are, and will demonstrate its use through a series of examples that will be run during the short course. The software is written in R (which is an open source statistical and graphics language which is platform independent). The course will be most useful for students who are already familiar with R or S+, although it can be very useful even for those who are not familiar with that software. Every student will get an electronic copy of the software and a user's manual.

## Session A6: Meeting the Nation's Needs for Water-Quality Information in the Next Decade: Planned Contributions from the NAWQA Program (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am
Room A107-109

*Organized by Gary Rowe, USGS*

In October, 2012, the USGS National Water Quality Assessment (NAWQA) Program will begin its third decade of monitoring conditions in the Nation's streams and aquifers, assessing trends, understanding the causes of impairment, and determining impacts on human and ecological health. To ensure that NAWQA's third decade will provide the most useful scientific information to policy makers and managers, USGS has developed a strategy and program plan based on information needs described to NAWQA by these stakeholders.

The Cycle 3 plan reflects the priority need expressed by stakeholders to restore NAWQA's monitoring capabilities, severely reduced during the past decade, and to leverage NAWQA resources with those of other USGS programs and other agencies such as USEPA and USDA. The plan is founded on meeting four main goals that address the Nation's needs for water-quality information:

Goal 1: Monitor and assess the current quality of the Nation's freshwater resources and how water quality is changing over time.

Goal 2: Evaluate how human activities and natural factors, such as land use, water use, and climate, are affecting streamflow alteration and the sources, transport, and transformation of contaminants, nutrients, and sediment.

Goal 3: Determine the effects of contaminants, nutrients, sediment, and streamflow alteration on aquatic ecosystems.

Goal 4: Predict the effects of human activities, climate change, and management strategies on water quality and aquatic ecosystems.

These goals will be achieved by studies with nationally consistent methods and approaches that allow NAWQA to provide comparable information nationwide and to integrate studies for a more complete understanding of interactions within and among watersheds. This session will describe the needs of water-quality information users for the next decade, the monitoring, modeling and research studies NAWQA has developed to meet them, and highlight plans by USGS and EPA to collaborate on a major regional water-quality assessment as part of the upcoming EPA National Aquatic Resource Survey of streams and rivers and the first NAWQA Cycle 3 Regional Synoptic study of contaminants and other water-quality stressors.

Panel Members:

- Gary Rowe, USGS, Central Areas NAWQA Coordinator, Denver, Colo.
- Bob Gilliom, USGS, Chief, NAWQA Pesticide National Synthesis, Sacramento, Calif.
- Ken Belitz, USGS, Supervisory Hydrologist, California Water Science Center, San Diego, Calif.
- Paul Capel, USGS, Research Hydrologist, Minnesota Water Science Center, Mounds View, Minn.
- Mark Munn, USGS, Supervisory Ecologist, Washington Water Science Center, Tacoma, Wash.
- Dave Wolock, USGS, Research Hydrologist, Kansas Water Science Center, Lawrence, Kans.
- Pete VanMetre, USGS, Research Hydrologist, Texas Water Science Center, Austin, Tex.
- Ellen Tarquinio, USEPA Office of Water, Washington D.C.

## Session A7: Developing a Regionally Consistent Approach to Lake Biomonitoring for the Northeast (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am
Room C123

*Organized by Kellie Merrell, Vermont Agency of Natural Resources and Theresa Portante-Lyle, NEIWPCC*

The biological condition gradient has been used successfully to assess the condition of streams and match narrative water quality standards to scientifically defensible biological integrity metrics. While many states have developed assessment methodologies for macroinvertebrates and fish in streams, most were developed independently and it is difficult to compare results across political borders. Rather than approach the development of lake biomonitoring techniques and metrics independently, this workshop will be part of an initiative to develop a regionally consistent lake biomonitoring approach for the Northeast. This workshop will include discussions on what biological parameters are most promising, what methods have already been employed by the 2007 National Lake Assessment and others across the country and what, if any, additional biological monitoring methods can be piloted in the Northeast during the 2012 National Lake Assessment. People with an interest or expertise in the development of IBIs, the biological condition gradient and/or the assessment of the condition of lakes are invited to attend. Those with experience with biological indicators in rivers, estuaries, and wetland systems will enhance this workshop by providing their insights to the development of similar indicators for lakes.

## Session A8/B8: Building, Empowering & Sustaining State, Regional and Tribal Water Monitoring Councils and Water Monitoring Partnerships and Alliances (4 hours)

Tuesday, May 1
8:00 am – 10:30 am, continues 1:30 pm – 3:00 pm
Room B111-112

*Organized by Barb Horn, Colorado Parks and Wildlife; Cathy Tate, USGS; John Hummer, Great Lakes Commission; Leslie McGeorge and Alena Baldwin-Brown, New Jersey Department of Environmental Protection*

This interactive discussion will focus on successes and challenges in forming, building and sustaining successful water monitoring councils at the State, Regional or Tribal level as well as alternatives to formal councils such as partnerships and alliances (including the benefits to members and their organizations of investing and participating in such "councils"). In addition to presentations from representatives from various monitoring councils on topics such as organization and membership, data and technical information sharing, funding, partnerships, outreach and communication, and training (among others), participants should come prepared to share their own experiences in these areas as well as engage in discussions regarding issues they and their "Councils" are currently facing. Additionally, participants should bring ideas and/or suggestions regarding ways in which the National Water Quality Monitoring Council (NWQMC) can continue to provide assistance to water monitoring councils, partnerships and alliances. Likewise, ideas are welcome on how water monitoring councils, partnerships and alliances can assist the NWQMC in its mission. Resources currently available to State, Regional or Tribal councils and water monitoring partnerships and alliances from the NWQMC will also be showcased.

## Session A9: Implementing Web-based Digital Technologies for Volunteer Monitoring and Watershed Stewardship Organizations and Agencies (2.5 hours)

Tuesday, May 1
8:00 am – 10:30 am | Price: $15
Room B110

*Organized by Erickson Burres, California State Water Resources Control Board Clean Water Team*

Water is the most precious natural resource in the United States; and its value depends on its quality. Cleaner water can be put to greater uses, and requires less treatment prior to use. Improving and protecting water quality depends on a solid framework for monitoring; sound implementation projects to protect and restore beneficial uses; and effective outreach and education. These are not simple tasks, especially with dwindling budgets. To fulfill our stewardship missions, we have to find innovative ways to become more efficient, productive and expand our programs at a lower cost. This workshop will be a survey with some live demonstrations of effective and efficient uses of web-based infrastructure (training tools, software, maps, webinars, education, meeting/event management…), online databases (Georgia Adopt-A-Stream…), collaboration resources (web-meetings, cloud…), social media (Facebook, YouTube, LinkedIn, Meet-up Groups…), crowdsourcing (CreekWatch, Ushaldi…), fundraising (ChipIn, Razoo, eBay…), mobile apps and QR-codes which can help your programs grow in effectiveness, become more innovative and build legacy during difficult times.

## Session B9: New Techniques in Accessing and Analyzing Water-Quality Data (1.5 hours)

Tuesday, May 1
1:30 pm – 3:00 pm | Price: $15
Room B110

*Organized by Lorraine Murphy, USGS*

Part 1 Accessing water-quality data for the Nation in a few clicks from USGS and EPA: The Water-Quality Data Portal by Nate Booth and Lorraine Murphy

1. Understand the capabilities of the new portal
2. Become familiar with the WQX data model
3. Learn ways to consume the data from a simple form to programmatic access through web services

Part 2 Best practices in using water-quality data from multiple sources: Beyond remarks and values by Dave Mueller, Dave Lorenz and Robert Hirsch

1. Detection and quantitation limits: the EPA, ISO, ACS, ACIL, and USGS approaches
2. Detection and quantitation limits: the difference between individual values and representative values
3. Laboratory and method changes: data are not necessarily all the same
4. Remarks, values, and limits: making sense of all the information about a sample

Workshop participants will leave the class with software examples from several statistical software platforms to consume, format and summarize water-quality data using the principles described.

## Session C8: Understand, Restore, and Protect Our Waters: National Water Quality Monitoring Council Programs, Initiatives and Products (1.5 hours)

Tuesday, May 1
3:30 pm – 5:00 pm
Room C125-126

*Organized by Mike Yurewicz, USGS and Susan Holdsworth, USEPA*

The Council organizes the National Monitoring Conference every two years, but there are many other things we also do! Come to this session to learn what we're doing, and more importantly, how we can help you and how you can be part of the solution! Come learn about:

- **The Purpose and History of the Council**, including its partners and members
- **Water Quality Statistics and Assessments Workgroup's Online Database –** a web-based tool to address the need for better access to available information on methods for water quality assessment and data analysis to support water management programs.
- **National Network of Reference Watersheds –** a collaborative and multipurpose network will provide a national database of high quality observations from pristine and minimally disturbed watersheds.
- **A National Water Quality Data Portal –** will provide an integrated portal to retrieve water-quality data from NWIS and STORET.
- **Integrated Water Monitoring Activities White Paper –**addresses the misconception that state and federal monitoring programs are duplicating activities and provides a template to use with resource managers and decision makers to facilitate discussions on how monitoring programs fit different needs and how we can better integrate our programs to meet multiple purposes.
- **National Environmental Methods Index –** a web-based tool to compare, contrast, and select methods for your environmental monitoring needs.
- **Sensor Workgroup –** a public-private partnership of water-quality monitoring agencies, industry, and academia. Our mission is to ensure that water-quality data collected by sensors are of known and documented quality.
- **The National Monitoring Network for Coastal Waters and their Tributaries –** demonstrates the design of a national monitoring network in three demonstration studies and additional data collection at 5 key coastal stations.
- **Webinars and Newsletter –** resources for communicating the latest in water quality monitoring.
- **Volunteer Monitoring Web Page –** providing resources and newsletters for the volunteer monitoring community.
- **Support for State, Regional, Tribal Councils –** providing support for sustaining and developing water monitoring councils, partnerships and alliances.

***We want to hear from you!*** Whether you are new to the Council or an old friend, please plan to attend and give us feedback.

***Get involved!*** Workgroup participants do not have to be official active members of the Council and anyone in the monitoring community may serve on a Council workgroup.

## Session C9: A Web-Based Tool for Evaluating Surface-Water Nutrient Conditions (1.5 hours)

Tuesday, May 1
3:30 pm – 5:00 pm | Price: $15
Room B110

*Organized by Daniel Wise, USGS*

This will be a workshop featuring the new decision support system that the USGS has developed for its SPARROW watershed models. The SPARROW decision support system is a web-based interactive tool that allows users to display maps of model predictions, relate upstream nutrient sources to downstream loads, and test potential nutrient reduction scenarios. Attendees should bring their own internet-enabled devices.

## Session D8/E8: Getting Started: Tools and Resources for Starting Your Volunteer Monitoring Program (3 hours)

Wednesday, May 2
8:00 am – 9:30 am, continues 10:30 am – 12:00 pm
Room C125-126

*Organized by Julie Vastine, Alliance for Aquatic Resource Monitoring (ALLARM), Dickinson College and Danielle Donkersloot, New Jersey Department of Environmental Protection*

The "Getting Started" workshop is a one stop shop to orient new volunteer monitoring coordinators or agencies looking to implement volunteer monitoring programs to resources and considerations needed to develop scientifically robust, sustainable programs. Topics will include:

1. Getting started: Overview of tools from coordinating the first meeting to resources/trainings needed to successfully build the capacity of volunteers to collect and analyze water quality data.
2. Study design: A ten-step model to answer the who, what, where, how, and quality assurance/quality control measures needed to establish your program.
3. Quality Assurance: Defining your program's data quality needs for your defined data uses and data users.
4. Outreach, fundraising and additional resources: Insight to go-to fact sheets, web sites for additional resources.

## Session D9/E9: EPA's National Wetland Condition Assessment: What We Did, Where We Are, and What's Next (3 hours)

Wednesday, May 2
8:00 am – 9:30 am, continues 10:30 am – 12:00 pm
Room B111-112

*Organized by Gregg Serenbetz and Mary Kentula, USEPA*

Help shape how the National Wetland Condition Assessment presents findings in 2013! This interactive workshop will provide participants the opportunity to learn about plans for the NWCA data analysis by speaking directly with the NWCA team of scientists and policy makers that are leading the effort. Facilitated discussion and interaction will be a central part of the workshop as EPA and its partners consider new ideas and recommendations for analyzing the NWCA data.

Short presentations will provide a context for interactive discussions with audience members. This includes a retrospective presentation on the NWCA field season and an evaluation of how the NWCA data analysis may compare with the approaches used in previous NARS. Presentations will also provide an overview of potential approaches for defining reference condition, evaluating vegetation data, producing relative risk and attributable risk estimates, analyzing USA-RAM data, and assessing soil condition and stressors. Participants will be asked to provide input on the advantages and disadvantages of these

proposals and will be encouraged to suggest alternative ideas that may benefit the project. In addition, some preliminary data will be shared including (but not limited to) algal toxins, USA-RAM data, buffer condition, and soils. EPA will also solicit volunteers to participate in data analysis workgroups that will begin in the months following this meeting.

## Session F8/G8: Evaluating Volunteer Monitoring Program Success (3 hours)

Wednesday, May 2
1:30 pm – 3:00 pm, continues 3:30 pm – 5:00 pm
Room C125-126

*Organized by Tara Muenz and Allison Hughes, Georgia Adopt-A-Stream*

Do you have a hard time pinpointing successes of your volunteer monitoring program? Do you strive to have better volunteer recruitment and retention of volunteers? Are you curious about how volunteer monitoring data have been used locally or at the state level in other programs? Then this workshop is one you'll want to attend. You will be able to brainstorm ways that your program's data might be used, consider partnerships you may have previously overlooked, and outline a plan of action that can help you increase use of your program's data in your community or state. The workshop will focus on three aspects of volunteer monitoring that will allow you to recognize and achieve success in your program: volunteer recruitment and retention, program evaluation, and ensuring data use by a variety of entities. Program success can be measured in terms of how many and how long volunteers participate. To begin the workshop you will learn techniques of effective volunteer management and have a chance to share your own tools of the trade with other volunteer monitoring program coordinators. Next, peers from long-established volunteer monitoring programs will share a framework for effective program evaluation. As a participant, you'll have the opportunity to fit this framework to your program so you can head home with ideas of how to effectively evaluate your efforts to realize your successes and areas that may need fine tuning or change. Finally, the session leaders will share case studies of ways in which volunteer monitoring data have been used to support professional monitoring efforts and to affect natural resources management and policy at the local and state levels.

## Session F9/G9: Data Analysis from the National Rivers and Streams Assessment (3 hours)

Wednesday, May 2
1:30 pm – 3:00 pm, continues 3:30 pm – 5:00 pm
Room B111-112

*Organized by Ellen Tarquinio, USEPA*

The National Rivers and Streams Assessment (NRSA) is a collaborative effort between States, Tribes and EPA to monitor the condition of the nation's flowing freshwater. The NRSA provides the first statistically valid assessment of the nation's rivers and the current condition of the nation's streams as well as a change analysis from the 2004 Wadeable Streams Assessment. This workshop is a critical component of the NRSA collaborative approach by providing a face to face forum where workshop attendees can learn about the approaches used to analyze data collected, as well as provide feedback and guidance on the report. This will be the first time an outside audience will have results and the report presented to them and be able to provide comments to the analysts and NRSA staff.

## Session H8: Fascinating Biogeochemistry – How Diel Cycling Complicates Surface-Water Monitoring (1.5 hours)

Thursday, May 3
8:00 am – 9:30 am
Room C125-126

*Organized by David Nimick, USGS*

Many chemical constituents of interest in monitoring programs exhibit regular and persistent diel, or 24 hour, concentration cycles in streams. The sun is the dominant energy source at the earth's surface, and these diel cycles are caused by physical and biogeochemical mechanisms that respond to the solar photocycle. These mechanisms include streamflow variation, photosynthesis and respiration, plant assimilation, and biogeochemical reactions involving photochemistry, adsorption

and desorption, and mineral precipitation and dissolution. The amplitude of some diel cycles can be as large as changes occurring on annual timescales. Thus, understanding diel cycling is essential in monitoring and scientific studies not only for guiding collection and interpretation of almost all surface-water-quality data but also for geochemical and ecological studies of streams. While recognized for over a century and a half, diel biogeochemical cycling in streams was not studied extensively before the 1990s, perhaps because of the expense and inconvenience of the intensive temporal sampling required. Some biogeochemical processes, such as those producing diel cycles of dissolved oxygen and pH, were the first to be studied, while processes producing concentration cycles of a broader spectrum of chemical species including dissolved gases, trace elements, nutrients, stable isotopes, emerging contaminants, and suspended particles have received attention only more recently. The main purpose of this short course is to demonstrate that in many (but not all) streams, the results of water-quality sampling can depend dramatically on what time of day samples are collected. As such, failure in a monitoring program to recognize the existence of daily changes in physical and chemical properties could lead to data that are potentially biased, inconclusive, or misleading.

The course will begin with a discussion of some of the important physical and biogeochemical mechanisms that are responsible for diel cycling in all types of streams. Next, selected examples of diel cycles in the concentration of a wide variety of chemical constituents, including field parameters (pH, temperature, dissolved oxygen), trace elements, nutrients, photosensitive constituents such as mercury, iron, and emerging contaminants. Additional examples then will be presented to show how diel cycles can confound the interpretation of data collected during otherwise routine monitoring or scientific field investigations. Finally, some suggestions are given for how to design sampling strategies for collecting water samples from streams that exhibit large diel cycles in solute concentration.

## Session H9: Design and Indicator Selection for the National River and Streams Assessment 2013-2014 (1.5 hours)

Thursday, May 3
8:00 am – 9:30 am
Room B111-112

*Organized by Ellen Tarquinio, USEPA*

The National Rivers and Streams Assessment (NRSA) is a collaborative effort between States, Tribes and EPA to monitor the condition of the Nation's flowing freshwater. In 2013 and 2014, field crews will sample for the second round of the NRSA. In this workshop, experts will present design components for the NRSA 2013-2014, including population definition, stream size and areas of enhancement for the survey. Participants will give direct input to the design and criteria for exclusion of sites. Proposed indicators will also be discussed, and participants will vet their use in a national survey using criteria defined by the NRSA Steering Committee. Participants will give direct input to the design. The goal of the workshop is to leave with a clear NRSA design and proposed list of indicators for the NRSA 2013-2014.

## Session I8: Volunteer Water Quality Monitoring around the World: Global Water Watch Affiliate Experiences in Mexico, South America, and the Philippines (1.5 hours)

Thursday, May 3
10:00 am – 11:30 am
Room C125-126

*Organized by Heather Williams, Ponoma College/Global Water Watch*

Water quality issues are at the center of a set of controversies over public health, urban development, and traditional use rights to fisheries and aquatic resources in many developing countries. Regulatory structures often do not keep pace with rapid land use changes, municipal water withdrawals, and demand for running water and sanitation systems. This panel discussion will focus on the experience of four of the Global Water Watch affiliate programs in Mexico, Peru, Brazil, and Philippines who utilize community-based water monitoring (CBMW) as part of integrated watershed management. These programs differ in character and membership, but all share common goals of educating the general public about water quality and addressing data disputes and data lacunae. Global Water Watch, a global nonprofit based in Auburn, Alabama,

has partnered with communities and non-governmental organizations in Mexico, Brazil, Ecuador, Philippines, Thailand, and Peru to train groups in citizen monitoring protocols that were originally developed for Alabama Water Watch, a state-level monitoring network established in 1992.

Panel Members:

- Miriam Ramos-Escobedo, Global Water Watch-Mexico
- William Deutsch, President and Founder, Global Water Watch
- Sergio Ruiz-Cordova, Data Coordinator, Global Water Watch
- Heather Williams, Vice President, The Chijnaya Foundation

## Session I9: Using Wetlands Monitoring and Assessment Information to Support Decision-Making (1.5 hours)

Thursday, May 3
10:00 am – 11:30 am
Room B111-112

*Organized by Gregg Serenbetz and Regina Poeske, USEPA*

This panel session will explore, through active dialogue between states and EPA, potential applications of wetlands monitoring and assessment data in a decision-making context. Short presentations from EPA and the participating states will provide ideas on how data is used or is planned to be used to support federal and state wetland management priorities. Specific focus will be directed toward the use of assessment data to inform decision-making under the Clean Water Act Section 404/401 regulatory program and state wetland regulatory programs. The moderator will encourage active participation and engagement from the audience as sharing ideas and experiences will be key to making this a successful session.

Panel Members:

- Michelle Henicheck, Virginia Department of Environmental Quality
- Brandon Moody, Georgia Department of Natural Resources
- Joanna Lemly, Colorado Natural Heritage Program

## Session J8/K8: It Ain't Necessarily So: Urban Legends in Environmental Statistics (3 hours)

Thursday, May 3
1:00 pm – 2:30 pm, continues 3:30 pm – 5:00 pm | Price: $5
Room B111-112

*Organized by Dennis Helsel, Practical Stats*

Several 'urban legends' have kept statistical tools used by environmental scientists in the dark ages. I'll describe what the misinformation has been, and available new tools to improve our standard practices for data assessment, including available software. Legends include:

1. Parametric methods (based on a normal distribution of data) have more power than nonparametric methods.
2. R-squared is the best guide to a good regression equation.
3. Thirty observations are enough to apply any method successfully.
4. t-tests determine whether one group has higher values than another.
5. t-tests on logarithms determine whether one group's mean is higher than another.
6. Substituting one-half the reporting limit works fine if there aren't too many nondetects.
7. Confidence intervals show the limits of where the next observation will likely occur.

These and other legends will be tackled as time permits, including "I've always heard that ..." questions from the floor.

## Session J9: Advancing the Implementation of a National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries (1.5 hours)

Thursday, May 3
1:00 pm – 2:30 pm
Room C125-126

*Organized by Bernice Smith, USEPA*

Six expert panelists will share their ideas for advancing the implementation of the 2006 "A National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries Report" that proposed an integrated, multi-disciplinary approach for monitoring water quality designed to address coastal water challenges.

Panel Members:

- Judy Beck, U.S. EPA Great Lakes National Program Office (Lake Michigan Manager)
- Whitney Broussard III, Ph.D., University of Louisiana at Lafayette (Research Scientist)
- Gunnar G. Lauenstein, NOAA (Manager, Mussel Watch Program)
- Donna N. Myers, U.S. Geological Survey (Chief, Office of Water Quality)
- Jan A. Newton, Ph.D., University of Washington (Executive Director, National Association of Northwest Ocean Observing Systems)
- Anthony (Tony) R. Olsen, U.S. EPA Office of Research and Development (Chief, Freshwater Ecology Branch)

## Session K9: Gulf of Mexico Monitoring – Developing a Long-Term Water Quality Monitoring Framework (1.5 hours)

Thursday, May 3
3:30 pm – 5:00 pm
Room C125-126

*Organized by Sarah Lehmann and Treda Grayson, USEPA; Steve Wolfe, Florida Department of Environmental Protection*

Join us to help move forward on development of a long-term monitoring network for the Gulf of Mexico. The Gulf of Mexico Alliance (GOMA) monitoring workgroup is developing several draft alternatives for a long-term foundational monitoring program for the Gulf of Mexico. This interactive workshop will provide participants the opportunity to learn about the current status of monitoring in the Gulf and plans for a multi-jurisdictional monitoring network. The introductory presentations will provide a context for facilitated discussions with audience members on three to four potential strategies for long-term foundational monitoring in the Gulf. Participants have the opportunity to review the draft strategies suggested by the GOMA monitoring workgroup, and to provide feedback on the merits of the alternatives presented as well as other ideas that should be considered.

## Session L1: Shale Gas Volunteer Monitoring (1.5 hours)

Friday, May 4
8:00 am – 9:30 am
Room C125-126

*Organized by Julie Vastine and Kathryn Tomsho, Alliance for Aquatic Resource Monitoring (ALLARM), Dickinson College*

This session will cover the basic science of Marcellus Shale as well as the role volunteer organizations can play in assessing impacts related to Marcellus Shale and other shale natural gas extraction. The monitoring plan and protocols that the Alliance for Aquatic Resource Monitoring (ALLARM) has developed will be highlighted. Participants will receive hands-on training on how to perform the steps necessary to successfully monitor the impacts of Marcellus Shale through the use of case studies. Additionally time will be spent on how to tailor this protocol to other states. Focus will be on permit watching, choosing site locations, chemical monitoring methods, and managing, interpreting and using the data collected.

## Session L3: Effective Public Communication of Water Quality Data (1.5 hours)

Friday, May 4
8:00 am – 9:30 am
Room A107-109

*Organized by Travis Pritchard, San Diego Coastkeeper*

Communicating water quality data effectively is an often overlooked aspect of water quality monitoring programs. The vast majority of governmental and regulatory water quality data is ineffectively communicated to a public audience with multiple levels of technical knowledge. A user with limited technical knowledge can become easily lost when presented with an online database. Similarly, when data is digested to a format that the general public can understand (such as using an A-F grading system), the audience with a more technical knowledge base is often not given easy access to the data behind the score.

To address these issues, San Diego Coastkeeper has developed a method for displaying water quality data in a way that allows users to interact with the data at a level matching their technical expertise. The Canadian Water Quality Index (CWQI), adopted by United Nations Environment Programme, was modified and is used to generate scores based on comparisons of water quality data to regulatory thresholds. This modified method is based on the number of measurements exceeding regulatory water quality standards and by how much (frequency and amplitude) they exceed it and are given a score from 0-100. These scores are broken into 5 different classifications and assigned a color. When users visit the water quality website, they are first presented with a map showing each site and its current color, based off of monthly data collection. Users can drill down into each sampling location to learn why the site received its score, as well as explore the data for individual constituents and their relationships.

This method allows for users with differing knowledge bases and interests to use the same data portal. As users click through the website, they are presented with data in order of most digested to most technical. This method delivers relevant information to the general public, volunteers with basic understanding of water quality parameters, as well as water quality experts and regulatory agencies.

## Session L6: Creative Partnerships for Monitoring Restoration Projects (1.5 hours)

Friday, May 4
8:00 am – 9:30 am
Room B111-112

*Organized by Merritt Frey, River Network*

River restoration project leaders – whether from watershed groups, state agencies, or other walks of life – often struggle to secure the financial and technical capacity to conduct good, long-term monitoring that effectively documents success (or failure) in improving water quality or habitat. As budgets shrink, these challenges only loom larger. Project leaders use a variety of approaches to attempt to ensure efficient, effective monitoring, including: conducting the monitoring themselves, using volunteer monitors, partnering with state or federal agencies and others.

Our presentation will draw from two pools of experience to document the pros and cons of different partnership approaches: our own work with Learning Labs and a survey of River Network Partners.

The first thread of information will be drawn from our experience with Learning Labs. River Network partners with organizations in select watersheds to focus funding, skills, and learning around particular river issues. The projects are designed to create lessons learned that can both make a difference in the targeted watershed and provide replicable models for restoration efforts all around the country. The targeted watersheds are known as “Learning Labs.” We are experimenting with several different monitoring approaches and partnerships in these Labs, and will use those efforts as case studies of successes and challenges.

The second thread of information will draw from a survey of our Partners and others. River Network Partners include watershed organizations; statewide river groups; local, state and federal agencies; and others. The survey will provide data to: 1.) identify the partnership approaches used to monitor water quality and habitat improvements as the result of projects, 2.) analyze the pros and cons of different approaches, and 3.) identify the most successful types of partnerships for various types of projects. Follow up interviews will be conducted with selected respondents and turned into stories for the presentation.

Our presentation will summarize: the pros and cons of various partnerships approaches; case studies for the key approaches; critical factors in establishing a successful partnership; and advice on how watershed groups, state agencies and federal agencies should translate the lessons learned into creating the right approach for their needs.

## Session L8: Overview of US EPA Policies Regarding Data Solicitation, Screening, and Interpretation for Section 303(d)/305(b) Listing and Reporting (1.5 hours)

Friday, May 4
8:00 am – 9:30 am
Room C124

*Organized by Bill Painter, USEPA*

This session will be an interactive dynamic session focused on key provisions of guidance issued by EPA over the last decade regarding the assembly, screening, and interpretation of monitoring data and other information relevant to the development of state (303) lists of water quality-limited waters and associate parts of integrated 305(b)/303(d) lists.

In addition to using a slide-talk format, the session leader will employ various methods of soliciting comments and stimulating discussion among the participants, including informal "pop quizzes" (true/false or multiple choice), one or two short small group exercises, and repeated requests for sharing of real world experiences.

## Session L9: Navigate the USGS Water Web Sites (1.5 hours)

Friday, May 4
8:00 am – 9:30 am
Room B110

*Organized by Donna Myers, USGS*

USGS hydrologists will demonstrate and instruct participants on how to navigate USGS public websites to find information about their watersheds, rivers, groundwater, and aquatic biological resources. A limited number of laptops will be available for hands-on demonstrations. USGS websites demonstrated will include those providing real-time stream flow, water quality, and groundwater level data. Attendees will be shown how to sign up for instant Water Alerts for their favorite rivers and streams. Water Alerts are used by the people who want water data in real time for purposes of boating, canoeing, fishing, other recreation, and for instant updates on flooding, flood warnings, and other potential water hazards. The USGS Publications warehouse will be described. Search strategies for USGS reports and other information products will be demonstrated. No previous experience necessary. Knowledge of using a web browser is a prerequisite.

## Session M1: Bridge Day Plenary Panel: Are Monitoring Collaborations Worth My Time? (1.5 hours)

Friday, May 4
10:00 am – 11:30 am
Room A107-109

*Organized by NWQMC and River Rally Bridge Day Subcommittee*

Monitoring collaborations, imposed or organic, are they really worth the time and effort? Leverage the opportunity of joining three conference audiences, NWQMC, National River Rally and Watershed Keepers Alliance, in a unique panel presentation and discussion offering four cases studies as examples of collaboration successes and failures that include federal, state, local government, non profits and tribal entities. Case studies will provide aspects most entities can take home and present views from all involved. This panel kicks off the discussion for structured regional and state break out session after lunch.

Panel Members:

- Moderator, Mary Skopec, Section Chief, Iowa Department of Natural Resources
- Linda Green, Program Director, University Rhode Island Watershed Watch
- James Webster, Habitat Program Supervisor, Confederated Tribes of the Umatilla Indian Reservation, Department of Natural Resources and Fisheries
- Bill Meyers, Rogue Basin Coordinator, Oregon Department of Environmental Quality Western Region
- Bill Deutsch, Director, Alabama Water Watch

## Session N1: Bridge Day Regional Breakouts: Are Monitoring Collaborations Worth My Time? (1.5 hours)

Friday, May 4
1:30 pm – 3:00 pm

*Organized by NWQMC and River Rally Bridge Day Subcommittee*

No other sessions are offered so everyone could take advantage of this once in a long, long time opportunity experience our common challenges and success. The Conference Theme: Water: One Resource-Shared Effort-Common Future acknowledges that although we may have different roles, responsibilities and approaches, the common ground is much more broad and deep than we realize due to our silos and misperceptions. Bridge Day was designed from a survey of NWQMC and River Rally audiences. From that survey the most requested activity was to have a chance to communicate and connect with others in their area that they don't know exist, have perceptions about or want to meet. This break out is designed to break into small, local, meaningful groups and share focused information. An opening will provide context and instructions. We are being called to think out of the box and collaborate on scales, scopes and in ways we have never before. The place to start is to learn who is out there and break down any separation between you and "them".

Moderator, Barb Horn, Water Resource Specialist, Colorado Parks and Wildlife

## Session O2: Integrated Monitoring: How Can We Weave More Effective Webs to Better Capture and Share Information? (1.5 hours)

Friday, May 4
3:30 pm – 5:00 pm
Room A107-109

*Organized by Jen Bayer, USGS*

Common to entities involved in monitoring in the Pacific Northwest is the need for efficient collection of information on indicators and metrics on all or certain aspects of the status and trend of water quality, fish, habitat, and watershed health. Experts will share their knowledge on innovations and successes in integration of monitoring to meet multiple objectives, such as Clean Water Act, Endangered Species Act, and Northwest Power Act requirements. This expert panel will bring

together experiences in a variety of scales of integration – from collaboration within a single small watershed to efforts that span an entire state, the Pacific Northwest, or the Columbia Basin. Many believe that by taking advantage of past monitoring work and applying well-coordinated monitoring approaches, technical and fiscal resources can be more effectively shared among interested parties, data can be shared, and resulting information can provide increased scientific credibility, cost-effectiveness in use of limited funds, and greater accountability to stakeholders. We intend to share information and spark discussion in the hope that we can identify opportunities for future collaboration.

Panel Members:

- Deb Lester, Toxicology and Contaminant Assessment Group, King County Department of Natural Resources and Parks
- Karen Dinacola, Stormwater Work Group, Washington Department of Ecology
- Bernadette Graham-Hudson, Lower Columbia Fish Recovery Board
- Mike Mulvey, Oregon Department of Environmental Quality
- Kyle Abraham, Effectiveness Monitoring Coordinator, Oregon Watershed Enhancement Board

## Session O5: Oregon's Groundbreaking Rules to Reduce Toxics (1.5 hours)

Friday, May 4
3:30 pm – 5:00 pm
Room C125-126

*Organized by Lauren Goldberg, Columbia Riverkeeper*

In 2011, Oregon adopted the most protective Clean Water Act toxic water quality standards in the nation to protect human health. This workshop will include veterans of Oregon's rulemaking sharing their perspectives on the science, moral questions, and legal challenges to adopting and implementing protective toxics standards.

## Session O6: Burning Rivers: Moving Past Thirsty Energy (1.5 hours)

Friday, May 4
3:30 pm – 5:00 pm
Room C123

*Organized by Travis Leipzig, River Network*

Virtually every process in the lifecycle of almost all electricity sources, uses or significantly alters massive amounts of fresh water resources, though the extent of the impacts on water resources varies considerably based on the electricity source and technologies used.

This workshop will begin with a presentation of the findings of a forthcoming River Network report, investigating the varying levels of water related impacts of electricity production based on fuel source, technology and location of power plants. Drawing from the report, I (Travis Leipzig) will highlight the most water efficient electricity sources and technologies and sources, the least water efficient sources and technologies, the most water polluting sources and technologies, and offer policy recommendations that can help ensure that poor management of electricity production in the U.S. does not push the nation into a water crisis we cannot recover from.

The second half of the workshop will be led by Cat Shrier where she will review the current changes in policies and interagency activities on thermoelectric water use, and opportunities for the watershed protection community to become more knowledgeable and involved. Cat will discuss: recent findings, recommendations, and activities by the national energy labs, US Department of Energy, General Accounting Office, and US Geological Survey on water and power plants; currently USDOE and USGS activities on power plant water use data and reporting and where to look for available data on power plant water use; case studies on cooperation between watershed organizations and power plants on water use, temperature and water quality impacts; and opportunities for watershed organizations and the water community to get involved.

## Session O7: Water Quality Monitoring for Enforcement (1.5 hours)

Friday, May 4
3:30 pm – 5:00 pm
Room C124

*Organized by Lara Meeker, Santa Monica Baykeeper*

The workshop will cover different ways of targeting pollution sources (point and non-point) and what specifically is necessary for producing high quality, scientifically defensible, and legally admissible data. Santa Monica Baykeeper's DrainWatch program focuses on end of pipe monitoring in a highly developed watershed and has experience with using in house generated water quality data to support litigation against both businesses and larger municipalities. San Diego Coastkeeper has recently begun using its long running in-stream ambient monitoring program to identify pollutant hotspots in order to target enforcement based sampling efforts. Both keepers will discuss the importance of data management, EPA sampling recommendations, and how to design and run a success investigative sampling plan. Presenters are experienced with volunteer based sample collection and laboratory analysis and will discuss the ever so important quality assurance and quality control measures required of a citizen monitoring program in order to facilitate legal action.

Some prior experience coordinating a water quality monitoring program is recommended, however the workshop is appropriate for all levels of citizen monitoring program staff, development staff and volunteers.

## Session O8: Changing the Paradigm for Chesapeake Bay Restoration (1.5 hours)

Cancelled

## Session O9: Social Indicators + Social Marketing = Cleaner Water! (1.5 hours)

Friday, May 4
3:30 pm – 5:00 pm
Room B111-112

*Organized by Lyn Crighton, Tippecanoe Watershed Foundation*

Use the www.ClearChoicesCleanWater.org campaign to learn how to think through what behavior changes you want to see and measure; implement a pledge campaign; make a program fit your audience's knowledge and values and willingness; and implement a cutting-edge, action-focused public engagement program that transcends nearly every watershed stakeholder group. Ever wonder how to create a grassroots public education and engagement program that brings about real, measurable change in water quality? This session is for you!

Clear Choices, Clean Water is a social marketing campaign focused upon how the choices we make impact our lakes and streams. The program's unique strategy to increase awareness and knowledge about lawn care, pet waste, native plants, and septic systems is garnering the attention and financial support of dozens of agencies, non-profits, and municipalities. The ultimate vision for the campaign is to change people's behavior while simultaneously evaluating the success of such efforts.

Workshop participants will start at the beginning of the process. They will evaluate the original social indicator survey data used to develop the Clear Choices program. They will delve into pulling out key messages from this data through interactive activities, identifying the potential barriers to behavior change, and understanding the base knowledge of the targeted public. Good social marketing is grounded in good social indicator data.

Since the focal point of the Clear Choices, Clean Water campaign is a modern, interactive website (www.ClearChoicesCleanWater.org), participants will evaluate various versions of materials, taglines, photos, and graphics against core principles from the Water Words that Work methods. Workshop participants will take pledges themselves and learn how to build an effective pledge campaign. Techniques regarding messaging, the use of staged auto-responder emails, modern web concepts such as landing pages, and direct posts to Facebook will show participants how to make a campaign go viral with limited maintenance and investment.

The campaign's pledge map provides immediate feedback and gratification for the participant that they are doing their part to make a difference. For the sponsors, this map also provides built-in, real-time evaluation of the success of the campaign.

In addition to the map, pledgees are provided with an estimate of water quality improvements (*e.g.*, decrease in weeds and algae, reduced bacteria or sediment load) as a result of their pledge. These load reduction techniques and appropriate assumptions for showing such impact will be shared. The ability to show these impacts to water quality has drawn the attention and funding support of State agencies and provided program sponsors with great fodder for related grants.

The many successes, including development of branded, yet customizable, campaign materials will be discussed, as well as some of the early pitfalls regarding web development/function. Workshop participants will leave with tangible examples of the program's promotional materials and technical content. The overall objectives for the session are to teach participants how to think through what behavior changes they want; implement a pledge campaign; make a program fit their audience's knowledge and values and willingness; and implement a cutting-edge, action-focused public engagement program that transcends nearly every watershed stakeholder group. Although the campaign was developed for Indiana, it could be expanded nationally. Likewise, the concepts and lessons could be used as a model in other states, regions, or watersheds. *[Note: Bringing a laptop or mobile device may be helpful during this workshop.]*

# Concurrent Session Presentations

## Tuesday, May 1

### Session B1: Partnerships for Western Water Concerns

**Room A105**
**1:30 – 3:00 pm**

**Moderator:** **Jason Jones, Arizona Department of Environmental Quality**

1:35 pm *Federal and State Coordination on Water Policy, Water Resources, and Water Quality via the Western States Water Council and WestFAST*, **Dwane Young**, Western States Water Council

1:55 pm *Creating a Baseline Water Quality Library using Citizen-Based Monitoring Data in Southcentral Alaska*, **Rachel Lord**, Cook Inletkeeper

2:15 pm *The Umatilla Basin Project: Cooperative Exchange of Columbia River Water for Instream Flows in the Umatilla Basin, Oregon*, **Rich Marvin**, Oregon Water Resources Department

2:35 pm TBD

### Session B2: Challenges in Defining Reference Conditions, Session 1

**Room A106**
**1:30 – 3:00 pm**

**Moderator:** **Michael Miller, Wisconsin Department of Natural Resources**

1:35 pm *Establishing a National Network of Reference Watersheds and Monitoring Sites for Freshwater Streams in the United States*, **Jeff Deacon**, USGS

1:55 pm *Selecting Reference Sites for the U.S. EPA's National Aquatic Resource Surveys*, **Alan Herlihy**, Oregon State University

2:15 pm *Reference Sites and Reference Condition for Biological Condition Gradient (BCG) Development in the Upper Midwest*, **Jeroen Gerritsen**, Tetra Tech, Inc.

2:35 pm *Historical and Current Assemblages of the Youghiogheny River Watershed: Implications for Determining Reference Conditions and Conducting Restoration*, **Scott Stranko**, Maryland Department of Natural Resources

### Session B3: Assessing Water Quality Conditions in Estuaries

**Room B117-119**
**1:30 – 3:00 pm**

**Moderator:** **Hugh Sullivan, USEPA**

1:35 pm *Application of Spatially-Referenced Regression (SPARROW) Modeling to Nitrogen and Phosphorus Management in the Chesapeake Bay Watershed as part of a Total-Maximum Daily Load (TMDL)*, **Scott Ator**, USGS

1:55 pm *Evaluation of Broader Water Quality Assessments for Coastal National Parks*, **Eva DiDonato**, USNPS

2:15 pm *Integrating Estuarine Water Quality Monitoring in Northeastern National Parks at Local and Regional Scales*, **Hilary Neckles**, USGS

2:35 pm *Water Quality and Salmon in the Lower Columbia River: Results of the Lower Columbia Estuary Partnership's Ecosystem Monitoring Project*, **Lyndal Johnson**, NOAA

### Session B4: Watershed Protection: Diverse Perspectives

**Room A107-109**
**1:30 – 3:00 pm**

**Moderator:** **Diane Wilson, Pennsylvania Department of Environmental Protection**

1:35 pm *Monitoring the Effectiveness of a New Rain Garden Filtering Medium for Pollutant Removal and Urban Hydromodification Mitigation*, **Ken MacKenzie**, Urban Drainage and Flood Control District, CO

1:55 pm *Use of Ecosystem Service Markets to Protect Drinking Water in the McKenzie Watershed*, **Karl Morgenstern**, Eugene (OR) Water & Electric Board

2:15 pm *Drainage Districts as Nitrate-Nitrogen Sources to Headwater Streams*, **Anthony Seeman**, Iowa Soybean Association

2:35 pm *Assessing Traditional Ecological Knowledge and Cultural Needs in Developing Tribal Water Quality Standards and Developing Data and Collaborative Solutions to Protect and Restore Water Resources*, **Linda Moon Stumpff**, Evergreen State College

## Session B5: Monitoring and Assessing Groundwater Quality

**Room C123**
**1:30 – 3:00 pm**

**Moderator:** **Christopher Carlson, USDA Forest Service**

1:35 pm *The Groundwater-Ecosystem Connection: Multi-Scale Assessment Methods for Inventory, Mapping and Analysis*, **Allison Aldous**, The Nature Conservancy

1:55 pm *The Quality of Water in the Nation's Principal Aquifers*, **Michael Rosen**, USGS

2:15 pm *Decadal-scale Changes of Chloride, Dissolved Solids, and Nitrate Concentrations in Groundwater in the United States, 1988-2010*, **Bruce Lindsey**, USGS

2:35 pm *Temporal Changes in Groundwater Concentrations of Pesticides and Nitrate, and their Relation to Regional Agrichemical Usage Patterns and Other Potential Controlling Factors*, **Anne F. Choquette**, USGS

## Session B6: Source, Fate and Transport of Mercury

**Room C120-122**
**1:30 – 3:00 pm**

**Moderator:** **Heather Golden, USEPA**

1:35 pm *Temporal and Spatial Variability of Mercury, pH, and Non-Sea Salt Sulfate Fluxes Associated with Changes in Anthropogenic Emissions in the Pensacola Bay Region*, **Alexander Maestre**, University of West Florida

1:55 pm *The Importance of Dry Gas-Phase Mercury Deposition to Aquatic Ecosystems*, **David Krabbenhoft**, USGS

2:15 pm *Modeling Mercury Exposure at Different Scales in the McTier Creek Watershed and Edisto River Basin, SC, USA*, **Christopher Knightes**, USEPA

2:35 pm *Mercury in Atmospheric Deposition, Sediment Cores, and Fish on the East and West Coasts of North America, and in the Southern Hemisphere: Effects of Regional and Global Atmospheric Emissions*, **John Colman**, USGS

## Session B7: Effective Communication of Water Quality Science to Stakeholders, Session 1

**Room C124**
**1:30 – 3:00 pm**

**Moderator:** **Shannon Quigley-Raymond, San Diego River Park Foundation**

1:35 pm *Communicating Water-Quality Information – How to Get Started, and What's Most Effective*, **Donna Runkle**, USGS

1:55 pm *Methods, Models and Monitoring...Mundane? Or Newsworthy!*, **Kara Capelli**, USGS

2:15 pm *The Data Speaks: Is It a Language We Understand?*, **Cheryl Cheadle**, Oklahoma Conservation Commission

2:35 pm *Using Video to Communicate Scientific Findings – Habitat Connections in Urban Streams*, **Douglas Harned**, USGS

## Session C1: Expanding the Use of Volunteer Monitoring Information

**Room A105**
**3:30 – 5:00 pm**

**Moderator:** **David Chestnut, South Carolina Department of Health and Environmental Control**

3:35 pm *Integration of Volunteer Monitoring in the Myrtle Beach Urbanized Area's NPDES Phase II Stormwater Management Programs*, **Susan Libes**, Coastal Carolina University

3:55 pm *Collaboration between New Jersey's Volunteer Monitoring Community and the State Agency*, **Danielle Donkersloot**, New Jersey Department of Environmental Protection

4:15 pm *Insuring Quality Volunteer Data*, **Chris Riggert**, Missouri Department of Conservation

4:35 pm *Incorporating and Validating Citizen and Non-Agency Data for 305(b)/303(d) Assessment*, **James Beckley**, Virginia Department of Environmental Quality

## Session C2: Site Evaluation Considerations in Probability-based Surveys

**Room A106**
**3:30 – 5:00 pm**

**Moderator:** **Amina Pollard, USEPA**

3:35 pm *National River and Stream Assessment Monitoring Design & Extent Estimates*, **Tony Olsen**, USEPA

3:55 pm *Probabilistic Monitoring in the Southwestern Deserts; What are the Chances of Finding Water?*, **Patrice Spindler**, Arizona Department of Environmental Quality

4:15 pm *Navigating the Site Evaluation Phase of Probability Based Surveys*, **Jennifer Linder**, Tetra Tech, Inc.

4:35 pm *Demographic and Geographic Factors Affecting Access to Probabilistic Stream Sites in Kansas*, **Elizabeth Smith**, Kansas Department of Health and Environment

## Session C3: Emerging Technologies and Techniques in Real-time Monitoring

**Room B117-119**
**3:30 – 5:00 pm**

**Moderator:** **Charles Dvorsky, Texas Commission on Environmental Quality**

3:35 pm *Dissolved Organic Matter as a Proxy for Mercury in Aquatic Ecosystems*, **George Aiken**, USGS

3:55 pm *What Can We Learn From Continuous Measurements of Water Quality in Large Rivers?*, **Brian Pellerin**, USGS

4:15 pm *Use of Real-Time Data to Monitor the Biogeochemistry and Plankton Ecology of the Lower Columbia River*, **Michelle A. Maier**, Oregon Health and Science University

4:35 pm *The Complexities of High-Level Turbidity Measurement – How to Select the Technology to Meet Your Monitoring Needs*, **Michael Sadar**, Hach Company

## Session C4: Assessing Urban Waters

**Room A107-109**
**3:30 – 5:00 pm**

**Moderator:** **Lori Pillsbury, Oregon Department of Environmental Quality**

3:35 pm *The Response of Benthic Macroinvertebrates to Urbanization in the Los Angeles and San Gabriel Rivers Watersheds, California*, **Kristy Morris**, Council for Watershed Health

3:55 pm *Design of and Initial Results from an Integrated, Probabilistic Stream Monitoring Survey in Portland, OR*, **Jason Law**, City of Portland

4:15 pm *Modeling the Health of Wadeable Streams in Connecticut Using Biomonitoring Information and Watershed Characteristics*, **Christopher Bellucci**, Connecticut Department of Energy and Environmental Protection

4:35 pm *Geospatial Techniques for Site Selection and Estimated Benefit of Watershed-scale Implementation of Low Impact Development*, **Thomas Jabusch**, San Francisco Estuary Institute

## Session C5: Cyanobacteria Detection and Monitoring Methods

**Room C123**
**3:30 – 5:00 pm**

**Moderator:** **Jennifer Graham, USGS**

3:35 pm *Suitability of In Vivo Fluorometry and Backscatter Data to Assess Short-Term Fluctuations of a Cyanobacteria Bloom, Upper Klamath Lake, Oregon*, **Liam Schenk**, USGS

3:55 pm *Using Real-Time Monitoring for Assessing Cyanobacteria Algal Blooms and Water Quality Conditions at Two Waterbodies in the Boston Urban Area*, **Tom Faber**, USEPA

4:15 pm *Evaluation and Comparison of Sample Splitting and Cell Lysis Techniques for Recovery of Total Microcystins from Cyanobacteria*, **Keith Loftin**, USGS

4:35 pm *New Mass Spectrometry Methods for the Evaluation of Cyanobacterial Blooms*, **Claudia S. Maier**, Oregon State University

## Session C6: Predicting the Effects of Klamath River Dam Removal

**Room C120-122**
**3:30 – 5:00 pm**

**Moderator:** **Nancy Roberts-Lawler, Musconetcong Watershed Association**

3:35 pm *The Klamath Basin Secretarial Determination: Water Quality Considerations for Decisions about Dam Removal*, **Chauncey Anderson**, USGS

3:55 pm *Using Monitoring Data and Empirical Analyses to Predict the Long-Term Effects of Dam Removal on Nutrients, Water Quality, and Periphyton in the Klamath River*, **Eli Asarian**, Kier Associates

4:15 pm *Simulating Water Temperature of the Klamath River under Dam Removal and Climate Change Scenarios*, **Russell Perry**, USGS

4:35 pm *Model Development and Estimation of Short-Term Impacts of Dam Removal on Dissolved Oxygen in the Klamath River*, **Maia Singer**, Stillwater Sciences

### Session C7: Effective Communication of Water Quality Science to Stakeholders, Session 2

**Room C124**
**3:30 – 5:00 pm**

**Moderator:** **Gary Kohlhepp, Michigan Department of Environmental Quality**

3:35 pm *Beyond Graphs and Tables: Effective Communication of Water Quality Data by the Surfrider Foundation's Blue Water Task Force*, **Mara Dias** and **Charlie Plybon**, Surfrider Foundation

3:55 pm *Methods for Improved Dissemination of Water-Resources Data by the U.S. Geological Survey Arkansas Water Science Center*, **Jaysson Funkhouser**, USGS

4:15 pm *Landscaping for Water: Addressing Water Quality Impairments One Backyard at a Time*, **Kristen Travers**, Delaware Nature Society

4:35 pm *An Examination of Public Perception of Water Quality in Denver, CO*, **Jon Novick**, Denver Department of Environmental Health

## Wednesday, May 2

### Session D1: Developing Local, Regional, and National Water Quality Data Exchanges

**Room A105**
**8:00 – 9:30 am**

**Moderator:** **James Beckley, Virginia Department of Environmental Quality**

8:05 am *Cloud Based WQX Implementation for Tribal and Volunteer Communities*, **Dave Wilcox**, Gold Systems, Inc.

8:25 pm *The California Environmental Data Exchange Network (CEDEN): A Statewide Water Quality Monitoring and Visualization System for California*, **Steven Steinberg**, Southern California Coastal Water Research Project

8:45 am *Implementing an Organization-Wide Advanced Sampling Data Management System at the New South Wales Office Of Water*, **Frank Schlaeger**, KISTERS AG, Germany

9:05 am *The National Ground Water Monitoring Network: Design, Piloting, and Implementation*, **William Cunningham**, USGS

### Session D2: Challenges in Defining Reference Conditions, Session 2

**Room A106**
**8:00 – 9:30 am**

**Moderator:** **Richard Mitchell, USEPA**

8:05 am *The U.S. Geological Survey Hydrologic Benchmark Network: A Testing Ground for a National Network of Reference Watersheds and Monitoring Sites*, **Michael McHale**, USGS

8:25 am *Evaluation of Various Classification Schemes for Establishing Reference Conditions for Wisconsin's Stream Resources*, **Mike Miller**, Wisconsin Department of Natural Resources

8:45 am *Development and Evaluation of Reference Criteria for California's Perennial Streams*, **Peter Ode**, California Department of Fish and Game

9:05 am *Estimating Reference Condition for Large-Scale Surveys—Where Are We, and How Did We Get Here?*, **John Stoddard**, USEPA

## Session D3: UV Sensors: Nitrate

**Room B117-119**
**8:00 – 9:30 am**

**Moderator:** **Brian Pellerin, USGS**

8:05 am *Using Optical Sensors to Measure Nitrate Concentrations in Iowa's Rivers*, **Jessica Garrett**, USGS

8:25 am *Benefits of High Resolution In Situ Monitoring of Nitrate in Aquatic Systems*, **Brian Bergamaschi**, USGS

8:45 am *Nitrate Analysis by UV Spectrophotometry – An Unbiased Comparison of Four Models*, **Teri Snazelle** and **Janice Fulford**, USGS

9:05 am *Quantifying the Effects of Particle and Organic Matter Interference on Several Commercially Available* In Situ *Optical Nitrate Analyzers*, **John Franco Saraceno**, USGS

## Session D4: Assessing Climate Change Impacts on Water

**Room A107-109**
**8:00 – 9:30 am**

**Moderator:** **David Fuller, Port Gamble S'Klallam Tribe**

8:05 am *The Indigenous Observation Network (ION): Preliminary Results of Long-Term Water-Quality Monitoring in the Yukon River Basin to Address Climate Change*, **Ryan Toohey**, Yukon River Inter-Tribal Watershed Council

8:25 am *Vulnerability Assessment of New England Streams to Contribute to a Monitoring Network to Detect Climate Change Effects*, **Britta Bierwagen**, USEPA

8:45 am *Modeling Hydrologic Alteration and Ecosystem Response to Climate Change in the Southeastern U.S.*, **William Hughes**, USGS

9:05 am *Development of a Decision Support System for Estimating Salinity Intrusion Effects due to Climate Change on the South Carolina and Georgia Coast*, **Paul Conrads**, USGS

## Session D5: Studying Groundwater/Surface Water Interactions

**Room C123**
**8:00 – 9:30 am**

**Moderator:** **Michael Rosen, USGS**

8:05 am *Using Real-Time Geochemical Monitoring and Flood Inundation Mapping to Identify Groundwater Under the Influence of Surface Water*, **Christopher Braun**, USGS

8:25 am *Water-Table and Nutrient Fluctuations within the Floodplain of the Upper Cape Fear River, North Carolina*, **Kristen McSwain**, USGS

8:45 am *Stormwater: Benefit or Detriment to Groundwater?*, **Barbara Adkins**, City of Portland

9:05 am *Groundwater Studies with Atmospheric Trace Gases: Current Techniques, Applications, and Future Directions*, **Karl Haase**, USGS

## Session D6: Transformation and Fate of Mercury in River and Streams

**Room C120-122**
**8:00 – 9:30 am**

**Moderator:** **Christopher Knightes, USEPA**

8:05 am *Willamette Basin Mercury Trends and Analysis, 2003 – 2011*, **Agnes Lut**, Oregon Department of Environmental Quality

8:25 am *Characterizing Mercury Concentrations and Flux Dynamics in a Coastal Plain Watershed using Multiple Models*, **Heather Golden**, USEPA

8:45 am *Hydrologic Controls on Methylmercury Availability in Coastal Plain Rivers*, **Paul Bradley**, USGS

9:05 am *Applying Measures of Watershed Geomorphology and Organic Carbon to Identify Relative Risk of Mercury Contamination in Regional Landscapes: Example from the Adirondack Mountains of New York*, **Douglas Burns**, USGS

## Session D7: Influencing Behavior through Public Education

**Room C124**
**8:00 – 9:30 am**

**Moderator:** **Marisa Burghdoff, Snohomish County, WA**

8:05 am *Making Clear Choices for Clean Water: A Pledge-Based Social Marketing Campaign*, **Jill Hoffmann**, Upper White River Watershed Alliance

8:25 am *Addressing Threats from Increasing Development in the McKenzie Watershed*, **Nancy Toth**, Eugene (OR) Water & Electric Board

8:45 am *Training the Public to Identify Aquatic Invasive Plants*, **Elizabeth Herron**, University of Rhode Island

9:05 am *Applying Kitsap Public Health's Pollution Identification and Correction Methods for the Restoration & Protection of Shellfish Growing Areas*, **Eva Crim**, Kitsap (WA) Public Health District

## Session E1: Applied Biological Assessments

**Room A105**
**10:30 am – 12:00 pm**

**Moderator:** **Tony Shaw, Pennsylvania Department of Environmental Protection**

10:35 am *Determining Sediment Impairment in New Mexico using Biologic and Geomorphic Sediment Thresholds*, **Lynette Guevara**, New Mexico Environment Department

10:55 am *Interactions of Stressors in Virginia Streams*, **Lawrence Willis**, Virginia Department of Environmental Quality

11:15 am *Watershed-wide Macroinvertebrate Monitoring in Johnson Creek*, **Roy Iwai**, Multnomah County, OR

11:35 am *Monitoring Water Quality in Alaskan National Parks: Development of RIVPACS Empirical Models for Assessing Ecological Condition and Detecting Change in a Heterogeneous Landscape*, **Trey Simmons**, USNPS

## Session E2: The National Lakes Assessment 2007: Continuing Analyses and Statewide Survey Results

**Room A106**
**10:30 am – 12:00 pm**

**Moderator:** **Amina Pollard, USEPA**

10:35 am *The National Lakes Assessment: A National Assessment of Bacteria (Enteroccoci) Levels in Lakes Across The United States*, **Sarah Lehmann**, USEPA

10:55 am *Condition of Indiana Lakes Following the National Lakes Assessment*, **Stacey Sobat**, Indiana Department of Environmental Management

11:15 am *The Health of Vermont Lakes: Results of the 2007 National Lake Assessment*, **Kellie Merrell**, Vermont Agency of Natural Resources

11:35 am *Using $d^2H$ and $d^{18}O$ in Assessing Evaporation and Water Residence Time of Lakes in EPA's National Lakes Assessment*, **Renee Brooks**, USEPA

## Session E3: Real-time Surrogates

**Room B117-119**
**10:30 am – 12:00 pm**

**Moderator:** **Patrick Rasmussen, USGS**

10:35 am *Use of Real-Time Monitoring to Predict Concentrations of Select Constituents in the Menomonee River Watershed, Milwaukee, Wisconsin*, **Austin Baldwin**, USGS

10:55 am *Continuous Monitoring of Total Phosphorus in the Reedy River through Implementation of Empirical Regression Equations*, **Benjamin Hammond**, Woolpert, Inc.

11:15 am *Applications of Fluorescence Spectroscopy to Predict Wastewater in an Urban Stream*, **Jami Goldman**, USGS

11:35 am *Real-Time Monitoring to Estimate Bacteria Concentrations in Midwest Urban Streams Providing the Public with Continuous Water Quality Information*, **Gary Welker**, USEPA

## Session E4: Emerging Contaminants in Urban Waters

**Room A107-109**
**10:30 am – 12:00 pm**

**Moderator:** **Greg Pettit, Oregon Department of Environmental Quality**

10:35 am *Occurrence and Transformation of Benzodiazepine Pharmaceuticals in the Environment*, **Tina Kosjek**, Jožef Stefan Institute, Slovenia

10:55 am *Reconnaissance Investigation of Emerging Contaminants in Effluent from Wastewater Treatment Plant and Stormwater Runoff in the Columbia River Basin*, **Jennifer Morace**, USGS

11:15 am *Assessing the Extent and Magnitude of Sediment Contamination in Southern California by Two Chemicals of Emerging Concern*, **Kenneth Schiff**, Southern California Coastal Water Research Project

11:35 am *Urban Water Monitoring for Organic Contaminants*, **Laura Webb**, USEPA

## Session E5: Understanding Nutrients in Surface Water

**Room C123**
**10:30 am – 12:00 pm**

**Moderator:** **Dave Mueller, USGS**

10:35 am *Temporal Trends in Stream N Concentrations and Biogeochemical Responses to Disturbances in Long-Term Reference Watersheds*, **Alba Argerich**, Oregon State University

10:55 am *Spatially Explicit Modeling to Extend Monitoring Information in Major Regions of the Conterminous United States*, **Stephen Preston**, USGS

11:15 am *Use of Refined SPARROW Models to Better Understand the Spatial Distribution and Sources of Nutrients in Streams throughout the Mississippi/ Atchafalaya River Basin*, **Dale Robertson**, USGS

11:35 am *A Web-Based Tool for Evaluating Surface-Water Nutrient Conditions across the Pacific Northwest*, **Daniel Wise**, USGS

## Session E6: Predicting Mercury Levels in Fish and Wildlife

**Room C120-122**
**10:30 am – 12:00 pm**

**Moderator:** **Leslie McGeorge, New Jersey Department of Environmental Protection**

10:35 am *Mercury and Methylmercury in Reservoirs in Indiana*, **Martin Risch**, USGS

10:55 am *Landscape-level Patterns of Mercury Contamination of Fish in the South Central United States*, **Ray Drenner**, Texas Christian University

11:15 am *A Dynamic Model using Monitoring Data and Watershed Characteristics to Project Fish Tissue Mercury Concentrations*, **Caroline Chan**, University of Louisville

11:35 am *MERGANSER – An Empirical Model to Predict Fish and Loon Mercury in New England Lakes*, **Neil Kamman**, Vermont Agency of Natural Resources

## Session E7: Communication Using Innovative Technologies

**Room C124**
**10:30 am – 12:00 pm**

**Moderator:** **James Harrington, California Department of Fish and Game**

10:35 am *The Central Valley Monitoring Directory: A Web-based Tool to Aid Monitoring Coordination*, **Thomas Jabusch**, Aquatic Science Center

10:55 am *Improving Scientific Communication through the Use of U.S. Geological Survey Video Podcasts*, **Michelle Moorman**, USGS

11:15 am *Putting Water Quality Information into the Hands of the Public: KCWaters' New Mobile Apps*, **Jeffery Robichaud**, USEPA

11:35 am *"Show Me" – Empowering Decision Makers and Stakeholders with Data Analysis Tools to Further Communicate Science*, **Peter Sabee**, North Jackson Company, OR

## Session F1: Data Access through Innovative Web Technologies

**Room A105**
**1:30 – 3:00 pm**

**Moderator:** **Dave Wilcox, Gold Systems**

1:35 pm *Citizen Water Quality Monitoring Data Indexing – The San Diego River Story*, **Shannon Quigley-Raymond**, San Diego River Park Foundation

1:55 pm *Using Innovative Technologies to Access Environmental Data*, **Won Kim**, Oregon Department of Environmental Quality

2:15 pm *Introducing the Water Quality Data Portal*, **Nate Booth**, USGS

2:35 pm *Development of a Ground Water Data Portal for Interoperable Data Exchange and Mediation within the National Ground Water Monitoring Network (NGWMN)*, **Jessica Lucido**, USGS

## Session F2: Planning and Enhancing the 2012 National Lakes Assessment

**Room A106**
**1:30 – 3:00 pm**

**Moderator:** **Treda Grayson, USEPA**

1:35 pm *National Lakes Assessment: Overview of 2007 Results and Plans for the 2012 Assessment*, **Amina Pollard**, USEPA

1:55 pm *Results of Pilot Testing in Wisconsin to Add Rapid Macrophyte Assessment to the 2012 National Lake Assessment*, **Timothy Asplund** and **Alison Mikulyuk**, Wisconsin Department of Natural Resources

2:15 pm *Measuring Reservoir Drawdown Effects in Texas as Part of the 2012 National Lakes Assessment: A Pilot Study to Enhance National Methods*, **Anne Rogers**, Texas Commission on Environmental Quality

2:35 pm *Evaluation of Sublittoral and Littoral Indexes of Macroinvertebrate Integrity for Southern New England and Mid-Atlantic Lakes*, **James Kurtenbach**, USEPA

## Session F3: Incorporating Innovations into Network Design

**Room B117-119**
**1:30 – 3:00 pm**

**Moderator:** **Andrew Ziegler, USGS**

1:35 pm *Continuous Water-Quality Monitoring Throughout Virginia: Objectives, Study Designs, and Analysis of Data*, **Kenneth Hyer**, USGS

1:55 pm *Continuous Water Quality Monitoring in Remote Arid West Texas*, **Charles Dvorsky**, Texas Commission on Environmental Quality

2:15 pm *Regulatory Applications of Real-time Water Quality Data in Newfoundland and Labrador*, **Ryan Pugh**, Newfoundland and Labrador Department of Environment and Conservation

2:35 pm *Use of Technology to Support Tributary and Near-Shore Monitoring for the Great Lakes Restoration Initiative (GLRI)*, **Charles A. Peters**, USGS

## Session F4: Tools for Prioritizing Restoration Efforts

**Room A107-109**
**1:30 – 3:00 pm**

**Moderator:** **Lori Sprague, USGS**

1:35 pm *Recovery Potential Screening: Innovative Assessments in State "Laboratories of Democracy"*, **Douglas Norton**, USEPA

1:55 pm *Showing a Restoration Benefit in the Chesapeake Bay Watershed: The Easy, the Not So Easy, and the Very Hard*, **Mark Southerland**, Versar, Inc.

2:15 pm *Using Mapping Technology and Water Sampling to Prioritize Projects to More Effectively Improve Water Quality in Southeastern Oregon*, **Ellen Hammond**, Oregon Department of Agriculture

2:35 pm *Stormwater and Streams: Understanding the Thermal Impact of Stormwater Best Management Practices*, **Alison Watts**, University of New Hampshire

## Session F5: Monitoring Network Design and Redesign

**Room C123**
**1:30 – 3:00 pm**

**Moderator:** **Gary Rowe, USGS**

1:35 pm *Rehabilitation of the Malawi National Water Quality Monitoring Network: Lessons learned*, **Nico Rossouw**, Aurecon, South Africa

1:55 pm *Long Term Aquatic Resources Monitoring and Research Plan for Lakes Mead and Mohave, Lake Mead National Recreation Area, Nevada and Arizona*, **Kent Turner**, USNPS

2:15 pm *Initiate and Sustain Collaboration by Focusing on the Delivery of Information to the User*, **Jon Marshack**, California State Water Resources Control Board

2:35 pm *Assessing and Improving the Northeast-Midwest Region's Water Information System*, **Rachel Dawson**, National Wildlife Federation, presenting on behalf of Northeast-Midwest Institute

## Session F6: Monitoring for Impacts of Fracking, Session 1

**Room C120-122**
**1:30 – 3:00 pm**

**Moderator:** **Tony Shaw, Pennsylvania Department of Environmental Protection**

1:35 pm *The Hydraulic Fracturing (HF) Process: Real Concern or Misdirected Focus Concerning Threats to Drinking Water Supplies (DWS)*, **Peter Penoyer**, USNPS

1:55 pm *Unconventional Hydrocarbon Development and the Use of Hydraulic Fracturing – Monitoring for Water Quality Impact*, **William Kappel**, USGS

2:15 pm *Monongahela River QUEST: A Collaborative Approach to Monitoring Water Quality in the Monongahela River Basin*, **David Saville**, West Virginia University

2:35 pm *Continuous Remote Water Quality Monitoring of Headwater Streams within the Marcellus Shale Region of the Susquehanna River Basin*, **Dawn Hintz**, Susquehanna River Basin Commission

## Session F7: Monitoring and Modeling Cyanobacteria Blooms, Session 1

**Room C124**
**1:30 – 3:00 pm**

**Moderator:** **Tom Faber, USEPA**

1:35 pm *History of Cylindrospermopsis in a Large Flood-control, Hydroelectric, and Water-supply Reservoir in Northwestern Arkansas*, **Reed Green**, USGS

1:55 pm *Phytoplankton Communities of Productive Ohio Reservoirs: Importance of Cyanobacteria and Ecoregion*, **Kyle Scotese**, BSA Environmental Services, Inc.

2:15 pm *Creating Cost-effective Regional Algal Bloom Monitoring Networks*, **Alan Wilson**, Auburn University

2:35 pm *A Comparison of Modeling Approaches to Predict Taste-and-Odor Occurrences in Cheney Reservoir, Kansas*, **Kimberly Catton**, Colorado State University

## Session G1: Development and Use of Water Quality Indicators

**Room A105**
**3:30 – 5:00 pm**

**Moderator:** **Jim Dorsch, Metro Wastewater Reclamation District, Denver, CO**

3:35 pm *Effective Public Communication of Water Quality Data*, **Travis Pritchard**, San Diego Coastkeeper

3:55 pm *Using an Automated Water Quality Report Card System from the East Coast on the West Coast – A Successful Implementation*, **Lilian Busse**, San Diego Regional Water Quality Control Board

4:15 pm *Comparing Metrics Used to Assess Macroinvertebrate Collections: Ways to Communicate Your Results and Avoid Calibration Problems*, **Jim Martin**, Adrian College

4:35 pm *Ranking Matrix to Prioritize Watersheds in a TMDL Context*, **William Stringfellow**, University of the Pacific

## Session G2: Improving State/Tribal Monitoring Programs Using the National Aquatic Resource Surveys

**Room A106**
**3:30 – 5:00 pm**

**Moderator:** **Marsha Landis, USEPA**

3:35 pm *Integrating Random Probabilistic Design Surveys into Legacy Statewide Rotating Integrated Basin Studies*, **Alexander Smith**, New York State Department of Environmental Conservation

3:55 pm *State-Scale Statistically-Valid Surveys NARS and State Programs Concordance and Discord*, **David Chestnut**, South Carolina Department of Health and Environmental Control

4:15 pm *2010 National Coastal Condition Assessment: Lessons Learned in Michigan*, **Dawn Roush**, Michigan Department of Environmental Quality

4:35 pm *Nebraska's Wetland Assessment Intensification Study as Part of the National Wetland Condition Assessment Project*, **Ted LaGrange**, Nebraska Game and Parks Commission

## Session G3: Continuous Real-time Monitoring: QA from Start to Finish

**Room B117-119**
**3:30 – 5:00 pm**

**Moderator:** **Daniel Sullivan, USGS**

3:35 pm *From Quality Assurance to Data Elements: Making the Connections for Sensors*, **Revital Katznelson**, University of California, Berkeley Extension

3:55 pm *USGS Protocols for the Operation of Continuous Water-Quality Monitors*, **Richard Wagner**, USGS

4:15 pm *Estimating Missing Data in Water Quality Time Series*, **Peter G. Stoks**, RIWA, The Netherlands

4:35 pm *"... and When That Doesn't Work ..." Real-Life in Real-Time Monitoring*, **Charles Dvorsky**, Texas Commission on Environmental Quality

## Session G4: Prioritizing Emerging Contaminants for Monitoring

**Room A107-109**
**3:30 – 5:00 pm**

**Moderator:** **David Thompson, Colorado Trout Unlimited**

3:35 pm *Which Unregulated Organic Chemicals are Highest Priority as Contaminants of Emerging Concern?*, **Jerry Diamond**, Tetra Tech, Inc.

3:55 pm *Prioritization of Constituents and Analytical Methods for National Assessments by the U.S. Geological Survey*, **Joshua Valder**, USGS

4:15 pm *Use of Market Forensics to Estimate the Environmental Load of Ingredients from Consumer Products*, **Paul DeLeo**, American Cleaning Institute

4:35 pm *Drugs Here, There, and Everywhere-How One Utility Refined Its Approach to Emerging Contaminants*, **Kristin Anderson**, City of Portland

## Session G5: Healthy Drinking Water for Healthy People

**Room C123**
**3:30 – 5:00 pm**

**Moderator:** **Curtis Cude, Oregon Health Authority**

3:35 pm *The Reliability of Drinking Water Quarterly Compliance Monitoring Data as Reflected By EPA's 2nd 6-Year Review of National Primary Drinking Water Regulations*, **John Regnier**, National Rural Water Association

3:55 pm *Chemical Mixtures in Water from Public-Supply Wells in the U.S. – Occurrence, Composition, and Potential Toxicity*, **Julia Norman**, USGS

4:15 pm *Assessment of Arsenic Concentrations in Domestic Well Water in Maine*, **Martha Nielsen**, USGS

4:35 pm *The Big Four: How Arizona's Most Comprehensive Groundwater Quality Assessment Relates to Discount Shopping*, **Douglas Towne**, Arizona Department of Environmental Quality

## Session G6: Monitoring for Impacts of Fracking, Session 2

**Room C120-122**
**3:30 – 5:00 pm**

**Moderator:** **Christopher Carlson, USDA Forest Service**

3:35 pm *Pennsylvania Department of Environmental Protection (PA-DEP) Water Quality Monitoring Section, Continuous Instream Monitoring, In Response to Ever Increasing "Deep Well" Shale Gas Drilling Activity*, **Dustin Shull**, Pennsylvania Department of Environmental Protection

3:55 pm *Monitoring Potential Surface-Water Effects from Shale Gas Exploration and Extraction Activities in the Fayetteville Shale of North-Central Arkansas*, **Jaysson Funkhouser**, USGS

4:15 pm *Assessing Potential Water-Quality Effects on Shallow Groundwater from Unconventional Gas Production in the Fayetteville Shale in Arkansas*, **Tim Kresse**, USGS

4:35 pm *Groundwater Quality Assessment in the Central Arkansas Area Overlaying the Fayetteville Shale Gas Play*, **Anna Nottmeier**, University of Arkansas

## Session G7: Monitoring and Modeling Cyanobacteria Blooms, Session 2

**Room C124**
**3:30 – 5:00 pm**

**Moderator:** **Mary Skopec, Iowa Department of Natural Resources**

3:35 pm *Phytoplankton Community Dynamics in 28 North American Reservoirs/Lakes: A Multivariate Analysis*, **John Beaver**, BSA Environmental Services, Inc.

3:55 pm *Spatial and Temporal Dynamics of Microcystins and their Relation to Other Water Quality Variables in Upper Klamath Lake, Oregon*, **Sara Eldridge**, USGS

4:15 pm *Environmental Influences on Toxic and Non-Toxic Microcystis Populations in Vancouver Lake, Washington*, **Tammy Lee**, Washington State University

4:35 pm *Reassessment of Cyanotoxin Mixtures in the 2007 US EPA National Lakes Assessment*, **Keith Loftin**, USGS

# Thursday, May 3

## Session H1: Adaptive Monitoring with Volunteers

**Room A105**
**8:00 – 9:30 am**

**Moderator:** **Linda Green, University of Rhode Island**

8:05 am *State of the Malibu Creek Watershed: Results from 12 Years of Citizen Monitoring*, **Katherine Pease**, Heal the Bay

8:25 am *Maryland Stream Waders Volunteer Monitoring Program: Eleven Years of Success!*, **Daniel Boward**, Maryland Department of Natural Resources

8:45 am *Colorado River Watch's Success Over the Past Twenty-two Years*, **Julia Campus**, Colorado River Watch

9:05 am *Amphibian Monitoring with the Georgia Adopt-A-Stream Program*, **Tara Muenz**, Georgia Department of Natural Resources

## Session H2: Results from State and Regional Wetlands Assessments

**Room A106**
**8:00 – 9:30 am**

**Moderator:** **Gregg Serenbetz, USEPA**

8:05 am *California Rapid Assessment Method (CRAM) Results from the 2011 EPA National Wetland Condition Assessment*, **Cara Clark**, Moss Landing Marine Laboratories

8:25 am *Evaluating the Range of Natural Variability in Wetlands: Lessons Learned from the Rocky Mountain ReMAP Project*, **Linda Vance**, University of Montana

8:45 am *Ohio's Intensification of the National Wetland Condition Assessment (NWCA)*, **Brian Gara**, Ohio Environmental Protection Agency

9:05 am *A Comparison of the North Carolina Rapid Assessment Method with the Ohio Rapid Assessment Method using the National Wetland Condition Assessment Sites*, **Rick Savage**, North Carolina Department of Environment and Natural Resources

## Session H3: Information Systems for Accessing and Assessing Data

**Room B117-119**
**8:00 – 9:30 am**

**Moderator:** **Rick Hooper, Consortium of Universities for the Advancement of Hydrologic Science**

8:05 am *StreamChemDB: Development of a Web-Accessible Database of Stream Chemistry for U.S. Forest Service Experimental Forests and National Science Foundation Long-Term Ecological Research Sites*, **Effie Greathouse**, Oregon State University

8:25 am *Tackling Data Comparability for Multiple Uses*, **Cristina Grosso**, San Francisco Estuary Institute

8:45 am *Recovery Potential Screening: Online Tools for Assessing Watershed Restorability*, **Tatyana DiMascio**, USEPA

9:05 am *Water Quality Data Assessment Using Principle Component Analysis, Case Study: Qazvin, Iran*, **Saeid Ashraf Vaghefi**, Amirkabir University of Technology, Iran

## Session H4: Emerging Contaminants in Fish

**Room A107-109**
**8:00 – 9:30 am**

**Moderator:** **Kathy Kuivila, USGS**

8:05 am *A Demonstration of the WERF Trace Organic Compounds Database Management System for Analyzing Impacts of Trace Organic Compounds on Aquatic Populations and Communities*, **Jeffrey White**, Tetra Tech, Inc.

8:25 am *Passive Samplers: Considerations to Help Make Your Study a Success*, **David Alvarez**, USGS

8:45 am *Emerging and Legacy Contaminants in POCIS, SPMDs, Sediments, and the Largescale Sucker (Catostomus macrocheilus) in the Lower Columbia River – USGS ConHab Project*, **Elena Nilsen**, USGS

9:05 am *Analysis of Fish Tissue in the National Rivers and Streams Assessment Focusing on a National Assessment of Organo-halogen Compounds in Fish from U.S. Rivers*, **John Wathen**, USEPA

## Session H5: Understanding Nutrients: Groundwater/ Surface Water Interactions

**Room C123**
**8:00 – 9:30 am**

**Moderator:** **Neil Dubrovsky, USGS**

8:05 am *Surface Water and Groundwater Interaction and Processes Affecting Nitrogen Speciation in a Karst Aquifer*, **Barbara Mahler**, USGS

8:25 am *Hydrologic and Geochemical Factors Influencing Stream Vulnerability to Legacy Nutrients*, **Anthony Tesoriero**, USGS

8:45 am *Nutrient Loads and Concentrations in the Nation's Streams During Base Flow*, **Norman Spahr**, USGS

9:05 am *Nitrate Trends in the Mississippi River and its Tributaries: Evidence of Groundwater/Surface Water Interaction*, **Lori Sprague**, USGS

## Session H6: Deepwater Horizon Spill Monitoring

**Room C120-122**
**8:00 – 9:30 am**

**Moderator:** **Steve Wolfe, Florida Department of Environmental Protection**

8:05 am *Response to an Oil Spill: USGS Protocols and Procedures for Shoreline Sampling Under Potentially Hazardous Conditions*, **Franceska Wilde**, USGS

8:25 am *Throwing a Scientist to the Wolves: Lesson Learned by a Scientist during the Deepwater Horizon Response*, **Wade Bryant**, USGS

8:45 am *Organic Contaminants and Trace Elements in Water and Sediment Sampled in Response to the Deepwater Horizon Oil Spill*, **Lisa Nowell**, USGS

9:05 am *An Investigation of the Relationship Between Contamination in Sediments and the Water Column following the 2010 Deepwater Horizon Gulf of Mexico Oil Spill and Hydrocarbons Sampling Distribution in Subsurface Sediment and Water Samples*, **Chelsea Spier**, University of the Pacific

## Session H7: Pathogen Source Identification and Management

**Room C124**
**8:00 – 9:30 am**

**Moderator:** **Laura Webb, USEPA**

8:05 am *The Poop Stops Here: E. Coli Sampling for Volunteer Water Quality Monitors*, **Jacob Apodaca**, Lower Colorado River Authority

8:25 am *Detecting and Eliminating an Illicit Source of Bacteria in an Urban Watershed in Minnesota*, **Matthew Loyas**, Capitol Region Watershed District, MN

8:45 am *Implementation of a Wildlife Scat Monitoring Program to Determine Giardia and Cryptosporidium Prevalence and Concentrations from Fecal Deposits in the Protected Bull Run Watershed, Oregon*, **Zoe Rodriguez del Rey**, City of Portland

9:05 am *Bacteria Contamination in Urban Water Monitoring using Multiple Analytical Tools*, **Laura Webb**, USEPA

## Session I1: Effects of Diel Cycling on Stream Conditions

**Room A105**
**10:00 – 11:30 am**

**Moderator:** **David Nimick, USGS**

10:05 am *Diel Cycles in Major and Trace Elements in Streams: Anthropogenic Effects on, and Additions to, Natural Cycles*, **Pamela Reilly**, USGS

10:25 am *Diel Variation in Sediment Load in a 5th Order River in SE Idaho – Temporal Variation and Impacts on Load Estimates*, **Richard Inouye**, National Science Foundation

10:45 am *Diel Cycles Confound Synoptic Sampling in a Metal-Contaminated Stream*, **Briant Kimball**, USGS

11:05 am *Effects of Daily Fluctuations in Streamflow on Stream Metabolic Activity Calculations*, **Alba Argerich**, Oregon State University

## Session I2: Applications and Analyses using National Aquatic Resource Surveys Data and Geospatial Information

**Room A106**
**10:00 – 11:30 am**

**Moderator:** **Tommy Dewald, USEPA**

10:05 am *Applying NHDPlus to Support the NLA and NRSA*, **Cindy McKay**, Horizon Systems Corporation

10:25 am *Creating the Spatial Framework for National Aquatic Resource Surveys (NARS): Melding National Aquatic Data Sets with Survey Requirements*, **Marc Weber**, USEPA

10:45 am *The Development of a Reference Lake Screening Tool for Natural Lakes in the Prairie Pothole Region of the United States Using 2007 NLA Land Use and Water Chemistry Data*, **Joseph Hoffmann**, Minnesota State University – Mankato

11:05 am *Using AttILA for Landscape-based GIS Analyses in the Identification of Reference Lakes for EPA's 2012 National Lakes Assessment*, **David F. Cox III**, USEPA

## Session I3: Data Quality Management Tools and Techniques

**Room B117-119**
**10:00 – 11:30 am**

**Moderator:** **Terry Schertz, USGS**

10:05 am *Bayesian Surprise as a Tool for Validating Data from Sensor Networks*, **Wesley Brooks**, University of Wisconsin – Madison

10:25 am *Quality Control of Observational Datasets Collected in a Real-Time Monitoring Network*, **Christopher Fuller**, Clarkson University

10:45 am *Streamlining and Automating Water-quality Time-series Records Processing*, **Patrick Rasmussen**, USGS

11:05 am *Visualization and Exploration of Time-Dense Monitoring Data with the USGS Data Grapher*, **Stewart Rounds**, USGS

## Session I4: Monitoring for the Effectiveness of TMDLs

**Room A107-109**
**10:00 – 11:30 am**

**Moderator:** **Tatyana DiMascio, USEPA**

10:05 am *Overview of Washington State's TMDL Effectiveness Monitoring Program*, **Scott Collyard**, Washington Department of Ecology

10:25 am *TMDL Effectiveness Assessments for the Union River and Dungeness River Watersheds, Washington*, **Corey Godfrey**, The Cadmus Group, Inc.

10:45 am *Development of a Monitoring Program for Evaluating Water Quality Improvements and TMDL Effectiveness in Bear Creek, Oregon*, **Bill Meyers**, Oregon Department of Environmental Quality and **Corey Godfrey**, The Cadmus Group, Inc.

11:05 am *Recommendations and Tools for Developing TMDL Effectiveness Monitoring Plans*, **Laura Blake**, The Cadmus Group, Inc.

## Session I5: Monitoring for Nutrient Impacts and Criteria Development

**Room C123**
**10:00 – 11:30 am**

**Moderator:** **Timothy Asplund, Wisconsin Department of Natural Resources**

10:05 am *Adapting a Biological and Water Quality Monitoring Program to Supply Information Required for Implementing Numeric Nutrient Criteria*, **Robert Miltner**, Ohio Environmental Protection Agency

10:25 am *A Biological Condition Gradient Approach for Using Diatoms to Assess Nutrient Conditions: New Jersey Streams*, **Donald Charles**, Academy of Natural Sciences, Philadelphia

10:45 am *The Use of Structural and Functional Indicators to Develop Numeric Nutrient Criteria for Utah's Wadeable Streams*, **Mike Shupryt**, Utah Department of Environmental Quality

11:05 am *Using Multiple Lines of Evidence to Assess Biostimulatory Effects in Central Coastal California Surface Waters*, **Karen Worcester**, Central Coast Regional Water Quality Control Board

## Session I6: Dam Removal and Associated Water Quality Impacts

**Room C120-122**
**10:00 – 11:30 am**

**Moderator:** **Chauncey Anderson, USGS**

10:05 am *Tribal Water Quality Monitoring Programs in the Klamath River and Major Tributaries*, **Ken Fetcho**, Yurok Tribe and **Crystal Bowman**, Karuk Tribe

10:25 am *Dillon Dam – To Pipe or not to Pipe? Evaluation of a Umatilla River Irrigation Diversion Structure*, **Greg Silbernagel**, Umatilla Basin Watershed Council

10:45 am *Monitoring and Assessing Water Quality Issues for the Martis Creek Lake Dam Project*, **J.J. Baum**, USACE

11:05 am *Assessing Dam Removals on a Shoestring: Underwater Photos Using Digital Cameras to Complement Bug Data*, **Nancy Roberts-Lawler** and **Beth Styler Barry**, Musconetcong Watershed Association

## Session I7: National Monitoring Network of Coastal Waters and Their Tributaries

**Room C124**
**10:00 – 11:30 am**

**Moderator:** **Michael Yurewicz, USGS**

10:05 am *Sources and Transport of Nitrogen to Estuaries along the U.S. Atlantic Coast*, **Anne Hoos**, USGS

10:25 am *NOAA's National Estuarine Eutrophication Assessment*, **Gunnar Lauenstein**, NOAA

10:45 am *Nutrient and Dissolved Oxygen Monitoring for the Delaware Basin Demonstration Project of the National Monitoring Network for Coastal Waters*, **Jeffrey Fischer**, USGS

11:05 am *Adapting Continuous Suspended Sediment and Water Quality Monitoring for New Findings in San Francisco Bay*, **David Schoellhamer**, USGS

## Session J1: Strengthening Monitoring Programs through Nonprofit / Nonprofit Collaboration

**Room A105**
**1:00 – 2:30 pm**

**Moderator:** **Susan Higgins, Missouri Department of Natural Resources**

1:05 pm *Unique Partnerships in Volunteer Water Quality Monitoring: Successes and Challenges from a Year as an AmeriCorps VISTA as the Link between Colorado Trout Unlimited and Colorado River Watch*, **David Thompson**, Colorado River Watch

1:25 pm *Benefits and Challenges of Creative Partnerships to Monitor River Restoration Projects*, **Merritt Frey**, River Network

1:45 pm *A Watershed Project of a Different Color: A Cooperative Monitoring and Stewardship Project between the Springfield Public Schools and the McKenzie Watershed Council*, **Stuart Perlmeter**, Springfield (OR) Public Schools

2:05 pm *Ozarks Water Watch Project*, **Susan Higgins**, Missouri Department of Natural Resources

## Session J2: Innovations in Data Capture and Tracking

**Room A106**
**1:00 – 2:30 pm**

**Moderator:** **Sarah Lehmann, USEPA**

1:05 pm *Using Electronic Field Forms for State Monitoring Programs*, **Jason Pappani**, Idaho Department of Environmental Quality

1:25 pm *Developing Electronic Field Forms for use in the National Aquatic Resource Surveys*, **Marsha Landis**, USEPA

1:45 pm *Lessons Learned from the National Aquatic Resource Surveys (NARS)*, **Dennis McCauley**, Great Lakes Environmental Center, Inc.

2:05 pm *Illuminating the NARS Data Entry Black Box: What Happens Between Sample Collection and Data Availability for Use in Assessments?*, **Karen Blocksom**, USEPA

## Session J3: Innovative Techniques for Monitoring, Session 1

**Room B117-119**
**1:00 – 2:30 pm**

**Moderator:** **Jane Caffrey, University of West Florida**

1:05 pm *Assessing the Nearshore Waters of the Great Lakes with a Towed Sensor Array*, **Glenn Warren**, USEPA

1:25 pm *Water-Quality Mapping in the Caloosahatchee River, San Carlos Bay, Matlacha Pass, and Pine Island Sound, Florida*, **Eduardo Patino**, USGS

1:45 pm *Mobile Environmental Monitoring Platform: Water Monitoring on Wheels*, **Ryan Pugh**, Newfoundland and Labrador Department of Environment and Conservation

2:05 pm *Telediagnosis: A New Concept for Rapid Assessment of Accidental or Intentional Water Resource Contamination*, **Estelle Baurès**, Advanced School of Public Health, France

## Session J4: Nonpoint Source Monitoring for TMDL Implementation

**Room A107-109**
**1:00 – 2:30 pm**

**Moderator:** **Michael Eberle, USFS**

1:05 pm *Estimation of Total Maximum Daily Load (TMDL) in Agricultural Watersheds using a Combined Continuous and Periodic Sampling Approach*, **Shelly Gulati**, University of the Pacific

1:25 pm *From Control Site to Treated Site: The Challenge of Quantifying Improvements at Walters Creek*, **Annie Gillespie**, Morro Bay National Estuary Program

1:45 pm *Ecological Function Approach to TMDL Prioritization and Implementation*, **Robert Hall**, USEPA

2:05 pm *Impaired Waters Within or Near US Forest Service Properties: a National Geospatial Assessment*, **Douglas Norton**, USEPA

## Session J5: Nutrient Source Tracking using Multiple Lines of Evidence

**Room C123**
**1:00 – 2:30 pm**

**Moderator:** **Mary Giorgino, USGS**

1:05 pm *Stable Isotope Mixing Models as a Tool for Tracking Sources of Water and Water Pollutants*, **Donald Phillips**, USEPA

1:25 pm *Combined Use of Stable Isotopes and Hydrologic Modeling to Better Understand Nutrient Dynamics in Highly Altered Systems*, **Megan Young**, USGS

1:45 pm *Evaluation of Nutrient Concentrations, Sources, and Pathways in Three Urban Streams in Durham County, North Carolina*, **Kristen McSwain**, USGS

2:05 pm *Lessons Learned from 20+ Years of Piggybacking Nutrient and Organic Matter Studies onto Large-Scale Monitoring Programs*, **Carol Kendall**, USGS

## Session J6: Bioaccumulation of Methylmercury in Aquatic Ecosystems

**Room C120-122**
**1:00 – 2:30 pm**

**Moderator:** **Mark Brigham, USGS**

1:05 pm *It's Not What it Looks Like: Are Temporal Trends in Fish Mercury Levels Affected More by Environmental Conditions or Loadings?*, **James Glover**, South Carolina Department of Health and Environmental Control

1:25 pm *Methylmercury Accumulation in the Base of an Estuarine Food Web; Sinclair Inlet, WA*, **Patrick Moran**, USGS

1:45 pm *Does Dietary Carbon Source Influence Methylmercury Bioaccumulation by Macroinvertebrates and Fishes in Small Streams?*, **Karen Riva-Murray**, USGS

2:05 pm *Variability in Mercury Bioaccumulation Factors (BAFs) for Riverine Fish across the United States*, **Barbara Scudder Eikenberry**, USGS

## Session J7: Standardizing and Enhancing Biological Assessment Methods

**Room C124**
**1:00 – 2:30 pm**

**Moderator:** **Shannon Hubler, Oregon Department of Environmental Quality**

1:05 pm *Standardizing Bioassessment Protocols: Collaboration Without a Carrot or a Stick*, **Gretchen Hayslip**, USEPA

1:25 pm *Standardizing and Enhancing Bioassessment Protocols: Developing a Science-Based Performance Measure of Stream Condition*, **Deb Lester**, King County (WA) Department of Natural Resources

1:45 pm *A Tool to Evaluate the Health of Streams and Rivers within the Chesapeake Bay Watershed*, **Katherine Foreman**, University of Maryland

2:05 pm *Development of a Fish Assemblage Tolerance Index for the National Rivers and Streams Assessment*, **David Peck**, USEPA

## Session K1: Evaluating Monitoring Program Needs and Outcomes

**Room A105**
**3:30 – 5:00 pm**

**Moderator:** **Elizabeth Herron, University of Rhode Island**

3:35 pm *A Summary of Findings on Citizen Monitoring Contributions Towards the Monitoring of California Waters and Beneficial Uses*, **Erickson Burres**, California State Water Resources Control Board

3:55 pm *Assessing the Needs of Extension-affiliated Volunteer Monitoring Programs*, **Linda Green**, University of Rhode Island

4:15 pm *What about the Volunteers? A Toolkit for Evaluating Learning Outcomes of Volunteer Participation in Water Quality Monitoring Programs*, **Tina Phillips**, Cornell University

4:35 pm *Analysis and Reporting of Volunteer-Collected Data in the Deer Creek Watershed, St. Louis County, Missouri*, **Danelle Haake**, Litzsinger Road Ecology Center

## Session K2: Using the National Aquatic Resource Surveys to Support Regional/State/ Tribal Information and Decision Needs

**Room A106**
**3:30 – 5:00 pm**

**Moderator:** **Aaron Borisenko, Oregon Department of Environmental Quality**

3:35 pm *An Example of Using National, State and Local Surveys to Support an Integrated Basin Water Quality Assessment: The Willamette Basin (Oregon) Rivers and Streams Assessment*, **Michael Mulvey**, Oregon Department of Environmental Quality

3:55 pm *Increasing State Biological Monitoring Capabilities Using Probabilistic Monitoring Strategies*, **Jason Hill**, Virginia Department of Environmental Quality

4:15 pm *California's Successful Transition from Western Pilot EMAP to a State Funded Wadeable Streams Assessment Program and Biocriteria*, **James Harrington**, California Department of Fish and Game

4:35 pm *Virginia's 2010 Near-Shore Oceanic Survey: Characterizing the Commonwealth's 6th Order Near-Shore Oceanic Watersheds*, **Donald Smith**, Virginia Department of Environmental Quality

## Session K3: Innovative Techniques for Monitoring, Session 2

**Room B117-119**
**3:30 – 5:00 pm**

**Moderator:** **Mike Eberle, USFS**

3:35 pm *Improving Upon Decades of Poor Quality Solids Data in Urban Stormwater through use of an Automated Depth-Integration Sample Collection System*, **Bill Selbig**, USGS

3:55 pm *Quantifying Solids and Phosphorous Loads Captured by Catch Basins and Manholes*, **Melissa Baker**, Capitol Region Watershed District, MN

4:15 pm *Quantifying Suspended Sediment Sources, Sinks, and Residence Times using Radioisotopic Methods and Reservoir Theory*, **Katherine Skalak**, USGS

4:35 pm *Instream Turbidity Monitoring Used to Assess Landslide Hazards in the Western Cascades*, **Steven Sobieszczyk**, USGS

## Session K4: Identifying and Protecting Healthy Watersheds

**Room A107-109**
**3:30 – 5:00 pm**

**Moderator:** **Laura Gabanski, USEPA**

3:35 pm *Maryland's Greenprint: A Model for Targeting and Protecting the State's Most Ecologically Valuable Lands and Watersheds*, **Christine Conn**, Maryland Department of Natural Resources

3:55 pm *Mapping Vermont's Critical Watershed Resource Areas: Data Integration using the Recovery Potential and Healthy Watersheds Approach*, **Neil Kamman**, Vermont Agency of Natural Resources

4:15 pm *What is a Healthy Watershed? Minnesota's Systems Approach to Measuring, Monitoring and Communicating*, **Ian Chisholm**, Minnesota Department of Natural Resources

4:35 pm *Developing California's Healthy Streams Partnership: Integrated Assessments and Information Delivery through the California Water Quality Monitoring Council's Ecosystem Health Internet Portal*, **Karen Larsen**, California State Water Resources Control Board

## Session K5: Using Diverse Data Sources for Assessment

**Room C123**
**3:30 – 5:00 pm**

**Moderator:** **Charles Kovatch, USEPA**

3:35 pm *Managing and Sharing BP Oil Spill Data from the Gulf of Mexico*, **Jeffrey White**, Tetra Tech, Inc.

3:55 pm *Lessons Learned from Creating Multi-Agency Nutrient Datasets to Estimate Loads and Calibrate Regional Nutrient SPARROW models*, **David Saad**, USGS

4:15 pm *Management and Sharing of Water Resources Data as a Basis for Rapid TMDL Estimating*, **Elly P.H. Best**, USEPA

4:35 pm *Applied Open Standards in Integrated Water Information Management: Enabling the "World Water Online" Vision*, **Michael Natschke**, KISTERS AG, Germany

### Session K6: Strengthening Monitoring Programs through Government-to-Government Collaboration

**Room C120-122**
**3:30 – 5:00 pm**

**Moderator:** **Susan Holdsworth, USEPA**

3:35 pm *Water Quality Sampling on Lake Mead, Arizona – Nevada: Interagency Sampling Events to Facilitate the Comparability of Data*, **Todd Tietjen**, Southern Nevada Water Authority

3:55 pm *From the Ground Up*, **Pixie Hamilton**, USGS

4:15 pm *Partnering for Monitoring and Research Across the Great Lakes: The Cooperative Science and Monitoring Initiative*, **Paul Horvatin**, USEPA

4:35 pm *Water-Quality Modeling in the United States and Canada for the Souris-Assiniboine-Red River Transboundary Watersheds*, **Craig Johnston**, USGS

### Session K7: Monitoring for Microbial Pathogens

**Room C124**
**3:30 – 5:00 pm**

**Moderator:** **David Chestnut, South Carolina Department of Health and Environmental Control**

3:35 pm *Portland Water Bureau's One-Year Cryptosporidium Study in the Bull Run Watershed*, **Zoe Rodriguez del Rey**, City of Portland

3:55 pm *Monitoring Indicator Bacteria Growth in Marine Sediment Causing Shellfish Harvest Closures*, **Joy Michaud**, Herrera Environmental Consultants

4:15 pm *Real-Time Monitoring of Water Quality through a Holistic Approach to Particle Characterization*, **Tawnya Peterson**, Oregon Health and Science University

4:35 pm *Non-stormwater Discharge Pollution Loading in Two Mid-Atlantic Subwatersheds and Implications for Nutrient and Bacteria Total Maximum Daily Loads*, **Lori Lilly**, Center for Watershed Protection

## Friday, May 4

### Session L2: Leveraging State Partners to Assist the National Aquatic Resource Surveys and State Level Data Collection

**Room A105**
**8:00 – 9:30 am**

**Moderator:** **Barbara Scott, Kentucky Division of Water**

8:05 am *Partnership Opportunities for Statewide Assessments of Lake Condition*, **Steven Heiskary**, Minnesota Pollution Control Agency

8:25 am *Capitalizing on an Opportunity: An Example of a Multiple Collaborator Endeavor Formed Around the National Wetland Condition Assessment in North Dakota*, **Shawn DeKeyser**, North Dakota State University

8:45 am *Sample It Once, Use It Twice. The Integration of NARS Surveys with State and Volunteer Data for Water Resource Management Decisions in Iowa*, **Mary Skopec**, Iowa Department of Natural Resources

9:05 am *Alaska's Statistical Monitoring Surveys-Implementation through Partnerships*, **Terri Lomax**, Alaska Department of Environmental Conservation

### Session L4: Monitoring Effectiveness of BMPs for Urban Stormwater

**Room A106**
**8:00 – 9:30 am**

**Moderator:** **Diane Switzer, USEPA**

8:05 am *Implementing an In-Stream Stormwater Monitoring Program to Measure BMP Effectiveness*, **Chris French**, Virginia Commonwealth University

8:25 am *Evaluation of Effects of Middleton's Storm Water Management Activities on Streamflow and Water Quality Characteristics of Pheasant Branch, 1975-2008*, **Warren Gebert**, USGS

8:45 am *Assessing Watershed Scale Responses to BMP Implementation in Urban Watersheds*, **John Jastram**, USGS

9:05 am *Portland Documents Stormwater Management Success Using Green Streets*, **Tim Kurtz**, City of Portland

## Session L5: Data Sharing and Presentation for Diverse User Groups

**Room B117-119**
**8:00 – 9:30 am**

**Moderator:** **Linda Vance, Montana Natural Heritage Program**

8:05 am *Development of a Web-Based Data Repository to Assess Land Use Change and Surface-Water-Quality in the Piceance Basin, Northwest Colorado 1959-2009*, **Jennifer Moore**, USGS

8:25 am *Niche Portals – Filling the Gap between Large-Scale Data Servers and the Needs of User Groups*, **Kamran Syed**, North Jackson Company, OR

8:45 am *Tools for Integrated Water Management – The San Diego Experience*, **Joe Purohit**, EcoLayers, Inc.

9:05 am *The State of Missouri's Streams-Showcasing Missouri Stream Team Invertebrate Data: 1993-2010*, **Holly Neill**, Missouri Stream Team Watershed Coalition

## Session L7: Monitoring and Predicting Cyanobacteria Blooms in Water Supplies

**Room C123**
**8:00 – 9:30 am**

**Moderator:** **Michael McDonald, USEPA**

8:05 am *Co-Occurrence of Cyanobacterial Toxins and Taste-and-Odor Compounds in Midwestern Drinking-Water Supply Reservoirs*, **Lenore Tedesco**, Wetlands Institute

8:25 am *Fate and Transport of Cyanobacteria-Related Toxins and Taste-and-Odor Compounds from Milford Reservoir and Other Upstream Reservoir Releases in the Kansas River, Kansas, 2011*, **Jennifer Graham**, USGS

8:45 am *Multi-year Trends in Microcystis aeruginosa and Associated Microcystin Toxin in the Klamath River System: Implications for Sampling and Public Health*, **Jacob Kann**, Aquatic Ecosystem Sciences LLC

9:05 am *A Framework for the Implementation of a Cost Effective Cyanobacteria Harmful Algal Bloom (Chab) Monitoring Program – A Case Study of Hypertrophic Lake Taihu, China*, **Timothy Otten**, University of North Carolina – Chapel Hill

## Session M2: Evaluating Statewide Probabilistic and Fixed Site Monitoring Programs

**Room A105**
**10:00 – 11:30 am**

**Moderator:** **Mike Ell, North Dakota Department of Health**

10:05 am *A Comparison of EPA and State Probabilistic Monitoring Methodologies in Arizona*, **Jason Jones**, Arizona Department of Environmental Quality

10:25 am *North Carolina's Assessment of the Attainment of Water Quality Standards Conducted through Probabilistic Monitoring*, **Steven Kroeger**, North Carolina Division of Water Quality

10:45 am *Probabilistic versus Fixed Site Monitoring: Results from a Decade of Rotating Basin Design Monitoring in Oklahoma*, **Brooks Tramell**, Oklahoma Conservation Commission

11:05 am *Ecological Condition Assessments of California's Perennial Wadeable Streams: Highlights from the Surface Water Ambient Monitoring Program's Perennial Streams Assessment (2000-2007)*, **Shakoora Azimi-Gaylon**, California State Water Resources Control Board

## Session M3: Evaluation of New In-situ Sensors

**Room A106**
**10:00 – 11:30 am**

**Moderator:** **Brian Bergamaschi, USGS**

10:05 am *A Microfluidic Chemical-Spectrophotometry (MCS) System for In-situ Monitoring of Heavy Metals*, **Justus Ndukaife**, Purdue University

10:25 am *Recommendations for Improving In-Situ Dissolved Organic Carbon Fluorescence Sensors Based on Analysis of Nationwide Excitation Emission Matrix (EEM) Data*, **Kenna Butler**, USGS

10:45 am *Real-time Monitoring of Dissolved Organic Matter (DOM) Amount, Composition, Source and Reactivity Using Fluorescence Sensors: Applications for Drinking Water Quality*, **Tamara Kraus**, USGS

11:05 am *The Effects of Iron on the Optical Properties of Dissolved Organic Matter*, **George Aiken**, USGS

## Session M4: Identifying Causes of Impairment Due to Multiple Stressors

**Room B117-119**
**10:00 – 11:30 am**

**Moderator:** **Jeff Thomas, Ohio River Valley Water Sanitation Commission**

10:05 am *A Long Term Groundwater Improvement Project in Oregon's Willamette Valley*, **Audrey Eldridge**, Oregon Department of Environmental Quality and **Kevin Fenn**, Oregon Department of Agriculture

10:25 am *Indicators, Diagnosis, Reduced Uncertainty, Criteria Assessment, Policy Setting and Discovery: Advancing Applications Using High Frequency Water Quality Monitoring Data in the Chesapeake Bay Program Partnership*, **Peter Tango**, USGS

10:45 am *Evaluating Effects of Atmospheric and Geologic Disturbance on a Southwest Alaska Lake*, **Claudette Moore**, USNPS

11:05 am *What Happened to the Neighborhood? Separating the Effects of Organics of Emerging Concern from Other Environmental Stressors on Aquatic Biological Communities*, **Jerry Diamond**, Tetra Tech, Inc.

## Session M5: Contamination of Drinking Water Supplies

**Room B111-112**
**10:00 – 11:30 am**

**Moderator:** **Julia Campus, Colorado River Watch**

10:05 am *Investigating the Source of Nitrate in a Salinas Valley Drinking Water Supply Well with Isotopic Tracers*, **Marianne Holtz**, California State University – East Bay

10:25 am *Groundwater Quality in the San Fernando-San Gabriel Groundwater Basins, CA*, **Justin Kulongoski**, USGS

10:45 am *Well Assessment Decision Support System – A Web Tool for Evaluating the Vulnerability of Public-Supply Wells*, **Jessica Thompson**, USGS

11:05 am *Solar Powered Mixers' Effects on Nitrate, Nitrite, Phosphate, and TKN Concentrations in a Drinking Water Reservoir*, **Jason Heberling**, Birmingham (AL) Water Works Board

## Session M6: Monitoring Mercury in the Environment: Data Synthesis and Integration

**Room C123**
**10:00 – 11:30 am**

**Moderator:** **Chris Piehler, Louisiana Department of Environmental Quality**

10:05 am *Sediment Mercury and Methylmercury Concentrations Across the Coterminous United States*, **David Krabbenhoft**, USGS

10:25 am *Informatics Approaches for Reuse and Modeling of Heterogeneous Mercury Data*, **Melinda Neville**, University of Maine

10:45 am *A Multi-media Synthesis of Data on Mercury in the Great Lakes Region: An Overview of Procedures and Key Findings*, **James Wiener**, University of Wisconsin – La Crosse

11:05 am *Application and Validation of the National Descriptive Model of Mercury in Fish (NDMMF)*, **Mark Brigham**, USGS

## Session M7: Detection, Fate and Transport of Pesticides

**Room C124**
**10:00 – 11:30 am**

**Moderator:** **Alisa Phillips-Griggs, Farmington River Watershed Association**

10:05 am *Water Quality Monitoring Needs for Evaluating the Risk of Pesticide Registration Actions to Threatened and Endangered Species*, **Tony Hawkes**, National Marine Fisheries Service

10:25 am *Continuous Monitoring for Pesticides in a Pacific Northwest Freshwater Off-Channel Habitat using a Lipid-Free Tubing Passive Sampling Device*, **Philip Janney**, Oregon State University

10:45 am *An Assessment of Pesticides, Trace Elements, and Their Potential to Affect Salmonids the Hood River Basin, Oregon, 1999-2009*, **Whitney Temple**, USGS

11:05 am *Pesticides of Emerging Concern: Adapting Analytical Methods in Support of Field Studies*, **Kathryn Kuivila**, USGS

## Session M8: Statistical Approaches for Assessing Water

**Room C120-122**
**10:00 – 11:30 am**

**Moderator:** **Douglas McLaughlin, National Council for Air and Stream Improvement, Inc.**

10:05 am *Measured Data are Uncertain: So What??*, **Daren Harmel**, USDA-ARS

10:25 am *Multivariate Methods for Nondetects, Part 2*, **Dennis Helsel**, Practical Stats

10:45 am *Spatially Explicit Predictors of Indicators of Water Quality: Example from Wadeable Streams in the U.S.*, **Mostafa Shirazi**, USEPA

11:05 am *Evaluating Wetland Health: Avoiding Indexes via a Multivariate Latent Variable Model*, **Jennifer Hoeting**, Colorado State University

## Session O1: Strengthening Monitoring Programs through Nonprofit / Government Collaboration

**Room A105**
**3:30 – 5:00 pm**

**Moderator:** **Peter Tennant, Ohio River Valley Water Sanitation Commission**

3:35 pm *SMART Monitoring-A Proposal for Coordinating Federal, State and Local Monitoring Programs-The Results of a Pilot Program in Massachusetts*, **Warren Kimball**, Massachusetts Department of Environmental Protection

3:55 pm *Partnering to Support Monitoring Programs at State and Local Level*, **Alyse Greenberg**, Stony Brook-Millstone Watershed Association

4:15 pm *Developing a Water Monitoring Consortium to Support NJ's Barnegat Bay Action Plan*, **Leslie McGeorge**, New Jersey Department of Environmental Protection

4:35 pm *Strengthening Regional Monitoring Programs through the Development of a Collaboration Network: The California Water Quality Monitoring Collaboration Network*, **Erickson Burres**, California State Water Resources Control Board

## Session O3: No Money, New Issues. How Do We Address Emerging Threats?

**Room A106**
**3:30 – 5:00 pm**

**Moderator:** **Julie Wood, Charles River Watershed Association**

3:35 pm *Volunteer Road Salt Monitoring: Assessing Impacts of Winter Safety Measures on Stream Quality in Wisconsin*, **Kristine Stepenuck**, University of Wisconsin – Madison

3:55 pm *Development of a Statewide Volunteer Monitoring Program for Aquatic Invasive Species: Challenges and Lessons Learned in Michigan*, **Jo Latimore**, Michigan State University

4:15 pm *Coordinated Monitoring Efforts in Shale-Gas Plays: Case Study Pennsylvania Marcellus Monitoring*, **Julie Vastine** and **Kathryn Tomsho**, Alliance for Aquatic Resource Monitoring (ALLARM), Dickinson College

4:35 pm *Leveraging Monitoring Networks to Meet Multiple Water Quality Data Needs*, **Tony Shaw**, Pennsylvania Department of Environmental Protection

## Session O4: Assessment Approaches for Habitat Protection and Restoration

**Room B117-119**
**3:30 – 5:00 pm**

**Moderator:** **Ed Chadd, Clallam County Public Works**

3:35 pm *Success at the Streamside – Riparian Buffers that Work*, **Diane Wilson**, Pennsylvania Department of Environmental Protection

3:55 pm *Leading or Lagging Indicator for Water Quality Management*, **Sherman Swanson**, University of Nevada – Reno

4:15 pm *Assessing the Effectiveness of Restoration Actions at Sites in the Lower Columbia River Estuary*, **Jina Sagar**, Lower Columbia River Estuary Partnership

4:35 pm *Protecting Manoomin (Wild rice) through Modern Science and Traditional Ecological Knowledge*, **Nancy Schuldt**, Fond du Lac Reservation

# Poster Presentations

**The following posters will be displayed on Wednesday, May 2, 9:30 am – 10:30 am. Poster presenters will be available to answer questions during this time.**

## Climate Change

01A *New England - New York Pilot Climate Change Monitoring Network*, **Jen Stamp**, Tetra Tech, Inc.

## Communication

02A *Snap Shot Monitoring of the Niangua River Watershed – Part II, Results from a Large-Scale Monitoring Effort with an Emphasis on Data Presentation*, **Daniel Obrecht**, University of Missouri

03A *Innovations in Sharing Water Quality Data and Identifying Sources of Impairment*, **TK Conrad**, Windsor Solutions, Inc.

04A *To Wade or Not To Wade? Inquiring Minds May Want To Know*, **David Peck**, USEPA

05A *Engaging Farmers in the McKenzie Watershed*, **Nancy Toth**, Eugene (OR) Water & Electric Board

## Water Monitoring Councils

06A *The Maryland Water Monitoring Council: Furthering the Cause of Water Monitoring in Maryland*, **Daniel Boward**, Maryland Department of Natural Resources

07A *New Jersey Water Monitoring Council: Strengthening Monitoring Collaboration and Partnerships Across a State Water Monitoring Community*, **Leslie McGeorge**, New Jersey Department of Environmental Protection

## Groundwater

08A *Hydrologic Mixing of Geothermal and Alluvial Groundwater in Dixie Valley, Nevada*, **Michael R. Rosen**, USGS

09A *Water Availability for the Future – Is Brackish Groundwater the Answer for Growth and Sustainability*, **Steven Sagstad**, Civil & Environmental Consultants, Inc.

## Lakes, Estuaries, and Wetlands

10A *Wisconsin Intensification Study of Lake Michigan Basin Wetlands: Combining Quantity Trends and Condition Assessment*, **Thomas Bernthal**, Wisconsin Department of Natural Resources

11A *Relations Between Hydrology, Water Quality, and Taste-and-Odor Causing Organisms and Compounds in Lake Houston, Texas, April 2006-September 2008*, **Mike Burnich**, USGS

12A *Field Guides for Inventory and Monitoring of Groundwater Dependent Ecosystems on National Forests and Grasslands*, **Christopher Carlson**, USFS

13A *Guidelines for Design and Sampling of Water, Sediment, and Biological Quality in Lakes and Reservoirs - A New Chapter in the U.S. Geological Survey National Field Manual for the Collection of Water-Quality Data*, **Reed Green**, USGS

14A *Testing Landscape Metrics as Indicators of Lake Ecological Condition*, **Lillian Herger**, USEPA

15A *Modeling of Phosphorus Dynamics in a Deep Reservoir in the Asian Monsoon Region (Lake Soyang, Korea)*, **Yoonhee Kim**, Kangwon National University, Republic of Korea

16A *Water Quality Evaluation of Isabella Lake in Preparation for Dam Remediation*, **Heather Jackson**, USACE

17A *Zooplankton Community Structure, Body Size and Biomass in Western U.S. Reservoirs Prior to Potential Invasion of Dreissenid Mussels*, **Teodoro Rosati**, BSA Environmental Services, Inc.

18A *Experiences with the National Wetland Condition Assessment and Implications for the follow on Intensification Grant with North Carolina, South Carolina and Alabama*, **Rick Savage**, North Carolina Department of Environment and Natural Resources

19A *New Jersey Statewide Statistical Assessment of Lakes for Aquatic Life Use*, **Brian Taylor**, New Jersey Department of Environmental Protection

20A *Assessing Water Quality and Food Web Resources Supporting Juvenile Salmonids in Tidal Emergent Wetlands in the Lower Columbia River and Estuary*, **Whitney Temple**, USGS

## Harmful Algae Blooms

21A *Role of BMAA (cyano-neurotoxin) in Nebraska Freshwater Ecosystems*, **Maitham Al-Sammak**, University of Nebraska- Lincoln

22A *Genetic and Toxin Analysis of Single Colonies to Catalogue the Toxigenicity of Pacific Northwest Bloom-Forming Cyanobacteria in Water Bodies Used for Drinking Water Supplies*, **Connie Bozarth**, Oregon State University

23A *High Throughput Sequencing Analysis of Cyanobacterial Bloom Populations for Identifying Commonalities and Differences Across Time and Location*, **Theo Dreher**, Oregon State University

24A *Citizen-Based Monitoring of Cyanobacteria in Littoral Regions of the Muskingum River Watershed, Ohio*, **Alison Minerovic**, BSA Environmental Services, Inc.

25A *Microcystin Toxin Migration, Bioaccumulation, and Treatment Fremont Lake #20 Dodge County, Nebraska*, **Will Myers**, Nebraska Department of Environmental Quality

26A *Why Cyanobacteria Dominate the World: Ecological Strategies*, **Barry Rosen**, USGS

27A *Cyanobacterial Management in Clear Lake, the Oldest Lake in the Nation*, **Carolyn Ruttan**, Lake County (CA) Department of Water Resources

28A *Environmental Factors that Influence Cyanobacteria and Geosmin Occurrence in Two Southeastern United States Reservoirs*, **Celeste Journey**, USGS

## Mercury

29A *Fluvial Transport of Mercury and Dissolved Organic Carbon in Contrasting Stream Basins in the Eastern United States*, **Celeste Journey**, USGS

30A *Rapid Site Characterization at a Former Mercury Mine Site Using Lumex, Arvind Acharya*, **Kristen Carlyon** and **Guy Jett**, Innovative Technical Solutions, Inc.

31A In Situ *Measurements of Porewater Hg and MeHg via DGT*, **Paul Bireta**, University of Texas

32A *Simulation of Streamflow in the McTier Creek Watershed, South Carolina, using TOPMODEL and GBMM*, **Paul Bradley**, USGS

33A *Development of a Mercury Load Model for McTier Creek, South Carolina using TOPMODEL*, **Paul Bradley**, USGS

34A *More than Generalist Predators: Are Behavioral Guilds Useful for Monitoring Mercury Concentration in Larval Dragonflies?*, **Roger Haro**, University of Wisconsin–La Crosse

35A *Variability in Selenium: Mercury Molar Ratios in Fish in Freshwater Ecosystems*, **Joanna Burger**, Rutgers University

36A *Parameters for a Biomonitoring Plan for Mercury in Freshwater Ecosystems*, **Joanna Burger**, Rutgers University

37A *Mercury Bioavailability and Transport in Deer Creek Over Lake Wildwood Dam*, **Joanne Hild**, Sierra Streams Institute

38A *Stability and Behaviour of Low Level Spiked Inorganic Mercury in Natural Water Samples*, **Milena Horvat**, Jožef Stefan Institute, Slovenia

39A *Mercury Monitoring from the Tundra to the Tropics: Using Songbirds as Indicators of Ecological Risk*, **Allyson Jackson**, Biodiversity Research Institute

40A *Biogeochemical Cycling of Mercury Coupled with a Nitrogen and Carbon Watershed Hydrology Model (VELMA)*, **Christopher Knightes**, USEPA

41A *Influence of Fire on Mercury Cycling in Boreal Forests*, **Randy Kolka**, USFS

42A *Fishery Assessments on the Duck Valley Reservation, Idaho and Nevada, 2007-09*, **Terry Maret**, USGS

43A *Role of Particles in Mercury Transport in a Coastal Plain Subsurface Environment*, **Pamela Reilly**, USGS

44A *Spatial Patterns of Mercury in Macroinvertebrates and Fishes from Streams of Two Contrasting Forested Landscapes in the Eastern United States*, **Karen Riva-Murray**, USGS

45A *The Song Sparrow as a Biosentinel for Methylmercury in Riparian Food Webs of the San Francisco Bay Area*, **Cristina Grosso**, San Francisco Estuary Institute

46A *Methylmercury in Lower Food Web Components of Six National Park Units in the Western Great Lakes Region*, **Kristofer Rolfhus**, University of Wisconsin–La Crosse

47A *Bioaccumulation and Ecological Risk of Methylmercury to Fish in National Parks of the Western Great Lakes Region*, **Mark Sandheinrich**, University of Wisconsin–La Crosse

48A *Geochemical Controls on Mercury Methylation in the Water Column of Backwaters of a Gulf Coastal Plain River System, Lower Ouachita River, Arkansas*, **Liam Schenk**, USGS

49A *Linking Local-Scale Monitoring to Form an Integrated Regional Seafood Safety Assessment for Southern California*, **Kenneth Schiff**, Southern California Coastal Water Research Project

50A *EPA's Assessment of Mercury in Fish from U.S. Rivers*, **Leanne Stahl**, USEPA

51A *Estimation of Particulate Mercury Washout Using National Atmospheric Deposition Program Samples and Instrumental Neutron Activation Analysis*, **Gregory Wetherbee**, USGS

## Microbial Pathogens

52A *Occurrence and Distribution of Fecal Indicator Bacteria and Gene Markers of Pathogenic Bacteria in Great Lakes Tributaries, March-September 2011*, **Angela K. Brennan**, USGS

53A *Validation and Application of Large Volume MPN Techniques Using a Modification of US EPA Method 1601: Detecting Low Concentrations of MS2 Coliphage*

*to Demonstrate the Efficacy of Soil-Aquifer Treatment of Secondary Effluent*, **Richard Danielson**, BioVir Laboratories, Inc.

54A *Quantitative Microbial Risk Assessment for Recreational Exposure in Northern California Receiving Waters*, **Richard Danielson**, BioVir Laboratories, Inc.

55A *Genetic Sequencing Methodologies to Assess Human Contributions of Fecal Coliforms to a Freshwater Receiving Stream*, **Bryan Rabon**, South Carolina Department of Health and Environmental Control

56A *Stormy Weather: Event-based Pathogen Monitoring in the Bull Run Watershed*, **Ann Richter**, City of Portland

57A E. coli *in the Urban South Platte River Watershed*, **Philip Russell**, Littleton/Englewood (CO) Wastewater Treatment Plant

## Urban Monitoring

58A *Volunteer Stream Monitoring: Assessing Aesthetics along Urban River Corridors*, **Christina Anderson**, Wisconsin Department of Natural Resources

59A *Assessment of Water Quality and Ecological Condition of Urban Streams in Independence, Missouri Using Multiple Lines of Investigation and Continuous Water-Quality Monitors*, **Eric Christensen**, USGS

60A *Analysis of the Patrick Henry School Stormwater Retrofit Demonstration Project*, **Chris French**, Virginia Commonwealth University

61A *Stormwater Sampling: A Look at the City of Portland's UIC Monitoring Program*, **Beth Hiscott**, City of Portland

62A *Assessing Progress towards Reducing* E. coli *Levels in Dry Weather Discharges from Denver's MS4*, **Jon Novick**, Denver Department of Environmental Health

63A *Development of Urban Steam Water Quality Indices in the Kansas City Urban Streams Network*, **Gary Welker**, USEPA

## Aquifers

64A *Water-Quality Assessments of Principal Aquifers*, **Terri Arnold**, USGS

65A *Water Quality of the Denver Basin Aquifer System*, **Nancy Bauch**, USGS

66A *Water Quality of the Floridan Aquifer System - Anthropogenic and Naturally Derived Contaminants*, **Marian Berndt**, USGS

67A *Water Quality of the Surficial Aquifer System of the Northern Atlantic Coastal Plain*, **Judith Denver**, USGS

68A *Water Quality of the Mississippi Embayment-Texas Coastal Uplands Aquifer System and Mississippi River Valley Alluvial Aquifer – Anthropogenic and Naturally Derived Contaminants*, **James Kingsbury**, USGS

69A *Water Quality in the Piedmont and Blue Ridge Crystalline- and Carbonate-Rock Aquifers, Early Mesozoic Basin Aquifers, and the Valley and Ridge Carbonate- and Siliclastic-Rock Aquifers, Eastern United States, 1993-2009*, **Bruce Lindsey**, USGS

70A *Water Quality of the High Plains Aquifer System*, **Peter McMahon**, USGS

71A *Water Quality in the Columbia Plateau, Snake River Plain, and Hawaiian Basaltic-Rock and Basin-Fill Aquifers, Washington, Idaho, Hawaii, 1992-2005*, **Michael G. Rupert**, USGS

72A *Water Quality of the Southwest Basin-fill Aquifers*, **Susan Thiros**, USGS

73A *Water Quality of the Glacial Aquifer System – Anthropogenic and Natural Contaminants*, **Kelly Warner**, USGS

## Water Quality Indicators

74A *New Mexico's Hydrology Protocol – An Expedited Field Methodology for Classifying Ephemeral, Intermittent and Perennial Waters and Documenting the Supported Uses*, **James Hogan**, New Mexico Environment Department

75A *Application of a Water Quality Index for the New River Estuary, NC*, **Kimberly Matthews**, RTI International

76A *The Water Quality Index for Agricultural Fields – A Tool to Establish Trends in Water Quality*, **Shaun McKinney**, USDA-NRCS

77A *Salinity in the Lower Middle Rio Grande, Socorro County, New Mexico*, **Belle Rehder**, University of New Mexico

78A *Clark County Stream Health Report: Sharing Stream Health Information with Citizens in Clark County, Washington*, **Jeff Schnabel**, Clark County, WA

79A *Evaluating Seasonal Effects on Langelier Saturation Index Ability to Predict Corrosion Potential of Water*, **Glenn Terrell**, Birmingham (AL) Water Works Board

**The following posters will be displayed on Thursday, May 3, 2:30 pm – 3:30 pm. Poster presenters will be available to answer questions during this time.**

## Biological Assessments

01B *Calibration of the Biological Condition Gradient (BCG) for Fish Community Assemblages in Connecticut and Southern New England*, **Christopher Bellucci**, Connecticut Department of Energy and Environmental Protection

02B *Calibration of Biological Condition Gradient (BCG) Models for Fish Assemblages in Minnesota, Michigan and Wisconsin*, **Jeroen Gerritsen**, Tetra Tech, Inc.

03B *Assessment of Water Quality and Biota in Korean Reservoirs*, **Bomchul Kim**, Kangwon National University, Republic of Korea

04B *Comparison of Two Adjacent Watersheds Using Multi-metric Macroinvertebrate Indices to Assess Biological Conditions in the Kansas City, Missouri Metropolitan Area, 2007 to 2011*, **Heather Krempa**, USGS

05B *The Extent of Fishing and Fish Consumption in the Los Angeles and San Gabriel Rivers Watersheds, California*, **Kristy Morris**, Council for Watershed Health

06B *The Influence of Reducing Full Macroinvertebrate Sample Data to a Common Fixed 300 Individual Count on Assessments of Stream Quality*, **Jean Sifneos**, Oregon State University

## Dam Removal

07B *Water Quality Dynamics and Phycocyanin Detection as a Biomass Indicator in Upper Klamath Lake, Oregon, 2011*, **Blake Eldridge**, USGS

08B *Surrogate Bed Load Measurement Using Impact Sensors on the Elwha River During and After Dam Removal*, **Robert Hilldale**, USBR

## Data Management and Sharing

9B *Status Network Water Quality Sampling within the St. Johns River Water Management District: Annual Sampling Cycles 2009 to 2010*, **Aisa Ceric**, St. Johns River Water Management District, FL

10B *What's New with the National Hydrography Dataset Plus (NHDPlus) Version 2?*, **Tommy Dewald**, USEPA

11B *Update on the U.S. EPA Integrated Reporting Activities*, **Charles Kovatch**, USEPA

12B *The Freshwater Biological Traits Database*, **Jen Stamp**, Tetra Tech, Inc.

13B *Integration of Routinely Collected Municipal Monitoring Data Sets to Supplement a Regional Dissolved Oxygen Total Maximum Daily Load (TMDL) Model*, **Ashley Stubblefield**, University of the Pacific

14B *Using the Lower Colorado River Water Quality Database to Share and Exchange Data between Agencies and Researchers along the Lower Colorado River*, **Todd Tietjen**, Southern Nevada Water Authority

## Diel Cycling

15B *Diel Biogeochemical Processes and Their Effects on Sample Design and Trend Analysis: A Study Looking at Diurnal Arsenic Cycling in a NJ Stream*, **Pamela Reilly**, USGS

## Drinking Water

16B *A Multipronged Approach to Identifying Potential Risks to Drinking Water*, **David Donahue**, Eugene (OR) Water & Electric Board

17B *Can the Addition of a Polymer during Drinking Water Treatment Improve Finished Water Quality?*, **Jason Heberling**, Birmingham (AL) Water Works Board

18B *Development of a U.S. EPA Method for the Analysis of Selected CCL 3 Drinking Water Contaminants by Solid Phase Extraction and LC/MS/MS*, **Daniel Tettenhorst**, USEPA

## Energy

19B *The Hydraulic Fracturing (HF) Process: Real Concern or Misdirected Focus Concerning Threats to Drinking Water Supplies (DWS)*, **Peter Penoyer**, USNPS

## Emerging Contaminants

20B *Analytical Approaches and Challenges to Measuring Pharmaceuticals and Endocrine Disrupting Compounds in the Environment*, **Mark Benotti**, Battelle

21B *An Overview of Oregon DEQ's Toxics Monitoring Efforts and Their Relevance to the Agency's Toxics Reduction Strategies*, **James Coyle**, Oregon Department of Environmental Quality

22B *iSTREEMTM – An Internet-Based National Watershed Scale Model Capable of Determining Where and When to Monitor for Chemicals from Consumer Products*, **Paul DeLeo**, American Cleaning Institute

23B *Emerging Contaminants in Bottom Sediments from the Lower Boise River and its Tributaries near Boise, Idaho*, **Alexandra Etheridge**, USGS

24B *Preliminary Assessment of the Effects of Treated Wastewater Effluent on Water-Quality, Sediment-Quality, and Biological Conditions in Spirit Creek, Fort Gordon, Georgia: 2010 – 2011*, **Celeste Journey**, USGS

25B *A Survey of Trace Metals and Organic Chemicals in Effluent from Oregon's Major Municipal Treatment Facilities*, **Bruce Hope**, CH2M Hill, **Lori Pillsbury** and **Brian Boling**, Oregon Department of Environmental Quality

26B *Assessment of Perfluorinated Compounds in Fish from U.S. Rivers*, **Leanne Stahl**, USEPA

## GIS

27B *Geospatial Assessment of the Impacts of Changing Agricultural Landscape In Southern Louisiana*, **Edmund Merem**, Jackson State University

28B *Linked Micromaps: Statistical Summaries in a Spatial Context*, **Quinn Payton**, USEPA

29B *A GIS-Based Approach to Evaluating Riparian Integrity along Montana's Large Rivers*, **Linda Vance**, University of Montana

## Innovative Monitoring

30B *Understanding Peatland Mercury Cycles under Elevated Carbon Dioxide and Soil Warming: Introduction of the SPRUCE Experiment*, **Randy Kolka**, USFS

31B *Techniques for Winter Stormwater Monitoring in Minnesota*, **Matthew Loyas**, Capitol Region Watershed District, MN

32B *Developing a Monitoring Strategy for Tracking Environmental Impacts of Co-Digested Feedstocks in an Anaerobic Biomass Energy Project*, **Chelsea Spier**, University of the Pacific

33B *Snap Shot Monitoring of the Niangua River Watershed – Part I, Organizing a Large-Scale Monitoring Effort*, **Anthony Thorpe**, University of Missouri

## *In Situ* Monitoring

34B *Everglades Depth Estimation Network (EDEN): Integrating Real-time Networks to Provide Hydrologic Data for the Restoration of the Everglades*, **Paul Conrads**, USGS

35B *Quantifying Effects of Temperature, Concentration, and Particles on* In Situ *Measurement of DOC Concentration Using Fluorescence Based Sensors*, **Bryan Downing**, USGS

36B *Continuous Monitoring of Suspended-Sediment Transport from Headwater Basins in Northeast Kansas*, **Guy Foster**, USGS

37B *Time Integrative Continuous Sampling Finally Made Quantitative for both Total and Dissolved Trace Organics*, **Brent Hepner**, Aqualytical Services, Inc.

38B *Deployment of Data Sondes from Fishing Piers to Monitor Nearshore Hypoxia in Long Bay, South Carolina*, **Susan Libes**, Coastal Carolina University

39B *A Novel Application of Dithizone in an Evanescent Wave Sensor for Rapid Detection of Acidic Gases and Ammonia*, **Justus Ndukaife**, Purdue University

40B *Computing Time-Series Concentrations and Loads from In-Stream Sensors and Streamflow Data*, **Patrick Rasmussen**, USGS

41B *Long-term Deployment Module: Promising New Anti-fouling Technology*, **Janice Fulford**, USGS

## Multiple Stressors

42B *Combination of Monitoring Approaches Provides Comprehensive Assessment of Changing Stream Conditions in Urbanizing Watersheds of Northeastern Kansas*, **Teresa Rasmussen**, USGS

43B *Use of High-Frequency Dissolved Oxygen and Water Temperature Data to Infer the Relative Importance of Components of a Stream Dissolved Oxygen Budget*, **Stewart Rounds**, USGS

44B *Lateral Variability of Water Quality Refugia Created by Near Shore Aquatic Macrophytes During Periods of Prolonged Hypoxia in the Klamath River*, **Garrett Steensland**, Oregon Institute of Technology

## National Aquatic Resource Surveys

45B *Preliminary Results from the North Dakota Intensification of the National Wetland Condition Assessment*, **Shawn DeKeyser**, North Dakota State University

46B *Fish Taxonomy Proficiency in the National Rivers and Streams Assessment*, **Chris Turner** and **Dennis McCauley**, Great Lakes Environmental Center, Inc.

## Network Design and Evaluation

47B *Quality Water for Wildlife: Developing a Comprehensive and Integrated Water Quality Monitoring Effort for the National Wildlife Refuge System*, **Michael Higgins**, USFWS

48B *Retrospective Analysis of Periodically-Collected Suspended-Sediment Data in the United States*, **Casey Lee**, USGS

49B *Monitoring Water Quality in the Mississippi River Basin – An Integrated and Interagency Approach*, **Shaun McKinney**, USDA-NRCS

50B *Condition of Indiana Streams and Rivers using a Probabilistic Monitoring Program*, **Myra McShane**, Indiana Department of Environmental Management

51B *Urban Waters Monitoring: Monitoring and Assessment of Biological, Chemical, Habitat and Watershed Influences on Kansas City Streams and Lakes*, **Gary Welker**, USEPA

52B *Monitoring Nutrient Concentrations to the Lower Missouri and Upper Mississippi Rivers*, **Gary Welker**, USEPA

## Nutrients

53B *Dynamic Modeling of Nitrogen Flux in the Potomac Watershed Using Spatially References Regressions*, **John Brakebill**, USGS

54B *Influence of Land Use on Phosphorus Concentrations in Southeastern US Piedmont Headwater Streams*, **Roger Burke**, USEPA

55B *Validation of a Green Chemistry Method for the Determination of Total Nitrogen and Total Phosphorus Levels in Pulp and Paper Mill Wastewaters: NCASI Method TNTP W10900 Comparative Study*, **Diana Cook**, NCASI

56B *Algal Community Response to Nitrogen and Phosphorus Concentrations in Ozark Streams, Southern Missouri, 1993-95 and 2006-07*, **Suzanne Femmer**, USGS

57B *Tracing Sources of Nitrate, Organic Matter, and Water in the Willamette River Basin, From the Headwaters to Portland, Using Stable Isotopic Techniques*, **Carol Kendall**, USGS

58B *Evaluating the Variability of Sediment and Nutrient Characteristics of the Trinity River Entering Galveston Bay, Texas during High Flow Events*, **Michael Lee**, USGS

59B *A Method for Economic Valuation of Nutrient Monitoring*, **Richard A. Smith**, USGS

60B *Clay Minerals as Important Inorganic Constituents Controlling Uptake and Bioavailability of Phosphorous Retained in Bottom Sediments of Klamath Lake, Oregon*, **Daniel Webster**, USGS

## Pesticides

61B *Analysis of Monitoring Data from Multiple Small Watersheds to Identify Drivers of Agrochemical Runoff from Corn and Sorghum Agriculture*, **Chris Harbourt**, Waterborne Environmental, Inc.

62B *Improved Characterization of the Temporal and Spatial Variability of Potential Surface Water Drinking Water Exposure by Using Environmental and Historic Monitoring Databases*, **Paul Hendley**, Syngenta Crop Protection, Inc.

## Restoration and Protection

63B *Water Quality Implications from Wildfire in Northern Oregon*, **Kimberly Gupta**, City of Portland

64B *State of the San Gabriel River Watershed (California) 2005 to 2009: Ambient Stream Condition, Unique Habitats, Swimming Safety & Fish Consumption Safety*, **Karin Patrick**, Aquatic Bioassay & Consulting Laboratories, Inc.

65B *Can an Urban Stream that has been Diverted into a Series of Pipes Underneath the City of Portland Ultimately Contribute to Improving Salmonid Habitat in the Willamette River?*, **Marc Peters**, City of Portland

66B *Trophic Level Interactions in Lake Havasu, AZ-CA: Comparison With Other Colorado River Reservoirs*, **Thomas Renicker**, BSA Environmental Services, Inc.

## Trend Analyses

67B *Analysis of Water Quality Trends and Evaluation of Climate Change Effects in a Rocky-Mountain Reservoir: A Case Study*, **Nicolas A. Gonzalez**, Brigham Young University

68B *Integrated Water Quality Trend Analysis: A Standardized Non-Parametric Characterization of Water Quality at the Watershed Scale*, **Donald Smith**, Virginia Department of Environmental Quality

## Strengthening Monitoring Programs

69B *Strengthening Regional Monitoring Programs through the Development of a Collaboration Network: The California Water Quality Monitoring Collaboration Network*, **Erickson Burres**, California SWRCB

70B *Making a Difference on the Ground: The US Forest Service-TNC Partnership for Monitoring and Managing Groundwater Resources*, **Christopher Carlson**, USFS

71B *Communication, Consistency & Quality: Keys to Volunteer Data Incorporation in Morro Bay, California*, **Annie Gillespie**, Morro Bay National Estuary Program

72B *Supporting Volunteer Water Quality Monitoring Efforts throughout the USA*, **Linda Green**, University of Rhode Island

## TMDLs

73B *Investigating the Feasibility of Using Biological and Habitat Metrics to Determine the Effectiveness of TMDLs: A Case Study*, **Scott Collyard**, Washington Department of Environmental Quality

74B *Use of NAIP Imagery to Characterize Riparian Vegetation Health for TMDL and Land Management Purposes*, **Randy Pahl**, Nevada Division of Environmental Protection

75B *Fanno and Tryon Watersheds Water Quality Monitoring – 1998 – 2011*, **Amin Wahab**, City of Portland

## Volunteer Monitoring

76B *The Stream Temperature Project: Expanding the Use of Volunteer Data*, **Kari Paulson**, North Jackson Company, OR

# Water: One Resource – Shared Effort – Common Future

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