

December 1, 2011

Opening Remarks

Presenter: Christopher Rinn
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Christopher Rinn is currently Assistant Commissioner of the Division of Public Health Infrastructure, Laboratories and Emergency Preparedness for the New Jersey Department of Health and Senior Services (DHSS). As Assistant Commissioner, he leads a 15-member management team with 300 professional and support staff. He provides strategic guidance and direction, operational, organizational, fiduciary and, administrative oversight, and interagency representation and integration in order to ensure that the division accomplishes all immediate and imminent tasks and fulfills the mission of the DHSS.

His career includes 15 years in Emergency Medical Services management, following substantial experience providing pre-hospital emergency medicine as both an Emergency Medical Technician and Paramedic. Mr. Rinn held key positions as Executive Director, Assistant Director, Operations Coordinator, and Tour Chief at one of New Jersey's largest EMS systems. Under Mr. Rinn's leadership, the Jersey City Medical Center EMS Department was recognized by The American Heart Association, the NJ Department of Health, NJ Biz, and the Hudson County Chamber of Commerce, for excellence in improving patient care, best practices and community service.

Opening Remarks

Presenter: Jill Lipoti, Ph.D.

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Division of Water Monitoring and Standards

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Jill Lipoti received her Ph.D. in Environmental Science from Rutgers University. Jill has served in various capacities at the NJ Department of Environmental Protection and currently, serves as the Director of the Division of Water Monitoring and Standards. Asked to summarize her philosophy of public service, Jill provided the following statement:

“Open and effective government demands that partnerships be strengthened to promote continuous quality improvement in government services as well as those provided by the regulated community. Uses of innovative management strategies, planning, prioritization, and compliance assistance have become the hallmarks of effective government. Enhanced scientific assessments of data by indicators that reflect conditions, trends, and results demonstrate progress toward mutual goals. A shared vision of the future contains enhanced participation by stakeholders to integrate public values into the government’s role.”

New Jersey Water Monitoring Council & National Water Quality Monitoring Council

Presenter: Leslie McGeorge

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Abstract

With a common interest in integrating and strengthening the water monitoring community in the State, the NJ Water Monitoring Council was formed on World Water Monitoring Day in 2003. The Council is co-chaired by DEP and USGS' NJ Water Science Center and is guided by a Steering Committee which also includes DRBC and EPA Region 2. The NJ Council facilitates a water information foundation for the management and protection of the State's aquatic resources, and promotes the coordination, collaboration and communication of scientifically sound water data. Membership includes federal, state, regional and local government entities, interstate organizations, academia, water and wastewater utilities authorities, and the volunteer monitoring community. The 18 NJ Council member organizations are responsible for ongoing water monitoring networks or conduct water quality research, and make their data publically available. Council goals include: facilitating monitoring technology transfer; enhancing data exchange and compatibility; promoting partnerships and efficient use of monitoring resources; identifying water research needs; and information exchange with other national and state monitoring councils. The NJ Council's website (www.state.nj.us/dep/wms/wmcchome) serves as a key communication tool by making members' information readily available, serving as a reference through its Council meeting technical presentation repository, as well as hosting an inventory of continuous monitoring activities (with direct links to online data). The Council also has played a key role in building and populating a water quality data management system for NJ and has enhanced the use of data external to DEP monitoring programs for the NJ Integrated Water Monitoring and Assessment Report. The Council has sponsored numerous water monitoring workshops/summits and trainings. As one of about a dozen state or regional monitoring councils nationwide, the NJ Council serves as an avenue to exchange monitoring information with similar organizations, including the National Water Quality Monitoring Council (NWQMC). Several NJ Council members are or have served as NWQMC representatives, and provide information on National Council sponsored webinars, newsletters, conferences, and use of the numerous monitoring tools provided through the NWQMC and its website (<http://acwi.gov/monitoring/>).

Leslie McGeorge is the Administrator for Freshwater & Biological Monitoring in the Division of Water Monitoring & Standards and has worked with DEP for 31 years. She manages the tributary sampling for the Governor's Barnegat Bay watershed initiative, the State's rivers and streams physical/chemical Cooperative program with USGS, Supplemental rivers and streams monitoring, Lakes probabilistic monitoring network, Benthic macroinvertebrate biological program, Fish index of biotic integrity network, monitoring for the shallow Groundwater Quality Network, and special Monitoring Initiative projects. She also manages the NJ component of the National Aquatic Resource Surveys (NARS) for rivers, streams and lakes. Ms. McGeorge co-chairs NJ's Water Monitoring Council, is a member of the National Water Quality Monitoring Council, a member of DEP's Sustainability Committee, provides support for DEP's Science Advisory Board, a member of the NJ Drinking Water Quality Institute, and serves on the Monitoring, Standards and Assessment Committee of the Association of Clean Water Administrators (ACWA). Prior to her current position, Ms. McGeorge has served DEP as the Administrator for Water Monitoring & Standards (2002-2010), as the Assistant Commissioner for Environmental Planning and Science (2000-2002) and as the Director, Deputy Director, Assistant Director and Research Scientist with the Division of Science, Research and Technology from 1981-2000. She has a Bachelors degree in Biology from Lafayette College and a Masters of Science degree in Public Health, Environmental Chemistry and Biology, from the University of North Carolina.

PLENARY: Barnegat Bay Monitoring Initiative

Presenter: Dr. Jill Lipoti
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Abstract

On December 9, 2010, Governor Christie announced a comprehensive action plan to address the health of Barnegat Bay. Long appreciated for its great aesthetic, economic and recreational value, an array of human impacts potentially threaten the ecological integrity of this backbay system. After adopting narrative nutrient criteria for coastal waters on December 21, 2010, the DEP and its partners launched a new comprehensive ambient water quality monitoring network in the Barnegat Bay watershed on June 6, 2011. This network will provide water quality data that will establish the baseline conditions of the bay and assess these conditions against water quality standards. The concurrent measurement of water flows and water quality throughout the Bay will produce a comprehensive data set of pollutant loadings to the Bay. That pollutant loading information, along with the flow measurements, sediment data and the results of the bathymetric survey, will be used to develop several models for Barnegat Bay that will allow the Department to simulate what happens to nutrients, sediment and other inputs to the Bay. This will give the Department an important scientific tool that can be used to determine the locations and extent of water quality impairments, and to make decisions about how to restore Barnegat Bay.

Jill Lipoti received her Ph.D. in Environmental Science from Rutgers University. Jill has served in various capacities at the NJ Department of Environmental Protection and currently, serves as the Director of the Division of Water Monitoring and Standards. Asked to summarize her philosophy of public service, Jill provided the following statement:

“Open and effective government demands that partnerships be strengthened to promote continuous quality improvement in government services as well as those provided by the regulated community. Uses of innovative management strategies, planning, prioritization, and compliance assistance have become the hallmarks of effective government. Enhanced scientific assessments of data by indicators that reflect conditions, trends, and results demonstrate progress toward mutual goals. A shared vision of the future contains enhanced participation by stakeholders to integrate public values into the government’s role.”

NJ Watershed Watch Network – Annual Updates

Presenter: Debra Hammond

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Debra Hammond has a degree in Environmental Science from Rutgers University. She has over 30 years experience at the Department of Environmental Protection in water monitoring, NPDES permitting, and planning. She is currently the Chief of the Bureau of Water Quality Standards and Assessment Program and responsible for the development of water quality standards and criteria for both surface and ground water as well as the development of the Integrated Water Quality Monitoring and Assessment Report.

Debra Hammond joined the DEP in 1978 after graduating from Cook College, Rutgers University with a degree in Environmental Science. She has worked in a variety of New Jersey water programs, starting out in Water Quality Planning and Management, where she conducted water quality monitoring and analyses, developed 305(b) Water Quality Inventory reports, and participated in the Clean Lakes Program. She joined the NJPDES program in 1985 and developed the “polluter pays” fee program. She also worked in the Division of Watershed Management and served as the Department’s NEPPS Water Committee Co-chair. Since 2002, she has been the Chief for the Bureau of Water Quality Standards and Assessment and is responsible for the development, adoption, and administration of New Jersey’s Surface and Ground Water Quality Standards. This includes the development of water quality criteria to protect aquatic life and human health, the assignment of stream classifications to reflect existing and designated uses, and the promulgation of antidegradation policies to protect and maintain the quality of surface and ground waters of the State. She is also responsible for conducting and coordinating water quality assessments of all waters of the State. These assessments are reported through the New Jersey Integrated Water Quality Monitoring and Assessment Report.

PLENARY SHOWCASE: Four Case Studies of Local Water Monitoring and Watershed Planning

4 Case Studies from Watershed Grants

Presenter: Alyse Greenberg
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Co-Presenters: Laura Kelm, Great Swamp Watershed Association
Nancy Lawler, Musconetcong Watershed Association
Melissa Almedinger, New Jersey Invasive Species Strike Team
Christine Nolan, South Jersey Land & Water Trust

Abstract

This showcase will provide attendees with the opportunity to learn about water quality and habitat monitoring efforts undertaken by Great Swamp Watershed Association, Musconetcong Watershed Association, New Jersey Invasive Species Strike Team, and South Jersey Land & Water Trust. We will also discuss the partnership between The Stony Brook-Millstone Watershed Association and NJDEP to fund monitoring projects.

Alyse Greenberg coordinates SBMWA's Watershed Institute, a resource to NJ watershed groups. She presented at past Summits and the 2010 National Monitoring Conference.

Laura Kelm is the Director of Water Quality Programs for the Great Swamp Watershed Association. She received her master's degree in Environmental Management from Duke University.

Nancy Roberts-Lawler coordinates Musconetcong Watershed Association's River Watcher monitoring program. She presented at the 2009 Summit and the 2008 National Monitoring Conference.

Melissa Almedinger is the Executive Director of the NJ Invasive Species Strike Team. She has presented at conferences such as the NJ Land Conservation Rally and the NY Invasive Species Symposium.

Michael Hogan is the volunteer and project manager for the South Jersey Land and Water Trust. He oversees SJLWT projects including: stream assessments; vernal pool surveys; swamp pink surveys and monitoring; stream bank restorations; Camden County's Clean Communities volunteer cleanup program; and leads a monthly "Walk in the Woods" throughout southern New Jersey. Michael teaches yearly environmental works shops for the SJLWT, does numerous environmental presentations and has been a presenter at the Pinelands Short Course for the past 10 years.

Michael Hogan will present for Christine Nolan.

Christine Nolan is the Executive Director of the South Jersey Land & Water Trust. She has extensive experience in watershed management and outreach and education efforts.

PLENARY: Dam Removal and Restoration on the Musconetcong River

Presenter: Beth Styler Barry

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Abstract

This presentation will provide an overview of the Musconetcong Watershed Association's efforts to remove dams and stream barriers, and restore the effected sections of the Musconetcong River. Because the organization is a leader in coordinating dam removals in the state of NJ, the MWA Executive Director, Beth Styler Barry has a unique perspective. This workshop will cover funding projects, working with engineers and contractors, permits, working with landowners and the public, and restoration planning. This presentation will also include lessons learned from the most recent dam removal.

Beth Styler Barry is the Executive Director of the Musconetcong Watershed Association. Ms. Styler Barry holds a Bachelors Degree in Biochemistry from Rutgers University, Douglas College and a Masters Degree in Environmental Management from Montclair State University. Ms. Styler Barry is the also the Executive Director of the Musconetcong River Management Council and leads the Musconetcong Watershed Education Program. Ms. Styler Barry has participated in all phases of the removal of the Seber, Gruendyke Mill, Riegelsville, and Finesville Dams on the Musconetcong River.

PLENARY: The Status of Pompeston Creek, 1998-2008: From Data to Action

Presenter: Debbie Lord
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Abstract

Pompeston Creek Watershed Association's (PCWA) Volunteer Water Quality Monitoring Program was started in 1998 when a member's Scout troop wanted to clean up trash in the creek. NJDEP was not collecting bacterial or chemical data in Pompeston; to be sure that the water would not be a health risk for children during cleanups, PCWA began monitoring the creek in Moorestown monthly for bacteria (by laboratory analysis), nutrients, dissolved oxygen, temperature, and pH (using kits and Delaware Riverkeeper Network's protocols).

By 2003, these data enabled PCWA to identify water quality impairments (including fecal coliform) and decreasing water quality trends. PCWA then took these actions: (1) applied for/was awarded an NJDEP grant to restore eroding streambanks and retrofit stormwater detention basins; (2) submitted the data to NJDEP for inclusion in New Jersey's Integrated Surface Water Quality Monitoring and Assessment Report (Integrated Report), hoping for a Total Maximum Daily Load for fecal coliform. NJDEP could not accept PCWA's data for the Integrated Report because a quality assurance project plan (QAPP) did not exist.

With a Watershed Institute (WI) grant and assistance from Rutgers Cooperative Extension (RCE) and NJDEP, PCWA developed a QAPP. Another monitoring site was added. Bacteria, nutrients, total suspended solids were analyzed; bacteria source-tracking was performed. These data were submitted to NJDEP; Pompeston Creek was then listed in the Integrated Report for violating phosphorus and *E. coli* criteria. With another WI grant, PCWA wrote a report summarizing 11 years of data, probable causes of impairments, and recommendations for actions to take to improve the health of Pompeston Creek. The report was distributed to the municipalities, targeted residents and businesses, and posted on PCWA's website. Presentations were made to each municipality. Meanwhile, RCE secured grants to develop and implement, with PCWA and numerous partners, a Regional Stormwater Management Plan for Pompeston Creek.

Debbie Lord is Pompeston Creek Watershed Association's Environmental Scientist. She developed and/or coordinates programs for stream monitoring, bioassessments, restoration, and education, and obtained grants to carry out this work. She's been a volunteer water-quality monitor since 1998. Debbie works with Rutgers and local stakeholders in implementing the Pompeston's Watershed Restoration Plan.

She also teaches environmental education at Palmyra Cove Nature Park. Debbie has an M.S. in Geology from University of Pennsylvania and a B.A. from Franklin and Marshall College. After college, she was a hydrogeologist at the U.S. Geological Survey in NJ, focusing on water quality in ground and surface waters.

PLENARY: Case Study: Assessment of Storm Water Basin Function, Design, and Challenges in Mansfield Township

Presenter: Peggy Snyder

Co-Presenter/Contact Person: Robert Tallon
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Abstract

A file review and field trips were conducted during the summer of 2010 and winter of 2011 on four stormwater basins in Mansfield Township, Burlington County. The findings that will be discussed include missing data, questionable design standards, stormwater reports, applications, and plan sheets. Compliance of the basins with the New Jersey Department of Environmental Protections rules and requirements for storm water basin design will also be discussed along with the adverse impacts that have occurred due to non-compliance. These include increases in flooding, water quality loss, loss of ground water recharge, decreases in stream base flows, and ultimately loss of swimmable fishable status of streams. Some suggestions and advice will be provided to educate citizens and watershed folks on what to look for in engineering data submitted to Townships and governing bodies including opening avenues of knowledge on shortcomings in storm water design that can lead to problem basins as well as offering mitigation suggestions to offset some of the problems with preexisting non performing wet basins.

Peggy Snyder is a professional engineer licensed in New Jersey and Pennsylvania specializing in environmental land use issues with exceptional skills in understanding storm water design and function under the new 2004 rules.

Bob Tallon is a licensed wastewater and water treatment operator New Jersey and president of the watershed association where study was completed.

Barnegat Bay Technical Session (Results, How to Access & Research)

Presenter: Patricia Ingelido

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Abstract

In 2010, the Governor's Action Plan (www.state.nj.us/dep/barnegatbay/) to address the health of Barnegat Bay was announced, including a monitoring plan designed to determine the extent of the impairment, to identify nutrient loading targets or numeric criteria, and to develop a models for use in directing water quality restoration of the Bay. The comprehensive, 2-year monitoring program requires extensive sampling capacity. The sampling plan, which began in June 2011, involves up to once a week, water quality synoptic grab sampling at 13 tributary and 14 bay stations, continuous in-situ water quality monitoring, flow measurements, two 5-day intensive sampling events, and sediment monitoring. A summary of preliminary data results will be presented.

Trish Ingelido is an Environmental Specialist and has worked for NJDEP for 11 years. She has BS in Environmental Science with a focus in Marine Sciences from Rutgers University, Cook College and an MS in Environmental Policy from NJIT. She began her career in state service as an education and outreach coordinator and watershed manager in the Division of Watershed management. For the past 7 years she has worked in the Bureau of Environmental Analysis and Restoration with a primary focus in TMDL development.

Presenter: Alena Baldwin-Brown

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Abstract

To date, over 2800 field measurements have been taken, during 11 sampling events, as part of this cooperative ambient monitoring project. This presentation will feature a live demonstration, using an online interactive map, showing how to access the information related to this project, including monitoring locations and associated data.

Alena Baldwin-Brown has worked in the NJ Department of Environmental Protection (NJDEP) for the past 25 years and is currently the Executive Assistant to the Director for the Division of Water Monitoring & Standards. In this capacity, she provides assistance to the Director in technical and policy-related matters of division operations. She also oversees communications, outreach and web-related activities for the division, including those related to the Barnegat Bay Ambient Monitoring project. In addition, she is the Coordinator of the NJ Water Monitoring Council and, as such, works closely with the Council Co-Chairs and Steering Committee to coordinate and organize Council-related activities, including a statewide water monitoring workshop (2006) and as part of the planning committee for the 2008 and 2011 NJ Water Monitoring Summits. She has also represented the NJ Water Monitoring Council at the 2008 and 2010 National Water Monitoring Conferences. Prior to assuming this role in 2002, she served as the Executive Assistant to the Assistant Commissioner for Environmental Planning and Science (2000-2002), as Technology Transfer Coordinator and Executive Assistant to the Director in the Division of Science, Research and Technology (1988-2000), and as a

Legislative Analyst in the Office of Legislation (1986-1988). She has a Bachelors of Science degree in Biology from Trenton State College and a Masters of Science degree in Management from Thomas Edison State College

Presenter: Gary A. Buchanan, Manager
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Abstract

Ten research projects have been identified and funded by NJDEP as part of the Governor's Comprehensive Plan of Action for Barnegat Bay to provide a wide-ranging examination of the health of the bay and to fill in key data gaps. This research will assist in answering fundamental questions about the current status of the bay ecosystem (e.g., crabs, fish, and submerged aquatic vegetation), support other aspects of the 10 point plan, and in conjunction with water quality analysis, help develop appropriate water quality standards that are tied to, and based upon, the ecological health of the bay. Understanding the bay's baseline condition will also provide a solid basis for future comparisons to measure the effectiveness of the Comprehensive Plan of Action.

Dr. Gary Buchanan is the Manager of the Office of Science for the NJ Department of Environmental Protection (NJDEP), directs multidisciplinary research and science-based technical support, and is responsible for the coordination and administration of the NJDEP Science Advisory Board. He is overseeing ten research projects as part of the Comprehensive Action Plan for Barnegat Bay, and was the project manager for the Ocean/Wind Power Ecological Baseline Studies, a two year study of avian, marine mammal and sea turtle species in the offshore waters of New Jersey. He has degrees in biology and environmental science with a focus on aquatic ecology, marine/estuarine ecology, and ecotoxicology. With more than 28 years of experience, he has conducted a variety of field, laboratory and research projects involving water quality, natural resources, ecology, ecotoxicology, environmental toxicology, ecological risk assessment, and hazardous waste site investigations. He has managed technical groups which have conducted numerous ecological and environmental investigations at sites across the United States

Calibrations 101, Temp pH, DO

Presenter: Debra Waller
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Abstract

An overview of the quality control requirements to ensure quality testing and sampling for field parameters will be presented including tips for calibration procedures, reagent and standard solution management, and replicate testing. An overview of the requirements for raw data record management and data reporting protocols for field testing will also be addressed.

Debra Waller earned her AA in Biology at Burlington County College and her BS in Environmental Science at Stockton State College. She has been with the NJDEP-Office of Quality Assurance since 2000 serving as a lead certification and quality assurance officer. She is a USEPA approved Laboratory Certification Officer specializing in microbiology and inorganic chemistry. Debra serves as the Quality Assurance Officer for the NJ BEACH testing laboratories, NJ Ambient Lake Monitoring Program and as the NJDEP QAO for EPA Region 2's effort to develop a rapid testing protocol for the detection of Enterococci bacteria in NJ bathing beaches. Her background also includes 20 years of service at municipal utilities authority as a technician, lead chemist and laboratory manager at the Mount Laurel MUA, East Windsor MUA and Evesham MUA.

Marcellus Shale Natural Gas Volunteer Monitoring

Presenter: Julie Vastine

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Abstract

With the turn of the millennium and developments in High Volume Hydraulic Fracturing technology, shale-based gas plays have become a go-to source for natural gas extraction. The largest shale gas play is found in the Appalachians with the combined Marcellus, Devonian, and Utica Shale formations. Since 2005, close to 7,000 Marcellus wells have been permitted in Pennsylvania with 2,600 permitted in 2010 and 2011. No one monitoring entity in the state can keep up with the rate of drilling, therefore a coordinated multi-layer (agency, volunteer, academic, etc.) monitoring approach is required. In 2010, the Alliance for Aquatic Resource Monitoring developed a baseline shale-gas volunteer monitoring protocol, worked collaboratively with state agencies to strengthen the protocol, and conducted 22 workshops throughout the state.

As other states in the region commence drilling for natural gas in shale plays, this protocol can be tailored so that volunteer monitors can collect weekly baseline data that complements other layers of water quality monitoring in your state. Participants in this workshop 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. Focus will be on permit watching, choosing site locations, chemical monitoring methods, and managing, interpreting and using the data collected.

Julie Vastine is the director of the Alliance for Aquatic Resource Monitoring (ALLARM) at Dickinson College. She is responsible for leadership of the ALLARM program, as well as providing monitoring technical assistance to watershed organizations. Julie has worked with volunteer monitors for ten years. In 2010, ALLARM developed a protocol for monitoring small streams and their watersheds for early detection of the impacts from Marcellus Shale gas extraction in Pennsylvania. From June 2010-July 2011, ALLARM conducted 23 Marcellus Monitoring workshops and trained just shy of 600 volunteers.

Marcellus Shale Natural Gas Volunteer Monitoring

Presenter: Thomas Fisklin

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Abstract

In December 2010, the Delaware River Basin Commission proposed regulations to protect the water resources of the Delaware River Basin Commission during the construction and operation of natural gas developments. These regulations contained several provisions to monitor surface and groundwater to assess the impact of these activities in the upper portion of the Delaware River Basin where shale formations containing natural gas occur. The regulations require both surface and groundwater monitoring with the surface water monitoring lead by Commission staff and the groundwater monitoring required of project sponsors. Surface water monitoring will include physical, chemical and biological analyses at sites in tributaries upgradient and downgradient of the well pads. The monitoring is required prior to construction of the well pad, following each hydraulic fracturing event, and annually for the life of the pad. Other monitoring required under the regulations include sampling and analysis of flowback water following each hydraulic fracturing event, and specific monitoring of discharges from industrial and municipal treatment plants receiving wastewaters from natural gas projects.

In addition to the monitoring required under the regulations, the Commission has several projects directed at assessing natural gas development including baseline temperature/conductivity and biological monitoring in 2010 and 2011, planned regional ambient monitoring network at 150 sites in PA and NY watersheds where development is expected, and development of mayfly toxicity tests.

Dr. Thomas J. Fikslin is the manager of the Modeling, Monitoring and Assessment Branch for the Delaware River Basin Commission. The Commission manages the water resources of the Delaware River Basin which spans the states of Delaware, New Jersey, New York and Pennsylvania. The branch is responsible for conducting and coordinating monitoring activities within the Basin, the development and updating of the Commission's water quality standards, development and application of hydrodynamic and water quality models, and the development and implementation of TMDLs for toxic and conventional pollutants. Prior to joining the Commission, Dr. Fikslin worked for the U.S. EPA Region II in the regional laboratory and NPDES program.

Sensor Monitoring in NJ Coastal Waters

Presenter: Bob Schuster

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Abstract

The Bureau of Marine Water Monitoring utilizes both Slocum Gliders with Water Quality monitors and Aircraft Remote sensing for chlorophyll *a* to assess potential human and ecological health impacts in New Jersey's Estuarine and Coastal Waters. The Slocum Glider monitors for temperature, salinity and dissolved oxygen in the ocean waters off of New Jersey. This data will help assess the conditions of New Jersey's Ocean waters and help determine what Water Quality standards are acceptable for classification the aircraft sensor records chlorophyll *a* concentrations in the ocean and Barnegat Bay. High chlorophyll *a* concentrations trigger a response of intensive sampling in the area to determine if there are any potential toxic algal species blooming that may be harmful to humans by either contact or through consumption of shellfish from the area. This information is useful for both the Bathing Beach Program and as part of the Bureau's required National Shellfish Sanitation Program (NSSP) toxic contingency plan.

Robert Schuster has a B.S. in Chemistry from Richard Stockton College. Currently, he is an Acting Section Chief with the New Jersey Department of Environmental Protection, Bureau of Marine Water Monitoring in Leeds Point, NJ, where he is responsible for all the field and laboratory operations. Mr. Schuster has over 20 years of experience in both chemical and microbiological analyses of marine waters – he developed and implemented the use of both real-time continuous water quality monitors and aircraft remote sensing for chlorophyll *a* for the Bureau.

Sensor Monitoring in NJ Coastal Waters: The National Estuarine Research Reserve System (NERRS) System Wide Monitoring Program (SMWP): How to Access and Utilize Our Coastal Monitoring Data

Presenter: Gregg Sakowicz
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Abstract

The National Estuarine Research Reserve System's (NERRS) System-Wide Monitoring Program (SMWP) consists of an array of coastal-monitoring stations at twenty-eight reserves nation-wide, one of which is the Jacques Cousteau National Estuarine Research Reserve System (JC NERR), located in the Mullica River/Great Bay estuary in Southern New Jersey. Collecting a variety of water-quality and meteorological data, a number of these stations transmit real-time data via satellite telemetry, and all data are archived and available at www.nerrsdata.org. This presentation will introduce the JC NERR's SWMP stations, demonstrate online data access and download, and showcase some interesting data we captured during fire events, coastal perturbations, and storms, including Hurricane Irene and the October 2011 Nor'easter.

Gregg P. Sakowicz is a Researcher with Rutgers University and the Jacques Cousteau National Estuarine Research Reserve System (JC NERR). Gregg is a Field Researcher at Rutgers University and is involved in a number of research and monitoring activities, among them annual surveys of Submerged Aquatic Vegetation (SAV) in Barnegat Bay and Little Egg Harbor and carrying out the duties associated with the National Estuarine Research Reserve System's (NERRS) System-wide Monitoring Program (SWMP).

Getting Things Done – NJ Watershed Ambassador Program

Presenter: Kimberly Cenno

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Co Presenters:

Ambassador Lauren Smith (WMA 1)

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Ambassador Lola Bobrowski (WMA 9)

Please contact **Lola** at wsamb@rارانbasin.org or at (908) 685-0315 X224.

Ambassador Meredith Brown (WMA 17) – **Meredith** can be reached through the Cumberland County Improvement Authority at or watershed17@ccia-net.com or at (856) 825-3700 X127.

Abstract

The AmeriCorps NJ Watershed Ambassadors Program was initiated by the NJDEP in 2000 to serve NJ's 20 watershed management areas (WMAs) to promote watershed stewardship. The 20 Ambassadors each reside at a host agency and “Get Things Done” for the communities they serve by conducting 50 presentations to the public and by performing 50 stream assessments every year. Ambassadors from WMAs 1, 9, and 17 will discuss Partnership Projects and volunteer monitoring trainings that the Program spearheads that help NJDEP to implement water quality standards and promote public awareness of how our actions affect clean water.

Kimberly A. Cenno is a graduate of Douglass College - Rutgers University and holds her bachelor's degree in Geology. While working for the NJDEP over the past 22 years, she attended the Bloustein School of Planning and Policy and earned a Master's Degree in City and Regional Planning in 2001. Kim formerly served as the State's Nonpoint Source Grant Coordinator and is currently a Team Leader in the Division of Water Monitoring and Standards responsible for developing Total Maximum Daily Loads to mitigate water quality impairment. She also supervises the AmeriCorps NJ Watershed Ambassador Program, which provides a community service by offering environmental education presentations to local organizations and schools, volunteer monitoring trainings and volunteer monitoring assessments of local water quality.

Lauren E. Smith, Watershed Management Area 1 Ambassador, graduated from Susquehanna University in May 2011 with a Bachelors of Science degree in Earth and Environmental Sciences. In the past, she has worked with the Student Conservation Association for seven years working on hiking trails in Hunterdon County, NJ, as well as Florida and Alaska. She is excited to be volunteering for the AmeriCorps NJ Watershed Ambassadors Program because it's a different way to get students out in the field and interested in the environment outside of trail work. Her host agency is the Musconetcong Watershed Association in Asbury of Warren County.

Lola Bobrowski, Watershed Management Area 9 Ambassador, is embarking on her AmeriCorps term of service at the NJ Water Supply Authority office in Somerville, NJ. Lola graduated from the Richard Stockton College of NJ In May 2101 with a B.S. in Environmental Studies with a focus on wildlife conservation/biology. Her favorite past time is to be out in nature and her watershed goal for the year is to inspire the public to take action to protect their water while having a little fun doing so!

Meredith Brown, Watershed Management Area 17 Ambassador, is from Mantua Twp, NJ is the AmeriCorps NJ Watershed Ambassador for WMA 17-Maurice, Salem, and Cohansey Rivers. She graduated from West Virginia University in May 2011 with a B.A. in Political Science. Meredith plans to use the skills she learned in college and the NJWAP to protect the environment in Salem and Cumberland counties. She is interested in land preservation, ecology, and community gardens.

Stream Critters and Water Quality

Presenter: Nicole C. Rahman

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Abstract

Not Available at the time of print.

Nicole C. Rahman - Not Available at the time of print

NJDEP Ambient Lake Monitoring Network – Overview and Results

Presenter: Victor Poretti
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Co Presenter: Sarah Helble
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Abstract

The NJDEP's Ambient Lake Monitoring Network consists of 200 lakes. Data is collected to evaluate the trophic state and the ecological health of the State's lake resources. Monitoring takes place at in-lake stations that best represent the limnological aspects of the lake. Sites are sampled seasonally, three times per year.

Victor Poretti has 24 years with NJDEP in the Bureau of Freshwater and Biological Monitoring. He currently supervises the Ambient Lake Monitoring Network, Ambient Biological Monitoring Network, and Data Management for the Bureau.

Sarah Helble currently works with the New Jersey Department of Environmental Protection, Bureau of Water Quality Standards and Assessment. Sarah received degrees in Environmental Geography and Climatology from Penn State University. She began her career with the NJDEP as a NJ Watershed Ambassador in 2009.

December 2, 2011

Legionnaire's Disease Cluster: Impact of Stream Microbial Ecology on Community Health

Presenter: Perry Cohn, PhD, MPH

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Abstract

The Legionella bacteria is widespread in water environments and can pass through water treatment when sheltered inside amoeba cysts. It grows best at 95-105 degrees F and can populate water heaters, spas, water fountains and chiller units. Respired aerosols can cause a life-threatening pneumonia, Legionnaire's Disease, which is a reportable disease. Recently, a multi-year cluster of legionellosis cases occurred in a neighborhood supplied by a drinking water system supplied by surface water. That section of the system had chronically low chlorine residual levels during warm weather. The relative rate for legionellosis was an order of magnitude higher than the State rates.

Dr. Perry Cohn has been a Research Scientist in the Division of Epidemiology, Environmental and Occupational Health Services of the New Jersey Department of Health and Senior Services since 1989. He conducts health studies on chemical, radiological and microbiological exposures from drinking water. In addition, he represents his department on New Jersey's Drinking Water Quality Institute. He received his PhD in the neurosciences from the University of Wisconsin-Madison in 1980 and a Masters Degree in Public Health from Yale University in 1989.

What's New at the New Jersey Water Science Center: Data Collection and Delivery

Presenter: Robert G. Reiser

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Abstract

The Hydrologic Data Assessment Program at the USGS New Jersey Water Science Center is responsible for operating hydrologic data collection networks. The networks are mainly longterm data collection projects operated in cooperation with NJDEP, and 26 other federal, state, and county agencies and water authorities. These networks comprise an extensive and comprehensive data collection program. The wealth of hydrologic data generated from these networks is an important source of information not only for the USGS and it's cooperators for studying hydrology in New Jersey but also for water managers, emergency managers, engineers, environmentalists and the general public. New Technology is being employed to collect the hydrologic data. The internet is being used to make the data more easily accessible.

Robert Reiser is a supervisory hydrologist with the Hydrologic Data Assessment program at the U.S. Geological Survey's New Jersey Water Science Center. He has a BS in Environmental Resource Management from Penn State University. He began his career with the USGS, 26 years ago, as a field hydrologist. His experience in surface water hydrology involves streamgaging, computation and analysis of stream flow records and statistics. His experience also includes collection, and analysis of water quality data, studies of pesticides and VOCs in New Jersey streams, assessment of water quality status in New Jersey river basins and point/non-point source loads in the Raritan River basin.

Clean Water Act Basics: Surface Water Quality Standards, Integrated Report, Water Restoration

Presenter: Debra Hammond

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Co Presenter: Sandra Cohen

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Abstract

Pursuant to the federal Clean Water Act, States are required to establish water quality standards which define the desired uses and the criteria to protect those uses, report to EPA on the condition of the state's waters and to identify impaired waters. This session will provide an overview of how NJ has integrated these requirements since 2002 and its plans for 2012.

Debra Hammond has a degree in Environmental Science from Rutgers University. She has over 30 years experience at the Department of Environmental Protection in water monitoring, NPDES permitting, and planning. She is currently the Chief of the Bureau of Water Quality Standards and Assessment, which is responsible for the development of water quality standards and criteria for both surface and ground water as well as the development of the Integrated Water Quality Monitoring and Assessment Report.

Debra Hammond joined the DEP in 1978 after graduating from Cook College, Rutgers University with a degree in Environmental Science. She has worked in a variety of New Jersey water programs, starting out in Water Quality Planning and Management, where she conducted water quality monitoring and analyses, developed 305(b) Water Quality Inventory reports, and participated in the Clean Lakes Program. She joined the NJPDES program in 1985 and developed the "polluter pays" fee program. She also worked in the Division of Watershed Management and served as the Department's NEPPS Water Committee Co-chair. Since 2002, she has been the Chief for the Bureau of Water Quality Standards and Assessment and is responsible for the development, adoption, and administration of New Jersey's Surface and Ground Water Quality Standards. This includes the development of water quality criteria to protect aquatic life and human health, the assignment of stream classifications to reflect existing and designated uses, and the promulgation of antidegradation policies to protect and maintain the quality of surface and ground waters of the State. She is also responsible for conducting and coordinating water quality assessments of all waters of the State. These assessments are reported through the New Jersey Integrated Water Quality Monitoring and Assessment Report.

Sandra Cohen holds a Bachelors Degree in Biology from Douglass College, Rutgers University, and a Masters Degree in Public Administration from Rutgers University Graduate School. Sandra has twenty-six years of experience with the Department of Environmental Protection, primarily in water quality planning, watershed management, and water quality assessment. Sandra is currently a Research Scientist 1 with the Bureau of Water Quality Standards and Assessment and is responsible for the New Jersey Integrated Water Quality Monitoring and Assessment Report, the New Jersey Ground Water Quality Standards Program and rules, and Bureau Web site design and maintenance.

Sandra Cohen joined DEP in 1985 as a student intern and played a key role in developing and implementing the Department's Water Quality Management Planning Program and rules, Industrial Stormwater Permitting Program and rules, Air Quality Outreach and Communications and rules, Stormwater Management rules, Watershed Management Programs, Ground Water Quality Standards rules, and Nutrient Criteria Enhancement Plan. Sandra was a Bureau Chief for the Division of Watershed Management from 1999 through 2004 and was responsible for overseeing Water Quality Modeling and Total Maximum Daily Load Program, Statewide Nonpoint Source Pollution Control Program, 319(h) Nonpoint Source Grant Program, and 604(b) Water Quality Planning Grant Program.

Sensor Monitoring in Freshwaters: Automated Stormwater Monitoring and Sampling

Presenter: Todd Kratzer
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Abstract

The Watershed Protection Programs Division of the NJ Water Supply Authority was awarded a 319(h) grant to implement innovative stormwater control projects at selected sites within the Lockatong and Wickecheoke Creek Watersheds, Hunterdon County, NJ. The projects were proposed in the “Lockatong and Wickecheoke Creek Watersheds Restoration and Protection Plan” for demonstrating techniques to reduce rainfall runoff volume and non-point source pollutant loadings (see website for reports - <http://www.raritanbasin.org/lockwick.html>).

This presentation will describe the technique and benefits of assessing the volume and quality of site-specific storm runoff characteristics prior to, and following, the installation of controls. Automated stormwater samplers were installed by the Authority to collect runoff flow data and water samples during rain storms at 4 project sites. Each sampler was programmed to collect up to 14 samples during a runoff event. Individual samples were collected at selected water depths, representing water quality snapshots along the hydrograph. The samplers simplified the collection of storm samples that historically were collected by field personnel. Sampling crews would have 15 to 20 minutes to organize, drive to each project site, and collect the samples. However, the automated samplers eliminated this problem. In addition, it was possible to sample storm events occurring on a weekend or in the evening, and/or in remote locations when flow conditions were appropriate. Total runoff volume and loadings for nutrients and solids were calculated for each storm event. The data are being used to facilitate the stormwater control designs, as well as for forecasting runoff conditions associated with future changes in land use(s).

Following this sampling program, the units will be relocated to other sites within central New Jersey to continue quantifying storm runoff for the implementation of effective controls.

Todd Kratzer received a BS in Environmental Resource Management and a Masters in Environmental Pollution Control from the Pennsylvania State University. Developed technical regulatory criteria for protecting water quality within the Upper and Middle sections of the Wild and Scenic Delaware River. Developed statistical technique used throughout the State for determining the maximum daily load of total phosphorus to sustain compliance with the NJDEP regulatory limit for surface waters. Currently conducting physical and chemical assessments in several watersheds to identify and remediate surface and ground water pollution problems to ensure a future supply of potable water.

Sensor Monitoring in Freshwaters Multi-Parameter Instruments: Vital to Good Water Quality Data

Presenter: Dan Skulski

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Abstract

The HDAP section of the USGS New Jersey Water Science Center is responsible for operating one of the more extensive and comprehensive data programs operated by a Water Resource Division in the country. The wealth of hydrologic data generated from these networks is an important source of information for the USGS and its cooperators as well as water managers, engineers, environmentalists, and the general public. While accurate lab results, PhD review, and reporting all contribute to the quality of our data, it is the hydrologic technician that must provide the best sample and data possible. Along with education and experience, the multi-parameter instrument is perhaps the most important piece of equipment in the hydrologic technician's arsenal. The correct use, maintenance, and understanding of a multi-parameter instrument are vital in any water data collection activity. The focus of the presentation will be the specific ways we at the USGS utilize the multi-parameter instrument. Additional discussion will include the proper use and maintenance of the multi-parameter, along with issues that a technician may encounter.

Dan Skulski is a Hydrologic Technician with the US Geological Survey - Water Resources Division – in West Trenton, NJ. Dan graduated with a B.S. in Natural Resources Management from Rutgers University, Cook College in 2002. After five years in the environmental consulting industry, Dan joined the survey in 2006 and has primarily worked within the Hydrologic Data Assessment Program (HDAP). The HDAP unit collects water samples at 40 different rivers and streams across all of New Jersey. Dan, along with a group of seven other technicians and hydrologists, are responsible for surface water collection, processing, analysis, dissemination, and archiving within the New Jersey Water Science Center program. Dan is also responsible for three real time continuous water monitoring sites.

Environmental Science, Stewardship & You – Perfect Together

Presenter: Paula Zevin

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Abstract

Environmental Science, Stewardship and You - Perfect Together centers on how citizen scientists and EPA can work together to achieve results which could not be otherwise possible. The presentation touches on the commonalities and differences between the work that EPA and citizen scientists perform, and how both sides can work towards achieving a closer cooperation. The presentation is geared mostly towards the environmental educator at all levels, but volunteer or non-profit organizations just setting out with projects entailing environmental data collection would benefit from attending the workshop.

Paula Zevin is the Regional Volunteer Monitoring Coordinator for Region 2. In this role, she is the liaison with state volunteer monitoring coordinators, individual organizations and academic institutions engaged in environmental stewardship, offering technical assistance with design and implementation of volunteer monitoring programs, quality assurance and grant review for non-profits. She is a member of the New Jersey Watershed Watch Network volunteer monitoring external advisory committee and of the New Jersey Water Quality Monitoring Coordinating Council. She is the DESA technical contact for Performance Partnership Agreements for New Jersey, Puerto Rico and the U.S. Virgin Islands, as well as the technical liaison for ambient monitoring for PR and the USVI. She is involved in the Lake Ontario US Tributary ambient monitoring program and represents EPA Region 2 on the Niagara River Monitoring Committee (with New York State, Environment Canada and the Ontario Ministry of the Environment). In the Region, Paula has been part of the review team for Environmental Education and CARE grant proposals for many years. She assists the DESA AWQAT team with project plan reviews and the development of project-specific templates. Paula conducts educational outreach with local high schools and the Douglass Project for Women (Rutgers University, summer residential science program for high school students) through class visits, lectures, interactive, hands-on monitoring sessions and field trips on the Clean Waters, as well as a speaker at volunteer monitoring organization events.

Paula started her career with EPA Region 2 in 1991 as an Environmental Engineer in the Toxic Release Inventory Program (TRI, EPCRA 313), performing manufacturing sector inspections, audits and civil complaint resolution; she served on EPCRA 313 national workgroups on compliance and enforcement topics. She joined DESA, Monitoring and Assessment Branch, the Monitoring Operations Section in 2000.

Prior to joining EPA, Paula worked in the private sector, at Cosmair Inc. (L'Oreal) in Research and Development, and as Manager of Industrial Chemistry (full-size production scale-up, specification development and testing) for hair care and hair color products. She started her professional career as an engineer in the textile industry, in the dyeing and finishing sector in Bucharest, Romania.

Diurnal Dissolved Oxygen Monitoring: Optical versus Membrane Sensors

Presenter: Thomas Amidon

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Abstract

Diurnal dissolved oxygen (DO) measurements are frequently performed *in-situ* along with temperature and pH (and sometimes conductivity and turbidity) to assess the impact of a variety of biochemical processes on surface water quality. These processes include photosynthesis, respiration, and decay associated with primary producers, namely plants and algae. The levels and diurnal fluctuations of DO and pH are therefore useful in assessing nutrient impacts. *In-situ* measurements of dissolved oxygen are often obtained by deploying a multi-parametric meter equipped with a data recording device (datalogger). The meter is equipped with a sensor that generally measures DO using one of two methods: 1) optical (luminescent-sensor) technology; or 2) membrane technology (also called Clark cell or amperometric method). The advantages and disadvantages of each DO sensor method under various environmental and regulatory constraints will be presented, along with the results of a long-term side-by-side field comparison. Optical sensors perform well in environments where membrane sensors are not as well suited, namely: low dissolved oxygen environments and low velocity environments. However, optical sensor technology still does not enjoy universal regulatory approval as a certified DO measurement method.

Omni deployed optical and membrane DO sensors side-by-side for extended periods from June 2010 through May 2011 in the Raritan River. Results from these deployments demonstrate the reliability as well as the limitations of each technology. While the optical and membrane DO data were generally consistent, there were periods of time when the DO peaks observed with the optical DO sensor were higher than those observed with the membrane DO sensor. Based on the grab data (both Winkler and optical Hach meter) available near a few of the peaks, it appears that the optical type DO sensors capture the actual DO peaks better than the membrane type DO sensors under some conditions.

Thomas Amidon earned a B.S. in Biology from the Pennsylvania State University, and a M.S. in Engineering Science from the State University of New York at Buffalo. He worked for ten years as a NJDEP scientist in the areas of environmental radiation and watershed management. For the last eight years, Mr. Amidon has been working as a consultant with Omni Environmental. Areas of focus include: surface water quality studies; total maximum daily loads; watershed and wastewater planning; stormwater management; and risk assessment. Mr. Amidon currently serves on the Water Quality and Quantity Committee of the NJDEP Science Advisory Board.

Barnegat Bay Water Quality Monitoring: A Student's Perspective

Presenter: Dr. John Wnek

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Abstract

As part of the Barnegat Bay Student Grant Program, college students participated in a water quality project that was coordinated by the NJ DEP Bureau of Marine Water Monitoring, Rutgers Cooperative Extension of Ocean County, and the Marine Academy of Technology and Environmental Science (MATES). Students developed a quality assurance and control plan as a Tier B water quality monitoring effort along the Toms River, New Jersey. Beachwood beach is among the "worst rated" beaches in the nation in terms of closures after rainfall events. Pine Beach, the neighboring town, also has undergone beach closures. Student in this project sampled storm water runoff prior to, during first flush, and thirty minutes into rainfall events that produced at least 1/10 inch of rainfall or more. Water quality parameters, including turbidity, temperature, pH, and salinity were recorded. Students also tested for *E. coli* and *Enterococcus* bacteria. Students used a hand-held Aquaflor fluorometer to determine optical brighteners. Optical brighteners are agents used to make clothes brighter during washing, and may be indicators of human sources of runoff into the Toms River. Students used Coliscan Easygel® testing to determine *E. coli*, and used the IDEXX method to test for *Enterococcus* bacteria. Students also developed a QA/QC plan that was approved by the NJ DEP as a result of the project. The student results indicated that *E. coli* levels significantly exceeded safe swimming standards (200 colonies or less per 100 mL water) after rainfall events, and that there were higher than baseline optical brightener levels. This project provided a better indication of how to incorporate students into testing to collect quality measurements and it provided students with hands-on experience in field methodology. The Barnegat Bay Student Grant Program demonstrated the link between education and good science, and provided more data about the water quality problems on the Toms River at Beachwood Beach and Pine Beach, New Jersey.

Dr. John Wnek is supervisor of science at the Marine Academy of Technology and Environmental Science (MATES). John serves on the Barnegat Bay Student Grant Program committee, and is the student project coordinator. He is also a co-Principal Investigator of the Barnegat Bay Diamondback Terrapin research project at Barnegat Bay. John has written several lessons incorporating the Barnegat Bay Watershed as a theme, and he has written curricula at MATES that focuses on Barnegat Bay in oceanography, aquatic ecology, and environmental science. He contributes lessons and professional development training workshops as part of the Barnegat Bay Educator's Roundtable.

Stream Gaging: Methods for Measuring Stream Velocity And Computing Discharge

Presenter: Jason Shvanda

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Abstract

Discussion of USGS methods used for stream gaging. Measuring stream velocity and discharge with acoustic equipment, mechanical meters, flumes, weirs, volumetric and floatation methods. Selecting a stream site to measure velocity and discharge, measuring stage and developing a stage-discharge relation

Jason Shvanda is a hydrologist with the U.S. Geological Survey's New Jersey Water Science Center. He has a BS in Environmental Science from East Stroudsburg University. He began his career with the USGS, 10 years ago, in the Hydrologic Data Assessment Program as a surface water hydrologic technician. He ran a surface water gaging station field trip for 7 years, most of which was in the northwest part of the state. Some of his current duties include the analysis of surface water records, and operation of new index-velocity gaging stations. He is also project chief of the bridge scour project in cooperation with the NJ DOT.

Technical Considerations for Performing Water Quality/Quantity Monitoring Studies

Presenter: Barrett Gaylord

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Abstract

After summarizing a variety of sensor types and platforms from which one can continuously monitor water quality, quantity and level, this presentation will address problems researchers commonly encounter when trying to use commercial sensors. Specifically, it will cover the theory, proper use and maintenance of Electrochemical vs. Luminescent Dissolved Oxygen sensors. It will similarly address other commonly used sensors such as pH and Turbidity. A review of certain data management and QA/QC tools will also be presented.

Barrett Gaylord – From 2008 – Present, he is the Northeast Technical Representative for YSI. His duties include routine customer training, troubleshooting and large-group workshop presentations. From 2005 – 2008, he served as Microbiologist & QA Officer for the New York City Dept of Environmental Protection where his duties included routine auditing of field and laboratory techniques, SOP management, data review, and laboratory analysis. From 2004 – 2005 he was a Research Scientist at Fordham University where his duties included routine field sampling of lakes and rivers, and supervision of the laboratory and students. He had a MS in Ecology from Penn State University and a BS in Biology from U. Wisconsin—Milwaukee.

Private Well Testing Act & Results to Date

Presenter: Judy Louis

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Abstract

In 2000, New Jersey passed the Private Well Testing Act. Beginning in September 2001, all private wells must be tested at the time of a real estate transaction for approximately 33 to 33 contaminants depending on the county. The law is basically a Right-to-Know Law. From the inception of the program to January 2011, 83,256 samples (72,109 individual wells) have been analyzed. Naturally occurring contaminants such as arsenic and gross alpha particle counts (a surrogate for radionuclides) most commonly exceed the NJ drinking water MCLs. This is followed by non-point source contaminants (nitrate and fecal coliform), and the least common are those from point sources (VOCs and mercury).

Judy Louis is the manager of the Bureau of Environmental and Health Assessment in the Office of Science in NJDEP. She received her B.S. in Chemistry from Purdue University, and her Ph.D. in Chemistry at New York University. During her career at NJDEP she has worked on issues relating to toxic air pollutants, pesticides, drinking water quality, and ground water quality.

Water Quality Restoration Through Permitting and Enforcement

Presenter: Richelle Wormley

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NJDEP - Air Compliance and Enforcement

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Abstract

Air Compliance and Enforcement ensures that facilities adhere to the air regulations, however when violations are found, settlement terms can be negotiated that result in a net gain for the environment. Sometimes these settlements result in projects that benefit the air only, but in a few instances the benefits can be far reaching across multimedia. This presentation shows an example of how an Air Enforcement case for multiple air violations resulted in a net benefit for air, water and the Camden City residents. Through funds provided from a settlement, a site was obtained, remediated, and beautified in the Waterfront South neighborhood located in Camden, New Jersey.

Richelle Wormley is the Manager of the Air Compliance and Enforcement Southern Office. She has been an employee with the New Jersey Department of Environmental Protection for twenty one years. Her career began as Environmental Engineer Trainee and her professional career development has led to her current position. In her role as Manager of the Air Compliance and Enforcement Southern Office (Air C&E), she is responsible for coordinating the day-to-day enforcement activities related to the air statutes and regulations to include overseeing the inspection of facilities, issuance of enforcement orders, and negotiating settlements with the regulated community. During her tenure with Air C&E, environmental cases in the Southern Region have been settled that have resulted in projects that benefit the environment. Some of these projects include funding for a Dust Identification Project in Camden's Waterfront South, the reduction in emissions at a vinyl chloride plant in Burlington, the beautification of Fort Billings Park in Paulsboro, NJ, and the solar panel installation at the Red Bank Elementary School in the West Deptford School district.

Prior to becoming a Manager with Air C&E, Ms. Wormley was a supervisor with the Bureau of Operating Permits, responsible for overseeing the issuance of Title V permits. She was also with the Bureau of Technical Services, overseeing and reviewing work performed by air test consultants both in the field and through the review of consultant reports.

Ms. Wormley received her Masters of Science Degree in Environmental Engineering from New Jersey Institute of Technology and Bachelors of Science Degree from Drexel University in Civil Engineering. Additionally, through the Human Resources Development Institute, she is a New Jersey Certified Public Manager.

Improving Stormwater Quality and Projecting our Groundwater in NJ

Presenter: Ed Frankel, Acting Bureau Chief
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Abstract

The Bureau of Nonpoint Pollution Controls is responsible for activities to control water pollution.

Ed Frankel has a BS in Biology from the University of Miami and a Masters in City and Regional Planning from Rutgers University. He has been with DEP for over 33 years. He is currently the Acting Bureau Chief of the Bureau of Nonpoint Pollution Control in the Division of Water Quality. The Bureau is responsible for all Municipal and Industrial Stormwater permitting, Stormwater Management Rules, Septic Rules (Chapter 199) and Discharge of Groundwater Permits (except Site Remediation Program projects).

Occurrence and Concentration of Pharmaceuticals and Personal Care Products in NJ Shallow Ground Water

Presenter: Raymond Boysenberry

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Abstract

Demands on ground water resources in New Jersey require the availability of high quality water for multiple uses. The study performed by the NJ Geological Survey in cooperation with the US Geological Survey on pharmaceuticals, personal care products (PPCPs) and organic wastewater compounds (OWCs) released to shallow ground water from large scale septic disposal systems will assist in the management of these resources and assist in protecting the public and environmental health in New Jersey. The goal of the study was to determine the occurrence, concentration and spatial distribution of these compounds in the shallow ground water just downgradient from large scale wastewater treatment systems that discharge to ground water.

Samples were taken from thirteen facilities that are permitted by the State of NJ. At each facility the disposal field was accurately mapped, ground water flow direction was determined and a sample was collected just below the ground water table downgradient of the disposal field.

The samples were analyzed for; field parameters, organic carbon, nutrients, ions, boron, iron, pharmaceuticals, wastewater compounds, antibiotics, sterols and hormones. In the coastal plain and bedrock aquifers detections of PPCPs and OWCs have been observed. It should be noted that only a portion of the results from the sampling performed in the bedrock aquifers has been received. Concentration levels of the compounds detected in the coastal plain are consistent with other studies. New Jersey is one of the first States to try to determine the occurrence and concentration of these compounds in bedrock aquifers, with no currently published studies for data comparison.

This study has produced the necessary data to perform a follow up study in the coastal plain to assess the fate and transport of these compounds. It has also shown the inherent difficulties of performing such reconnaissance studies in bed rock aquifers.

Raymond Bousenberry is an Environmental Specialist IV in the Bureau of Water Resources within the New Jersey Geological Survey. He has a BS degree in Marine Biology from Fairleigh Dickinson University and a MS Degree from NJIT in Environmental Sciences. Mr. Bousenberry is currently the project leader of the N.J. Ambient Ground Water Quality Monitoring Network and of the NJGS study on the impact of pharmaceuticals, personal care products, sterols and hormones to ground water quality. Mr. Bousenberry is a member of the NJ Water Monitoring Coordinating Council, and a member of the emerging contaminants working group.

Streamstats: Delivering Streamflow Information to the Public

Presenter: Kara Watson

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<http://nj.usgs.gov>*

Abstract

StreamStats is an interactive map-based USGS web application that allows users to easily obtain streamflow statistics and basin characteristics for USGS streamflow-gaging stations as well as for ungaged sites along a stream. The application uses a GIS and digital map data, allowing the user to automatically determine flood magnitude and frequency and values of basin characteristics for gaged and ungaged sites. The flood-frequency regression equations formulated from this study for the State of New Jersey have been input into the USGS National Streamflow Statistics (NSS) program and are used to solve peak flow frequency estimates within the web application. Using the updated flood-frequency regression equations, the user will be able to choose a point anywhere along a stream, and the GIS will automatically delineate the drainage-basin boundary, calculate values for selected basin characteristics, and obtain peak flow frequency estimates. The user can select existing USGS streamflow-gaging stations and obtain peak flow frequency statistics and other flow data with a link to the National Water Information System web interface (NWIS-WEB).

A StreamStats web application has been developed and implemented for use in New Jersey. The basin characteristics available for data retrieval for a delineated drainage basin, gaged or ungaged, are drainage-basin area, in square miles; basin shape index; mean basin elevation, in feet; longest flow path length, in miles; percentage of forest cover; 2000 population density, in persons per square mile; 10-85 basin slope, in feet per mile; percentage of storage; sum of length of streams in basin, in miles; percentage of urban land cover; and percentage of wetland land cover. Tidal areas and highly regulated stream reaches have been excluded from basin delineation and statistics estimation on the StreamStats website.

Kara Watson earned a B.S. in Geology from Virginia Tech. She is a hydrologist with the USGS- New Jersey Water Science Center, where she worked for the past 10 years. She works with surface-water statistics and GIS applications. Currently the lead of a project estimating monthly low-flow statistics for ungaged sites on streams in New Jersey. She also developed updated flood frequency estimating equations for NJ and StreamStats New Jersey.

Ms Watson has previously presented StreamStats at the New Jersey Association of Flood Managers Conference the last 3 years, NJ-AWRA, Rowan University, Montclair University, The College of New Jersey, and to various departments at the NJDEP.

SO WHAT?? Examples of Defining Measurable Results for your Restoration Efforts

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Abstract

As we seek to engage the community and municipal/state officials in the findings from our water quality monitoring it is important that we consider the information we are collecting and what it is that we are trying to accomplish. The question So What? albeit slightly cutting could be routinely applied during the set-up of programs to help provide rigor which could provide answers at the completion. In many areas of funding it is important to be able to show impact and planning to measure impact is the best way to determine if it has been achieved. As scientists and educators we have a responsibility to follow up to determine if what we have suggested is actually having the impacts we hypothesized they would have. This presentation is based on a case study for the Peters Brook watershed that involved water quality monitoring, installation of a Stingray flow meter in a stormwater pipe, WinSLAMM modeling and homeowner evaluations all revolving around four rain barrel workshops. Comparison of results will be discussed and how to best interpret these results for the community, funders and local officials will be the focus of the presentation: all revolving around the question So What? What does all of it tell us? And which of these results best helps to answer that question?

Pat Rector earned both her M.S. in Biology and her B.S. in Environmental Science from William Paterson University. She is an Environmental and Resource Management Agent with Rutgers Cooperative Extension, serving Morris and Somerset Counties since 2009. She previously was with the New Jersey Department of Environmental Protection as a Principal Environmental Specialist since 2001. With Rutgers she has been involved in: implementation of the Troy Brook Plan; a Peters Brook Rain Barrel Disconnection Project; Water Chestnut Task Force; Co-Editor of the Green Knight Newsletter; she has several publications and presentations at national conferences.

POSTER SHOWCASE: Arsenic Release from Coastal Plain Sediments in New Jersey, USA Biogeochemical Processes

Presenter: Pamela A. Reilly

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Abstract

As part of a joint study with the NJDEP the USGS determined background levels of arsenic (As) in streams in NJ. Studies of as in groundwater/surface-water interactions in the New Jersey Coastal Plain have involved two general types of geologic materials: arsenic-rich glauconitic marine-origin sediments, and arsenic-poor quartzose deltaic-origin sediments. In reducing environments where high concentrations of dissolved organic carbon (DOC) are present from natural or anthropogenic sources, as is released from these geologic substrates, presumably through microbial activity fueled by DOC. Elevated levels of As were found to be released by the glauconitic sediments (6 to 89 ug/L) and quartzose sediments (from <1 to ~ 7 ug/L) in shallow groundwater prior to its discharge to streams.

Microcosm experiments were conducted and amplification of the arsenic respiratory reductase gene (*arrA*) confirmed the presence of As-reducing bacteria. Microbial reduction and subsequent release of as was shown to take place in the shallow aquifer sediments beneath the stream in microenvironments where redox conditions differ and where inputs of organic carbon stimulate microbial activity. Given conducive conditions, anthropogenic inputs of DOC to the subsurface environment could substantially increase the amount of microbially mobilized as even when the As content of the sediments is low.

Pamela Reilly has been employed as a Hydrologist at the U.S. Geological Survey - New Jersey Water Science Center for over 12 years. She received her BS in Biology from Monmouth University and her MS in Environmental Science from Rutgers University. Her recent work focuses on differentiating anthropogenic and geogenic sources of arsenic and mercury to streams in New Jersey to assist the NJDEP in establishing background levels of these constituents for the application of a statewide surface water TMDL. Her past work focused on the cycling of metals through surface water and shallow ground water environments, examining the hydrogeology and groundwater withdrawal effects on fauna in the Pinelands National Reserve, and most recently the effects of hydrologic change on the aquatic invertebrate assemblage in NJ streams.

POSTER SHOWCASE: The Development of a Headwaters Index of Biotic Integrity for New Jersey Streams

Presenter: John Abatemaro

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Abstract

Since 2004, the New Jersey Department of Environmental Protection (NJDEP) has been working in cooperation with the Academy of Natural Sciences of Drexel University to develop an IBI for New Jersey headwater streams. Unlike New Jersey's current Fish IBI, the headwaters IBI assesses streams less than 5 square miles in drainage and includes the use of fish, salamanders, crayfish, and frogs. Separate metrics have been developed for high gradient streams with impoundments, high gradient streams without impoundments, and low gradient waters.

The three phases of the project have led to the collection of habitat, water chemistry, and biological data from 66 sites. This data was used to develop and finalize sampling protocols, metrics for each strata, and scoring criteria. Water Monitoring & Standards' Bureau of Freshwater and Biological Monitoring (BFBM) is working to create a headwaters monitoring network in 2012 and to initiate monitoring in the near future. The inclusion of a headwaters IBI will enhance NJDEP's biological monitoring program to include some of the most threatened aquatic environments and will provide the department an essential tool to assess aquatic life use 305(b), identify impaired headwater streams 303(d), and reveal those smaller waters in need of special protection (Category One).

John Abatemaro has worked in NJDEP's Division of Water Monitoring and Standards' Bureau of Freshwater and Biological Monitoring for over 7 years. His area of responsibility is in the Fish Index of Biotic Integrity program. He has a Bachelor's Degree in Fisheries and Aquaculture from SUNY Cobleskill.

POSTER SHOWCASE: Freshwater Short-Term and Long-Term Continuous Monitoring Applications in NJ

Presenter: Alex Dinkel and Paul Burt

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Abstract

There are numerous short-term and long-term continuous monitoring applications for evaluating New Jersey's freshwaters. DEP's Bureau of Freshwater and Biological Monitoring, in partnership with USGS's NJ Water Science Center, employs continuous monitoring to measure diurnal fluctuations in D.O., D.O. saturation, pH, water temperature and turbidity over 72 hour periods. This diurnal monitoring is used to determine critical results to assess attainment of NJ's Surface Water Quality Standards. DEP's Science Advisory Board has recently affirmed the technical procedures and conditions used for this short-term diurnal monitoring. Long-term continuous monitoring of water temperature is being used to measure normal daily fluctuations and impacts of heat transfer from impervious surfaces to adjacent streams at the onset of summer storms. This winter, long-term continuous, specific conductance data loggers will be used for the first time to measure impacts of road salt runoff on adjacent streams. In 2012, as part of DEP's Barnegat Bay Initiative, short-term, continuous monitoring data will be collected at 12 tributary locations and used in conjunction with discrete chemical data to assess impacts of contaminant loadings to the bay. The availability of long-term, continuous water quality data for both freshwater and coastal waters is summarized in the NJ Water Monitoring Council's Continuous Monitoring Inventory (<http://www.state.nj.us/dep/wms/wmccactivities.html>); links are provided to continuous data sets from multiple monitoring organizations and cooperators (e.g. USGS, DEP, Monmouth University, MERI) from over 60 locations statewide.

Alex Dinkel is a Senior Environmental Specialist working for NJDEP's Bureau of Freshwater & Biological Monitoring. He has been working for NJDEP for the last eleven years on Surface Water Monitoring networks and their relevant technologies.

POSTER SHOWCASE: Hurricane Irene Data Collected by the JCNERR's Telemetered SWMP Stations

Presenter: Gregg Sakowicz
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Abstract:

Hurricane Irene made landfall in New Jersey's Little Egg Inlet early morning August 28th, 2011. This was the first hurricane to make landfall in New Jersey since the Hurricane of 1903 struck Atlantic City with devastating results. In contrast to the unnamed 1903 storm, a number of sophisticated environmental-monitoring instruments were deployed during Irene, such as those operated by the Jacques Cousteau National Estuarine Research Reserve (JCNERR) as part of the NERRS (National Estuarine Research Reserve System) System-Wide Monitoring Program (SWMP), including three telemetry stations collecting and broadcasting data live through the event. These three stations in the SWMP array collect and transmit data to a GOES (Geostationary Operational Environmental Satellite) operated by NOAA (National Oceanic and Atmospheric Administration), which then relays the data back to Earth-bound receivers where they are repackaged for disbursement by the NERRS Central Data Management Office (CDMO) via www.nerrsdata.org.

Gregg P. Sakowicz is a Researcher with Rutgers University and the Jacques Cousteau National Estuarine Research Reserve System (JC NERR). Gregg is a Field Researcher at Rutgers University and is involved in a number of research and monitoring activities, among them annual surveys of Submerged Aquatic Vegetation (SAV) in Barnegat Bay and Little Egg Harbor and carrying out the duties associated with the National Estuarine Research Reserve System's (NERRS) System-wide Monitoring Program (SWMP).

POSTER SHOWCASE: Marine Academy of Technology and Environmental Science (MATES)

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Abstract

A Tier B model water quality monitoring program was developed to include students in a critical thinking project was used to detect human signatures in storm water runoff along the Toms River. Students sampled and tested water, correlating rainfall with bacteria measurements and the presence of optical brighteners.

Danielle Clancy was a participant in the Barnegat Bay Student Grant Program and she was an intern at the Rutgers Cooperative Extension of Ocean County during the summer of 2011. Danielle worked on a project in conjunction with the NJDEP, Rutgers Cooperative Extension, and MATES involving the detection of human signatures in storm water runoff along the Toms River. She focused on testing bacteriological (E. coli and Enterococcus) along with abiotic parameters during storm cycles as part of a Tier B volunteer water monitoring project. She further correlated optical brightener readings with bacteria counts, while developing a working quality assurance and control plan with the NJDEP.

POSTER SHOWCASE: Mercury in New Jersey's Diamondback Terrapins (*Malaclemys terrapin*)

Presenter: Natalie Sherwood

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Abstract

Diamondback terrapins (*Malaclemys terrapin*) are legally harvested throughout the state of New Jersey. Turtles are usually sold for human consumption at both local and global markets. Since turtles are long-lived omnivores, they can bioaccumulate high concentrations of pollutants in their tissues, such as mercury. High levels of mercury have been reported in turtle eggs, fat, organs, blood, shell, and muscle. This study aims to assess human consumption safety of diamondback terrapins. Twelve female and eight male turtles were collected from the Cape May area, New Jersey. Samples were collected from turtle carapace (n=24), blood (n=17), and front leg muscle (n=22). Mercury concentrations of collected samples were measured using Bacharach Coleman Cold Vapor AA Hg Analyzer (Model 50D). The results indicated the highest average mercury concentration was found in turtle carapace (1.099ppm), the concentration in blood the second highest (0.194ppm). The lowest concentration was found in turtle muscle at 0.178ppm, which was lower than the U.S. EPA fish mercury threshold of 0.3ppm. Three of the 22 muscle samples, 13.64%, were found to be over the threshold with the highest concentration of mercury recorded at 0.5ppm. The result of this study suggests that on average, diamondback terrapins generally do not pose as a threat to human consumption safety but a warning that some may terrapins exceed the limit and therefore consumption is inadvisable for pregnant women and young children.

Natalie Sherwood attended Rutgers University where she received a B.S. in Zoology. She received a Masters degree from Montclair State University in Biology with a concentration in Ecology and Evolution where her master's thesis focused on habitat selection of the threatened wood turtle. She is currently a first year PhD student in the Environmental Management program at Montclair State University. Her research focuses on the turtle harvest and its effects on wild populations, heavy metal contamination in harvested species and the economics of the harvest. Her research interests also include wildlife protection and conservation. An additional focus is on studying human impacts on wildlife and their habitats, with the goal of finding ways by which we can alleviate human pressures on wildlife. Other research areas of interest include conservation of wetland as well as aquatic habitats

POSTER SHOWCASE: Metedeconk River Watershed protection and Restoration Plan

Presenter: Eileen Althouse

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Abstract

A protection and restoration plan is currently being prepared for the Metedeconk River watershed. The poster will detail the status of the watershed as described in the technical analysis prepared for the Metedeconk River Watershed Protection and Restoration Plan. Restoration of the Metedeconk River watershed is of utmost importance because not only is it a potable water source for more than 100,000 residents, it is also a tributary of the Barnegat Bay, which has been suffering from high levels of nitrogen. The poster will highlight the data gathered through the Visual Assessment Project Plan (VAPP), which was implemented at 83 stream reaches. This data set was coupled with water quality data collected by Brick MUA and available land use data to present the current status of watershed health. This information will be used to determine restoration and protection strategies for the watershed and identify possible sites for restoration with LID solutions.

Robert Karl is the Source Water Supervisor for the Brick Township Municipal Utilities Authority and a graduate of Rutgers University. His education and work experience have focused on water resources management, regulatory compliance, and geographic information systems. He is responsible for managing all aspects of the BTMUA's raw water supply, which includes a Metedeconk River intake, one billion gallon off-stream reservoir, Aquifer Storage and Recovery (ASR) well, and production wells screened in the Potomac-Raritan-Magothy, Englishtown and Cohansey aquifers. Through his administration of the BTMUA's Source Water Protection Program, Mr. Karl oversees a comprehensive watershed monitoring program and is playing a leading role in the development of a Metedeconk River watershed management plan.

Eileen Althouse is a water resources engineer with the consulting engineering firm CDM and is licensed as a professional engineer in the State of New Jersey. She has experience with hydraulic and hydrologic collection system and watershed modeling, water quality analysis, and watershed management. Eileen obtained a masters degree in bioresource engineering from Rutgers University. She also completed her undergraduate degree in bioresource engineering at Cook College and The School of Engineering at Rutgers University.