



NJ Water Monitoring Coordinating Council

Measuring What Counts for Clean & Plentiful Water

May 25, 2011
MEETING MINUTES

Member Attendees

NJDEP – *WM&S*: Leslie McGeorge, Alena Baldwin-Brown, Danielle Donkersloot, Helen Pang, Bob Schuster, Tom Vernam *NJGS*: Ray Bousenberry *OS*: Gary Buchanan, Judy Louis *DWQ*: Marzooq Alebus

USGS – Rick Kropp (for Eric Vowinkel), Jack Gibs, Bob Reiser

DRBC – Bob Tudor, Tom Fikslin

EPA R2 - John Kushwara

IEC -

NJ Pinelands Commission – Nick Propocio

NJ Water Supply Authority – Todd Kratzer

Rutgers (Coop Extension Service) –

Rutgers (IMCS) –

Passaic River Institute/Montclair U. –

Monmouth University/Urban Coast Institute – Jim Nickels

Meadowlands Environmental Research Institute –

NOAA –

Monmouth County Health Dept –

Barnegat Bay Partnership – Jim Vasslides

Stony Brook-Millstone Watershed Association – Alyse Greenberg

Musconetcong Watershed Association – Nancy Lawler

NJ Harbor Dischargers – Ashley Pengitore

Brick Township MUA –

Guest Speakers/Discussion Leaders

Ron Baker – USGS NJ Water Science Center

Steve Cauller – USGS NJ Water Science Center

Ben Fertig – Rutgers/IMCS

Trish Ingelido – NJDEP/WM&S

Jill Lipoti – NJDEP/WM&S

Bob Nicholson – USGS NJ Water Science Center

Paul Morton – NJDEP/WM&S

Jinnie Woodward – ALLARM

Guests

Ron MacGillivray – DRBC

Vic Poretti – NJDEP/WM&S

Christine Wieben – USGS NJ Water Science Center

John Yagecic - DRBC

➤ **Council Business**

- Minutes from the 02/09/11 Council meeting were approved.

- Member Announcements: 1. *New and Replacement Members* – The Brick Township Municipal Utilities Authority (represented by Rob Karl), the Barnegat Bay Partnership (represented by Jim Vasslides), and Monmouth University’s Urban Coast Institute (represented by Jim Nickels) have officially joined the Council. Marzooq Alebus has changed positions at DEP and now represents the Division of Water Quality. Helen Pang is now serving as DEP’s Bureau of Environmental Analysis & Restoration representative on the Council. An updated list of Council members was distributed; additional modifications should be provided to Alena Baldwin-Brown. 2. *Updated Continuous Monitoring Inventory* – Alena Baldwin-Brown reported that the Continuous Monitoring Inventory spreadsheet and map have been updated and re-posted on the Council’s website. Suggestions were made to add a column for nitrate, add continuous monitoring information from other groups, such as the Pequannock River Coalition, as well as possibly adding information for short-term continuous monitor deployment. This last item will be discussed further at the September Council meeting. 3. *Summer 2011 Ocean Glider Runs* – Bob Schuster announced that the ocean glider (a cooperative effort between DEP, EPA and Rutgers) will begin operations in Summer 2011. Test runs are scheduled for early July with full deployment expected shortly after. Ocean monitoring for DO will be discussed further at a subsequent Council meeting. 4. *Sustainable State: Water-related Indicators* – Leslie McGeorge briefed the Council on a DEP effort related to sustainability and relooking at efforts from previous Sustainable State reports. There were 3 ambient water monitoring indicators used previously – river health, marine water quality and ocean & bay beach closings. Leslie requested Council input on the measures – are they good enough, can they be improved, and are there better measures that could be used in place of/addition to these. A summary of this effort is available on the Council’s website. [NOTE: DRBC indicated that they are also working with the Delaware Estuary Program on a Technical Report for the State of the Estuary and Basin that will address indicators in several areas of interest to members of the Council including water quantity and hydrology, water quality, and sediments.] 5. *Communicating Risk to Private Well Owners Using Maps* – Judy Louis brought a map that she has developed to try to communicate this information to private well owners. This map may be placed on-line as a communication tool and/or developed into a brochure. She is seeking comments from the Council on the effectiveness of this type of communication and will update the Council at the September meeting. 6. *National Monitoring Networks (Surface Water & Ground Water)* – USGS offered to provide updates at the September Council meeting on the development of the National Ground Water Network (& portal) as well as on the demonstration project for the National Surface Water Monitoring Network. 7. *EPA Healthy Watersheds Report* – Bob Tudor announced that June 3 is the deadline for comments on this report. Additional information about this effort can be found at: <http://water.epa.gov/polwaste/nps/watershed/index.cfm>. 8. *WATERSMART* – Rick Kropp and Bob Tudor mentioned that a small analysis-related grant (using stakeholders) had been received and that the first of the stakeholder meetings is expected to take place in September. They promised an update on this at the September Council meeting. 9. *2012 Integrated Report Data Solicitation* – Danielle Donkersloot announced that the solicitation notice for data for the 2012 Integrated Report had been published in the April 4, 2011 NJ Register and that the deadline for submission was July 1, 2011. Additional information on the data solicitation (including a link to the notice) as well as the Integrated Report in general can be found at: <http://www.state.nj.us/dep/wms/bwqsa/generalinfo.htm>.
- May 2011 National Water Quality Monitoring Council Meeting – Leslie McGeorge provided a summary from the May NWQMC meeting, including USGS Co-chair changes and a summary of the EPA ORD Safe & Sustainable Water Resources Research Program. The meeting also featured presentations on various state monitoring programs (ground water monitoring from SD, VT’s new state surface water management strategy), Gulf of Mexico post-oil spill monitoring, and monitoring related to EPA’s nutrient reduction framework. Presentations from the meeting are available on the NWQMC website at: <http://acwi.gov/monitoring/ppt/index.html>. Additional items discussed included a call for ideas for the NWQMC newsletter’s Fall issue, a survey of 17 State and Regional Councils to assist in Council formation and sustaining a Council [note: this survey completed was completed on behalf of the NJ Council], and a call for abstracts for 2012 National Water Quality Monitoring Conference, set for Portland, OR, April 30-May 2. Abstracts must be submitted by September 23,

2011. Additional information about the conference is available at: <http://acwi.gov/monitoring/conference/2012/index.html>. Leslie's meeting summary is available on the Council's website.

- Water Quality Data Exchange System - Paul Morton provided an update on use of the NJ Water Quality Data Exchange System. He reported that 161K of results had been added to the system – primarily from the NJ Harbor Discharges Group, DEP's Bureau of Freshwater & Biological Monitoring, Brick Twp MUA, the AmeriCorps NJ Watershed Ambassadors, and Monmouth County Health Department. Additionally, as a result of the 2012 Integrated Report data solicitation, he shared that data have been submitted by DRBC, the Harbor Dischargers, the Musconetcong Watershed Association, and (possibly) the Pinelands Commission (deadline for data submission is June 30, 2011). Paul also showcased the new WQDE webpage which had gone "live" since the last Council meeting as well as new DEP Data Miner reports and a preview of new search features on NJGeoWeb.

- **Technical Presentations** (Copies of many of the following presentations have been posted to the Council's webpage - <http://www.state.nj.us/dep/wms/wmccpresentations.html>)

Marcellus Shale Monitoring

A. *DRBC's Monitoring Framework Associated with Natural Gas Drilling* – Tom Fikslin (DRBC)
Tom Fikslin summarized DRBC's monitoring efforts related to natural gas drilling and the draft regulations that have been proposed. While there are numerous parameters being monitored, radionuclides are not currently included in that list (however, they are included in a longer list for well pad and ambient monitoring). Tom also mentioned that the monitoring components of the proposed regulations are receiving support. [NOTE: John Kushwara (EPA) noted that EPA has been tasked with this monitoring in NY State (both private wells as well as surface water) and some of their work may overlap with DRBC's effort so they should coordinate, as the lower NYS state waters may impact the NJ waters.]

B. *Marcellus Monitoring: the Role of Volunteers in Baseline Data Collection* – Jinnie Woodward (ALLARM – Alliance for Aquatic Resource Monitoring, Dickinson College, PA)
Jinnie Woodward shared, with the Council, information on ALLARM's mission and role in empowering communities with various scientific tools to monitor and restore PA streams and, specifically, their involvement in training volunteers how to monitor the potential impacts associated with natural gas drilling in the Marcellus Shale region. In 2010, ALLARM released a baseline monitoring protocol which involves monitoring small streams before, during, and after drilling. The protocol is based around monitoring chemical parameters (conductivity, total dissolved solids), water quantity, and visual observations (earth disturbances, spill, and discharges) on a weekly basis. In addition, water samples are sent to a PA certified lab twice a year for barium and strontium analysis - two signature chemicals associated with Marcellus Shale drilling. Volunteers practice internal quality control measures and participate in ALLARM's external QA/QC program. Volunteers manage and interpret their data using an Excel template. To date, over 700 volunteers have been trained to use the ALLARM Marcellus Shale Monitoring Protocol. Additional information about the protocol, other monitoring efforts, and ALLARM in general is available at: www.dickinson.edu/ALLARM.

Barnegat Bay

A. *Governor's Barnegat Bay Initiative* – Jill Lipoti (NJDEP/WM&S)
Jill Lipoti provided an overview of the Governor's 10 Point Plan for restoration of Barnegat Bay, with emphasis on the area in which DEP's Water Monitoring and Standards plays a significant role (Action Item 7 – Develop More Rigorous Water Quality Standards). As part of this effort, DEP has established – with 9 partners - a Barnegat Bay Ambient Water Quality Monitoring Network. Many of the partners are members of the Council. Within the network, water quality as well as flow measurements are taken 2x/month from 13 tributaries to the bay as well as 14 stations within the bay itself. In addition, there are also 3 gauges which measure flow both into and out of the bay. Information and data from the network are available on the Barnegat Bay website:

<http://www.state.nj.us/dep/barnegatbay/plan-wqstandards.htm>. Jill also mentioned that a Press Event, featuring the network, was being planned [NOTE: the Press Event took place on July 20, at the Lighthouse Camp, in Waretown].

B. Barnegat Bay Research – Gary Buchanan (NJDEP/OS)

Gary Buchanan summarized another of the Action Items under the Governors Barnegat Bay 10 Point Plan - Action Item 9 (Produce More Comprehensive Research). Gary showcased the workings of an estuarine ecosystem and then featured potential research projects that, if undertaken, would support water quality improvement (nutrient criteria), assist in developing baseline conditions for the bay, filling the data/information gaps, and advancing habitat restoration in the bay. Coordination for this effort includes DEP programs, Barnegat Bay Partnership STAC, EPA, USGS, Ocean County College, and various State Universities.

C. DEP Monitoring in the Barnegat Bay Watershed: Fresh, Marine and Ground Water – Leslie McGeorge, Bob Schuster (NJDEP/WM&S) and Ray Bousenberry (NJDEP/NJGS)

Leslie McGeorge, Bob Schuster and Ray Bousenberry provided overviews of the existing monitoring in the Barnegat Bay watershed. In the freshwater tributaries to Barnegat Bay, there are 28 chemical/physical stations and 63 biological stations monitored as part of various freshwater monitoring networks (note: 25 of these stations have been monitored for both chemical as well as biological components). Results show that NO₂-NO₃ concentrations are substantially below the human health criteria (10mg/L), total phosphorus has a few values exceeding the aquatic life criterion (0.1mg/L), grab DO samples show just a few results exceeding the DO criteria (there has been only limited diurnal, continuous DO sampling but additional diurnal work is planned), and biological results show ~60% of the sites ranked good or excellent with generally stable or improving conditions between sampling rounds [Note: updated benthic macroinvertebrate results for this watershed will be available shortly]. In Barnegat Bay, itself, DEP has 401 National Shellfish Sanitation stations that are sampled for total coliform (3639 samples annually), 47 bay and 15 tidal tributary stations that are sampled quarterly for nutrients, 5 stations that are part of EPA's summer bi-weekly phytoplankton monitoring, as well as stations that are part of the National Coastal Assessment. In addition, aircraft remote sensing for chlorophyll a takes place over the bay and DEP is in the process of re-establishing 4 real-time continuous monitoring buoys in the bay (plus plans to add 2 more in the future). Results show that nitrogen levels are generally higher in the northern portion of the bay but that there is a small area of higher concentrations in the lower portion of the bay. There is also a wide salinity gradient, with lower salinities in the northern portion and higher salinities in the lower portion of the bay. During the 2011 summer season, a total of 56 remote sensing flights were conducted over the coast and Barnegat Bay. The results showed random blooms in different parts of the Bay throughout the summer. Sampling in these bloom areas showed *naanochloris sp.* as the dominant bloom species. This is a typical occurrence during the summer months in the Barnegat Bay Estuary. There are also 8 groundwater wells that are monitored in the Barnegat Bay watershed – 4 urban wells and 4 in undeveloped areas. Results show that urban land is impacting ground water quality related to nitrite+nitrate, specific conductance, and DO. However, there is little to no impact to the groundwater quality from orthophosphate. It should be noted that 8 ambient network wells located in the Barnegat watershed is not enough to accurately assess the ground water quality within the watershed or assess the land use impact to the ground water quality.

D. Development of New Ambient Monitoring to Support Barnegat Bay Model – Trish Ingelido (NJDEP/WM&S)

Trish Ingelido summarized the background and existing information that led to the establishment of the new Barnegat Bay Ambient Monitoring Network, including the known impairments as well as the need to make the linkages between stressors and restoration measures. She also detailed the steps in development of a TMDL, which could possibly be one of the outcomes of this water quality data gathering effort as well as explained why this particular data gathering effort was necessary even though other Barnegat Bay-related data already exist. In addition, she detailed the components of and timelines associated with the monitoring network including where the samples are being collected, how often, and the parameters being analyzed.

E. State of the Bay – Jim Vasslides (Barnegat Bay Partnership)

Jim Vasslides presented an overview of the 2011 State of the Bay report, which had recently been released by the Barnegat Bay Partnership. Jim detailed the process used to create the report as well as

the various indicator categories - estuarine eutrophication assessment, freshwater assessment, water supply, and habitat and living resources - and associated indicators found within the report. He also provided an overview of the overall findings and explained how the report was designed to communicate the indicators in a "public friendly" fashion. The report is available, online, at: <http://bbp.ocean.edu>.

F. Land Use Patterns & Aquatic & Wetland Resources in the Barnegat Bay Watershed – Nick Procopio (Pinelands Commission)

Nick Procopio presented information on land use patterns and resulting effects on aquatic and wetlands resources in the Pinelands portion of the Barnegat Bay watershed. Nick detailed the results of the study that demonstrated that elevated pH and specific conductance values and the invasion of non-native plants and animals in Pinelands streams and impoundments are linked to watershed-wide developed and upland agricultural land uses. These findings also generally held true throughout the entire Pinelands region.

G. Observations of Eel Grass Declines in Barnegat Bay-Little Egg Harbor – Ben Fertig (Rutgers/IMCS)

Ben Fertig provided an update on an eel grass-related project in Barnegat Bay-Little Egg Harbor that he is working on with NJ Council member Mike Kennish. Ben explained that eelgrass is declining globally due to multiple pressures, including eutrophication and that Barnegat Bay-Little Egg Harbor has been characterized as 'highly eutrophic'. USGS research has shown that high nitrogen loads enter the bay from the northern sub-watersheds. Overall, eelgrass biomass has declined significantly within and across the years and both aboveground and belowground biomass in 2010 were the lowest on record. Eelgrass biomass has been changing throughout the bay: Ben shared that transect sampling of eelgrass throughout the bay shows no significant difference in above or below ground eelgrass biomass between the central and southern portions of the bay. He also shared that overall, Barnegat Bay appears to be following a pattern of eutrophication seen in many coastal bays across the country similar to Barnegat Bay in that increased nutrient loadings are one of the causes degrading the necessary habitat and water quality for seagrass.

H. Update on Sources, Transport and Delivery of Nutrient Loads to Barnegat Bay – Bob Nicholson, Ron Baker and Steve Cauller (USGS NJ Water Science Center)

Bob Nicholson, Ron Baker and Steve Cauller presented overviews of work that USGS has been doing in Barnegat Bay. Bob Nicholson summarized recent activities related to restoration such as the BB Partnership's State of the Bay report, the Governor's 10 Point Plan, as well as the fertilizer, soil health and DOT stormwater basin laws. He also shared USGS' role in the ambient water monitoring network, in other work related to Action Item 7, as well as potential future endeavors. Ron Baker summarized water-quality monitoring work that has been done to support improving the ecological health of Barnegat Bay. Problems in Barnegat Bay and Little Egg Harbor (BB-LEH) that are or may be related to nutrient (nitrogen and phosphorus) loading from the watershed include depletion of seagrass, stressing of the finfish and shellfish populations, unwanted algae blooms, and invasive jellyfish. A nitrogen loading estimate for BB-LEH was completed in 2009, and shows that nitrogen contributions from the northern more developed basins are generally greater than those in the southern less-developed basins. Of the 650,000 kg N per year that is delivered to BB-LEH, 62% is from surface-water discharge. Storm sampling in 2010 and loading simulations with the program PLOAD showed runoff from more highly developed sub-watersheds contribute higher levels of nitrogen loading than from undeveloped areas. An increase in loading over time is attributable to increases in the percentage of developed land. Steve Cauller summarized an analysis of groundwater flow in the Kirkwood-Cohansey aquifer system and deeper confined aquifers that underlie the BB-LEH watershed and estuary that was undertaken by USGS. Groundwater discharge to surface water is an important contaminant transport pathway that can result in degraded surface-water quality and habitats in the New Jersey Coastal Plain. Simulation results from a groundwater flow model developed by the USGS, in conjunction with the particle tracking computer program MODPATH, provided estimates of groundwater flow paths, travel times, and the subsurface transport of nitrogen to streams and the BB-LEH estuary.

I. Monmouth University's Barnegat Bay Monitoring Program – Jim Nickels (Monmouth University/Urban Coast Institute)

Jim Nickels summarized the water quality monitoring and related field programs of Monmouth University's Urban Coast Institute, with an emphasis on work being done in the Barnegat Bay. Program & research areas including real time water quality monitoring, Shrewsbury River flood monitoring, macrozooplankton of Upper Barnegat Bay, benthic habitat and seabed classification, coastal lakes restoration, cooperative and contract research and support, and vessel and field operations. UCI has 8 real time monitors located throughout NJ estuaries. Real time data are taken every 15 mins and transmitted 1x/hour. Data are available online at:

www.monmouth.edu/uci/waterquality. UCI is a partner in the Barnegat Bay Ambient Water Monitoring Network and provides both real time data as well as in-bay sampling at 4 stations.

➤ **Technical Topics for Next Meeting**

Barnegat Bay Project Update and Preliminary Data

➤ **Next Meeting**

September 21, 2011 at NJDEP [Note: NJDHSS offered to host this meeting at their new Public Health Environmental and Agricultural Laboratory, so the meeting location was moved.]