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NJ Water Monitoring Council
Measuring What Counts for Clean & Plentiful Water

May 23, 2018
MEETING MINUTES

Member Attendees
NJDEP – *DWM&S*: Leslie McGeorge, Alena Baldwin-Brown, Bruce Friedman, Brian Henning, Helen Pang, Vic
Poretti, Bob Schuster   *DWS&G*: Jeff Hoffman   *DSREH:* Rob Newby   *DWQ:* Marzooq Alebus
NJDOH – Doug Haltmeier
NJDMAVA – Sarah Helble
USGS – Bob Reiser, Tom Imbrigotta
USGS (retired) –
DRBC – Namsoo Suk, John Yagecic
EPA R2 – John Kushwara
IEC – Evelyn Powers
NJ Pinelands Commission – Marilyn Sobel
NJ Water Supply Authority – Angela Gorczyca
Rutgers (Coop Extension Service) – Lisa Galloway Evrard
Rutgers (IMCS) –
Rutgers (Env. Bioengineering) – Eric Vowinkel
Montclair University – Meiyin Wu
Monmouth University/Urban Coast Institute –
Stockton University – Christine Thompson
NJ Sea Grant Consortium –
Meadowlands Environmental Research Institute –
NOAA –
Monmouth County Health Dept. – Lillian Charbonneau
Barnegat Bay Partnership – Jim Vasslides
The Watershed Institute – Erin Stretz, Nik Hansen
Musconetcong Watershed Association – Nancy Lawler
Raritan Headwaters Association –
Great Swamp Watershed Association –
American Littoral Society -
NJ Harbor Dischargers – Greg Alber
Brick Township MUA – William Ruocco

Guest Speakers/Discussion Leaders
Tom Atherholt – NJDEP/DSREH (retired)
Dean Bryson – NJDEP/DWM&S
Emmalee Carr – NJDEP/DWM&S
Jim Ferretti – EPA Region 2
David Hsu – Montclair University
Paul Morton – NJDEP/DWM&S
Loel Muetter - NJDOH
Jack Pflaumer – NJDEP/DWM&S

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Other Attendees
Austin Fitzgerald – NJDEP/DWM&S
Lee Lee – Montclair University
Coleen Makuszewski – NJDEP/ DWM&S
Levi Marris – Musconetcong Watershed Association
Briana Morgan – NJDEP/DWM&S
Rob Siracusa – NJDEP/DWM&S

➢ **Council Business** (Copies of the agenda, minutes and many of the information updates and presentations are available on the Council's webpage, under "Meeting Information" - **http://www.state.nj.us/dep/wms/wmccmeetinginfo.html)**

- Minutes from the 01/24/18 Council meeting were approved
- The next meeting will be September 26 at DRBC. Road salt/conductivity was approved by the Council as the main topic for the September meeting. Brick Twp MUA, DWM&S/BFBM, USGS, Musconetcong Watershed Association & DEP/NJGWS indicated they had material that could be presented. In addition, USGS will present the results of their intersex fish study (conducted with DEP/DSREH). The Council Steering Committee will develop the meeting agenda using the suggestions above.
- The Council welcomed new members Rob Newby (DEP/DSREH), Nik Hansen (The Watershed Institute – formerly Stony Brook-Millstone Watershed Association), Sarah Helble (NJDMAVA) and Sarah Johnson (ALS)

Information Updates, Presentations and Announcements:

1. *Announcements* –

- Erin Stretz shared that the Stony Brook Millstone Watershed Association has changed its name to The Watershed Institute. The change reflects both its enhanced role in coordinating citizen monitoring efforts throughout NJ as well as its expansion of work beyond the Stony Brook Millstone Watershed, including the Trenton →Lambertville area where there are currently no citizen monitoring groups.

- Namsoo Suk introduced himself as the new Director for DRBC's Science & Water Quality Management section. Namsoo replaces Tom Fikslin who retired on April 1.

- Leslie McGeorge reminded the Council about the upcoming National Water Monitoring Conference, March 25-29, 2019 in Denver, CO. Abstracts for presentations, posters and/or extended sessions are due by August 15. Leslie announced that the National Council is also attempting to gauge progress towards its mission via its guidance and products. If NJ Council members have feedback, please provide it to Leslie.

- Bob Reiser announced several new USGS publications summarized in a handout. These include 2 that relate to hydrology at or in the vicinity of the Edwin B. Forsythe National Wildlife Refuge as well as one related to groundwater withdrawals from the Kirkwood-Cohansey and Piney Point aquifers. These publications can be found online at the USGS publications warehouse https://pubs.er.usgs.gov/. Bob also announced that most of the data from the Northeast Stream Quality Assessment (NESQA) is on the USGS website (including data from the Saddle and Ho-Ho-Kus Rivers). A request was made to cover some of this data at the September meeting. Tom Imbrigotta also announced that he had recently published 2 papers and had 1 data release, which he would share with the Council.

2. *Presentations:*

- ***CyanoHABs: Strategy & Monitoring Update and USGS Work*** – Vic Poretti (NJDEP/DWM&S) and Bob Reiser updated the Council on CyanoHABs-related work and activities. Vic summarized the Strategy updates including enhanced advisory language, the ongoing work of the Research Committee, the intensive surveys that are underway, outreach/communications efforts including the new postcard and poster that have been developed, as well as planned UAV surveillance for the 2018 HABs season. Bob shared information on USGS' CyanoHAB-related projects. These include monitoring activities (continuous

chlorophyll-a and phycocyanin monitoring and discrete sampling on major rivers), research, predictive models, hyperspectral microscopy, UAVs and use of satellite imagery (CyAN) for early bloom warning detection. Bob also indicated that a mobile app is in development for the CyAN project. More information about the CyAN project is available at: https://eros.usgs.gov/doi-remote-sensing-activities/2017/cyanobacteria-assessment-network-cyan.
[*see www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentations*]
- *Data Management/Exchange Update* – Paul Morton (NJDEP/DWM&S) provided a summary of both the WQX-Web as well as WQDE trainings that were held February 15 and April 24. The summary included topics covered as well as planned follow-up. In addition, Paul shared National Water Quality Portal improvements, updates on WQX 3.0 and the cessation of EPA's STORET Warehouse, as well as the agenda for an upcoming STORET Users conference call.
[*see www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

Session – Microbial Indicator Monitoring
a) *Overview of Microbial Indicators & Monitoring for Recreation & Drinking Water Quality* – Rob Newby (NJDEP/DSREH) presented an overview of pathogens, including the most common types, their routes of transmission in recreational water and why they are important to monitor from the perspective of waterborne diseases. He explained the indicators that are used for pathogen monitoring as well as the methods used to determine if fecal contamination is present using these indicators. In addition, he provided information on several other factors/agents that can be problematic for recreational and drinking water including nutrients, legionella pneumophila and algae/cyanobacteria. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]
B. *Lab Methods for Microbial Indicators* – As a companion to the above presentation, Jim Ferretti (EPA Region 2) provided an overview of the laboratory methods used for determining microbial contamination including a history of bacterial assays. An overview of why fecal indicator bacteria monitoring are used as indicator organisms based on risk models for more pathogenic bacteria, viruses, and protozoa as well as why using indicator organisms allows for more efficient and cost effective testing. Common methods/techniques to measure indicator bacteria – membrane filtration, multiple tube fermentation, enzymatic and defined substrate – were summarized as well as the benefits/drawbacks for each method.
[see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]
C. *Insights from the NJ Private Well Testing Database* – Tom Atherholt (NJDEP/DSREH-retired) shared how the data collected as part of the NJ Private Well Testing Act has illuminated various issues related to coliform presence in private wells around the state. Most important factors related to coliforms include well integrity/proper construction, depth, time of year sampled, number of times the well is sampled, laboratory & method used, lithology & aquifer pH, geology (bedrock wells located in northern NJ, especially those situated in sedimentary rock, are more vulnerable to contamination than wells located in the coastal plain of southern NJ), and whether or not there has been significant precipitation prior to sampling. As a result of this information, investigations are needed into whether the coliforms are derived from fecal contamination sources or from non-fecal sources such as soils and plants. Separate investigations directed toward improving grout materials and methods may also be needed. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]
D. *Freshwater Recreational Use Assessment Monitoring* – Dean Bryson (NJDEP/DWM&S) summarized the various freshwater recreational use assessment monitoring programs and activities performed by NJDEP. These include the Summer Ambient Surface Water Bacterial Monitoring Program, the National Water Quality Initiative (NWQI) as well as the use of rainfall data in assessing bacteria data. The Summer Ambient Surface Water Bacterial Monitoring Program is a regionally-based effort that consists of 80 rivers/stream sites which are sampled May-Sept, with 5 samples/30 days over 2 consecutive years. County health departments and watershed associations assist with sample collection and data from this program are used for primary contact recreation determination. NWQI focuses on long term effectiveness monitoring of agricultural BMPs to reduce nutria, sediment, pathogen & biological impacts. In NJ, monitoring is being conducted in the Upper Salem Watershed with 6 samples collected at 9 sites during the summer and fall.
[see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]
E. *Beaches:* [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentations]*

    a) ***Bathing Beach Regs & Lakes Beach Monitoring in NJ*** – Loel Muetter (NJDOH) summarized NJ's Public Recreational Bathing rule which is the responsibility of the NJ Department of Health including a history of rule changes, definitions of bathing vs non-bathing beaches, as well as the microbiological sampling protocols required under the rule for both fresh water as well as marine water recreational bathing areas. He also detailed the various grounds for closure of these bathing areas, including failure to meet water quality standards, and various scenarios for how these closures are to be handled.

    b) ***Coastal Bathing Beach Monitoring Process*** – Emmalee Carr (NJDEP/DWM&S) provided an overview of NJDEP's ocean & bay beach monitoring program, known as the Cooperative Coastal Monitoring Program, which falls under the NJ Public Recreational Bathing rule. Emmalee explained how the program works, who are the partners, how the data are collected and reported, the public notification system as well as several complementary programs (aerial surveillance and Clean Shores) and a new advertising campaign to entice additional purchases of the Shore to Please license plates, proceed from which support the beach monitoring program. Additional information about this program is available online at: www.njbeaches.org.

F. ***Microbial–Related Recreational Use & Criteria in NJ*** – Jack Pflaumer (NJDEP/DWM&S) presented information regarding microbial-related recreational use and the associated criteria by which "use" is determined in NJ. He detailed the various pathogen types that are tested under recreational use as well as the current criteria against which they are measured. He also shared information on proposed new primary recreational criteria resulting from the 2012 EPA Recreational Water Quality Criteria rule. In addition, he provided an overview of the microbial-related assessment methods used in NJ as well as the results from the 2014 Integrated Water Quality Assessment Report and the status of lake, freshwater river and coastal TMDLs approved 2002-2007.   [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

G. ***Microbial Water Quality Studies: Predicting Quality & Determining Sources*** – Amie Brady (USGS/OHWSC) showcased how the USGS is using the NowCast System in the Great Lakes region. She explained NowCast, which is a cooperative federal/state/local, system, that informs the public of bacteriological water quality conditions in near real time using mathematical models to predict water quality based on *E. coli* concentrations. It can be used on both large as well as small lakes. In Great Lakes, it's being used to provide near-real-time beach closures and advisories (https://ny.water.usgs.gov/maps/nowcast/). She also showcased a microbial source tracking (MST) study on the Little Blue River (in MO) which revealed that stormwater runoff was the primary source of contamination (*E. coli* and MST marker concentrations) in this river. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

H. ***Microbial Source Tracking for NJ Shellfish & Other Marine Waters*** – Bob Schuster (NJDEP/DWM&S) highlighted both the DWM&S/Bureau of Marine Water Monitoring's laboratory capabilities as well as its pollution source tracking program. The bacteriological laboratory can perform membrane filtration for fecal coliform and enterococcus, vibrio parahaemolyticus analyses (including qPCR), antibiotic resistance assays for E.coli, and coliphage analyses for viruses. The pollution source tracking program, which began in 1994, has been used in many areas along the coast to assist with potential upgrades for shellfish growing waters. Bob summarized several studies, including the current effort on the Navesink River. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

I. ***Microbial Indicator Monitoring & Source Tracking for the Musconetcong River Watershed*** – David Hsu (Montclair University) provided a summary of a joint study with the Musconetcong Watershed Association designed to track down the sources of contamination that were resulting in parts of the Musconetcong River watershed being listed on the Impaired Waterbodies List for pathogens. Using membrane filtration, DNA extraction and qPCR, results from the study showed that the major contribution of fecal contamination appears to be from wildlife and horses. Future efforts may include studies of the relationship of various land use (animal farm, open fields, residential) in proximity to the sampling sites on microbial water quality.

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➢ **Action Items**
- Work with Heather Desko (NJWSA) to set up initial meeting of NJ Aquatic Invasive Species Decontamination Protocols Workgroup
- Share Tom Imbrigotta's new publications with NJWMC

➢ **Topics for Next Meeting**
Road/Salt Conductivity Monitoring, Intersex Fish Study Results

➢ **Next Meeting**
September 26, 2018 at DRBC

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Gaps/Needs Related to Microbial Indicator Monitoring

- Improved septic system effectiveness monitoring needed
- Lack of similar notification system for lake bathing beaches as currently exists for ocean and bay bathing beaches
- Publication (by NJDOH) on the web of county health department monitoring information would be helpful
- Additional ambient data are needed on tributaries to assist in track down activities
- Might wish to consider advising homeowners with private wells in bedrock to disinfect their wells.
- Need to determine which equipment to recommend for private well disinfection