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NJ Water Monitoring Council

Measuring What Counts for Clean & Plentiful Water

September 20, 2017
MEETING MINUTES

Member Attendees
NJDEP – *DWM&S*: Leslie McGeorge, Alena Baldwin-Brown, Brian Henning, Helen Pang, Vic Poretti, Bob Schuster *DWS&G*: Jeff Hoffmann *DSREH:* Nick Procopio, Sandra Goodrow
NJDOH –
USGS – Bob Reiser, Pam Reilly, Heather Heckathorn, Pam Reilly
USGS (retired) –
DRBC – Tom Fikslin, John Yagecic
EPA R2 – John Kushwara
IEC –
NJ Pinelands Commission – Marilyn Sobel
NJ Water Supply Authority – Heather Desko
Rutgers (Coop Extension Service) –
Rutgers (IMCS) –
Rutgers (Env. Bioengineering) – Eric Vowinkel
Montclair University – Meiyin Wu
Monmouth University/Urban Coast Institute –
Stockton University – Christine Thompson
Meadowlands Environmental Research Institute –
NOAA –
Monmouth County Health Dept. – Dave Sorensen
Barnegat Bay Partnership – Stan Hales
Stony Brook-Millstone Watershed Association – Erin Stretz, Nik Hansen
Musconetcong Watershed Association – Nancy Lawler
Raritan Headwaters Association – Angela Gorczyca
Great Swamp Watershed Association –
NJ Harbor Dischargers –
Brick Township MUA – William Ruocco

Guest Speakers/Discussion Leaders*
Sheri Barash – EPA HQ/OST
Kevin Berry – NJDEP/DWM&S
Paul Morton – NJDEP/DWM&S
Rob Newby – DEP/DSREH
Toby Sanan – EPA ORD
Kelly Smalling – USGS NJWSC

Other Attendees*
Yaritza Acosta – Montclair State University
Eric Best – NJDEP/DWS&G
Jake Bransky – DRBC
Lillian Charbonneau - MCHD

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Julia Galayda – AmeriCorps NJ Watershed Ambassador
Fairfax Hutter – AmeriCorps NJ Watershed Ambassador
Debbie Kratzer - NJDEP/DWM&S
Ron MacGillivray – DRBC
Harold Nebling – NJDEP/DWM&S
Kevin Olsen – Montclair State University
Bruce Ruppel - NJDEP/DSREH
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 05/24/17 Council meeting were approved
- The next meeting will be January 24, 2018 at the NJDEP HQ (snow date – Feb 7). The remaining 2018 meetings will be May 23 at USGS and September 26 at DRBC. Several suggestions were offered for the January meeting topic – review of Council-identified gaps, Emergency Response monitoring, radionuclides, microplastics & endocrine disruptors, and intersex fish studies. The Council Steering Committee will review the suggestions and will decide on a topic. [Note: Radionuclide Monitoring will be the January 2018 topic]
- Christine Thompson, from Stockton University, was welcomed as the newest Council member.

Information Updates, Presentations and Announcements:

1. *Announcements* –

- Heather Desko provided a brief update on *Hydrilla* management efforts in the D&R Canal including treatment efforts that had been employed, status of the plants post-treatment, as well as a comparison of the D&R Canal work with similar efforts also taking place at the Manasquan Reservoir. During the Announcement, it was mentioned that there might be an interest in forming a group to develop a compendium of decontamination protocols for NJ. Heather and Angela Gorczya (RHA) expressed interest in participating in such an effort. Leslie McGeorge and Alena Baldwin-Brown will work with Heather to put together such a workgroup.

- Tom Fikslin announced the latest developments regarding DRBC's Dissolved Oxygen evaluation for aquatic life determination in zones 3, 4 & 5 of the Delaware River including passage of the DRBC Resolution on Sept 13 which calls for review of the existing determination and provides a 6 year path forward for developing studies with both States & dischargers, the results of which are expected to be used in rule making to reverse the aquatic life DO designation in the Delaware River. As part of that, DRBC expects 2018-2019 to be monitoring intensive, with a primary focus on the mainstem of the river. Additional information on the resolution is available at: http://www.nj.gov/drbc/home/newsroom/news/approved/20170921_EstuaryResolutionApproved.html. The Council indicated it would like to hear more about this at a future meeting.

- Pam Reilly announced that the USGS had published 2 new fact sheets related to stream stats and landslide monitoring in the Atlantic Highlands. These publications can be found online at: https://nj.usgs.gov/publications/.

- Kelly Smalling announced that USGS is underway with 2 projects related to Intersex Fish: 1. estrogenic activity as an indicator of intersex conditions and 2. Intersex in fish/frogs in the Pinelands as a result of point and non-point source pollution. Kelly indicated she would like to return and speak more to the Council about these projects when results are available [NOTE: it is likely that results will be available by the September Council meeting].

2. Presentations:

- ***CyanoHABs Strategy & Website Release*** – Leslie McGeorge, Vic Poretti and Alena Baldwin-Brown (NJDEP/DWM&S) briefly updated the Council on the August 28 release of the NJ Cyanobacterial Harmful Algal Blooms (HABs) Freshwater Recreational Response Strategy and Guidance document and HABs/CyanoHABs website. In addition to a review of the strategy procedures and website content/resources, they announced the formation of a Research Committee – to be led by Tom Miller (NJDEP/DWM&S) and Robert Newby (NJDEP/DSREH) – under the Interagency HABs Workgroup. NJWMC members interested in participating on this Committee should let Leslie or Vic know [Note: Meiyin Wu, Montclair U, indicated interest]. [*see www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]
- ***Nutrient Data Entry Best Practices*** – Based on recently published information by both USGS and EPA, Paul Morton (NJDEP/DWM&S) shared some best practices for nutrient-related data entry. The overall objectives of these best practices are to promote consistency in data submittal, reduce confusion/ambiguity for secondary users and to address metadata issues related to results. Areas of concern include monitoring locations, characteristic names, method speciation, sample fraction, censored data and analytical methods. [*see www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

Session – Fish & Shellfish Tissue Monitoring

A. ***EPA National Fish/Shellfish Information***

a. *Overview of EPA Fish Tissue Program* – Shari Barash (EPA HQ/OST) provided an overview of EPA's Fish Program, which has been in existence since 1998. Shari described the genesis of the Fish Tissue Study program in response to EPA's PBT Chemical Initiative as well as the various probability-based fish tissue studies that have been conducted, including results to date. She also shared a website to access fish tissue data collected by EPA partners (https://epa.gov/fish-tech/fish-tissue-data-collected-epa-partners) which includes the National Listing of Fish Advisories Database, National Survey of Mercury Concentrations in Fish Database, and a link to NOAA's National Status & Trends Programs. In addition, she provided information about fish consumption-related studies, EPA-FDA fish advice, and offered the Fish & Shellfish Program newsletter as an additional resource (available online: https://www.epa.gov/fish-tech). [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

b. *EPA Current Research on Cyanotoxins in Fish Tissue* – Toby Sanan (EPA ORD) summarized the current fish tissue-related cyanotoxin research, which centers around the risk of bioaccumulation and/or biomagnification and the potential for consumption. Toby explained the complexity of microcystin monitoring and that microcystins have a large amount of structural variability which makes laboratory identification/quantification challenging. EPA's current research is focusing on evaluating analyte recovery in fish tissue using the MMPB method, performing spike-recovery studies with various congeners, the potential application of results to fish in HAB-impacted waterbodies, and the possible expansion to non-microcystin cyanotoxins. Toby indicated that there is particular interest in obtaining fish tissue from states with HAB affected waterbodies and offered to speak more with NJ about this after the meeting. He also indicated he would send the methods and results from the ELISA and LCP-MS work to Alena Baldwin-Brown to share with the Council. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

B. ***NJDEP Fish/Shellfish Research Information***

a. Toxics in Biota: the NJ Fish Consumption Advisory Program – Sandra Goodrow (NJDEP/DSREH) provided the history of toxics in biota research and fish consumption advisory development in NJDEP as well as current activities related to ongoing research and advisory updates, including needed monitoring and data. This included summarizing the existing fish consumption advisories, particular studies related to mercury and PFAS in fish, as well as other uses for the data collected in conjunction with developing the advisories. Fish advisory information is available online at: www.FishSmartEatSmartNJ.org. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

b. Cyanotoxins in Tissue – Robert Newby (NJDEP/DSREH) summarized what is currently known in the literature about cyanotoxins in fish tissue. Overall conclusions are: clearing time is still a factor – some toxins may clear more quickly than others; organs and viscera have the highest concentration of detectable toxins, regardless of trophic level; toxins do not seem to follow a

biomagnification approach; testing method may bias detection (ELISA vs. LC-MS/MS, etc); and while a HAB might not be producing detectable toxins, fish are still likely experiencing health effects via things like water quality changes, oxidative stress, etc. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

C. ***Current Annual NJDEP Freshwater Tissue Monitoring*** – Brian Henning (NJDEP/DWM&S) provided an overview of the Bureau of Freshwater & Biological Monitoring's annual routine freshwater fish tissue monitoring program, which was initiated in 2014, including its genesis from a gap identified in NJ's Long Term Monitoring Strategy, its design consisting of both targeted and probabilistic monitoring sites, as well as field collection methods for both monitoring designs. Brian also identified the parameters for which the tissue is being analyzed (mercury & PCBs primarily) and provided results available to date. In addition, he shared the bureau's participation in fish tissue monitoring as part of EPA's National Rivers and Streams Assessment (1 of the EPA National Aquatic Resource Surveys). Additional information about the program is available online at: www.state.nj.us/dep/wms/bfbm/ftmainpage.html. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

D. ***Shellfish Tissue, NCCA and Current NJDEP Marine Water Tissue Monitoring*** – Bob Schuster (NJDEP/DWM&S) described the various shellfish tissue-specific monitoring conducted by the Bureau of Marine Water Monitoring including work from 2005-2009, the results of which showed dioxin was the most detectable metal and that organics were not typically detectable. He also summarized the bureau's participation in EPA's National Coastal Condition Assessment (another of the National Aquatic Resource Surveys, with respect to the fish tissue component of the survey. Finally, he shared current marine-related fish tissue monitoring activities which are primarily focused on assisting the Division of Science, Research & Environmental Health with updating existing consumption advisories. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

E. ***Fish Tissue Assessment: Integrated Reporting*** – Kevin Berry (NJDEP/DWM&S) shared the process by which fish tissue data are assessed for the fish consumption designated use determination as part of the Clean Water Act-required biennial Integrated Water Quality Assessment Report. Kevin explained the parameters that are of most concern (mercury and chlorinated organic compounds), criteria that are used in assessing the data as well as the methods used to determine whether or not the designated use is supported. Kevin also shared the 2014 statewide designated use assessment results which showed that fish consumption assessment is unable to be performed throughout much of the state due to insufficient data. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

F. ***USGS Fish Tissue Work: Persistent Organic Contaminants in Young-of-the-Year Bluefish & Mussels*** – Kelly Smalling (USGS NJWSC) summarized the results of a USGS study conducted on persistent organic contaminants in young-of-the-year bluefish & mussels in selected NJ and NY estuaries. The objective of the study was to assess the distribution and ecological effects of these contaminants following Superstorm Sandy. Young-of-the-Year bluefish were selected because they are fatty, consumed by humans and reside in these estuaries (high site fidelity) and mussels because they are widely distributed in coastal environments and are used as indicators of ecosystem health. Results indicate that contaminant accumulation appears to be driven by amount of urbanization around the estuary – higher urbanization correlates to higher levels of accumulation – although contaminant profiles often were different between estuaries. Based on over 2 decades of monitoring data, trends in mussel contaminant concentrations did not change following Superstorm Sandy. Overall results are being used to establish a new baseline from which impacts for future coastal storms can be assessed. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

G. ***Fish Tissue Monitoring in the Delaware River & Bay*** – Tom Fisklin (DRBC) provided an overview of the fish tissue monitoring occurring in both the Delaware River and Bay, conducted by both DRBC as well as the Delaware Department of Natural Resources and Environmental Control (DNREC). Tom explained that both agencies need this information for fish consumption advisories, integrated assessments, as well as the ability to assess progress in reduction of bioaccumulative pollutants. DRBC has been conducting fish tissue monitoring in tidal waters since the 1990s; non-tidal waters were added in 2001 - there are currently 5 tidal and 4 non-tidal locations. Monitoring stations span from Narrowsburg, NY down to Salem River in NJ. Sampling is currently conducted on a 3-year cycle. In the River, samples are composites of standard fillets; in the Bay, individual fish are analyzed. In the Bay, DNREC and DRBC share resources to monitor

Zones 5 and 6. Results show indications of some decline of certain bioaccumulative pollutant concentrations in the Estuary but size relationship is evident for both PCBs and mercury in certain species, which has ongoing implications for consumption advisories. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

H. ***Mercury in Diamondback Terrapins & Snapping Turtles*** – Meiyin Wu (Montclair University) summarized work that has been done regarding risks associated with human consumption of diamondback terrapins and snapping turtles in NJ. Because both of these species are top predators and are harvested for human consumption, mercury contamination is of concern. Snapping Turtles and Diamondback Terrapins, from 5 sites in Northern and Southern NJ, were examined (along with fish from 3 of the northern sites). Carapace, blood and tissue samples were collected from the turtles while fish fillets were used. Results indicate the levels of mercury present suggest the need to establish turtle consumption advisories (especially for sensitive populations), the need for regular turtle assessment at commonly harvested sites, as well as the development of guidelines on proper preparation. [NOTE: the DEP Division of Science, Research and Environmental Health noted that they could prepare a brochure on how to properly prepare turtles for consumption, if so desired]. [see *www.state.nj.us/dep/wms/wmccmeetinginfo.html for presentation*]

- **Action Items**
  - Work with Heather Desko (NJWSA) regarding establishing NJ Aquatic Invasive Species Decontamination Protocols Workgroup
  - Alena acquire methods and results from the ELISA and LCP-MS work, from Toby Sanan, and provide to full Council [Note: information received; to be distributed ASAP]

- **Technical Topic for Next Meeting**
  Radionuclide Water Monitoring

- **Next Meeting**
  January 24, 2018 at the NJDEP Headquarters (snow date – Feb 7)

*Speaker/Attendee Organization Acronyms (other than NJWMC member organizations):
EPA HQ/OST – EPA Headquarters, Office of Science & Technology
EPA ORD – EPA Office of Research & Development

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Gaps/Needs Related to Fish & Shellfish Tissue Monitoring

- Need to get fish tissue data into an accessible database. NJDEP and DRBC are currently putting fish tissue into WQX database
- Need a study of the sources of mercury found in fish tissue. Fish tissue could be analyzed for mercury isotopes to distinguish between sources of mercury derived from atmospheric deposition, point sources discharges and natural sources
- An insufficient number of streams have had fish tissue samples collected; this has led to insufficient information available in order to assess fish consumption designated use for a majority of the state.
- Need for field plug vs fillet information in the Pinelands area
- As a result of new criteria, need to consider adding the southeast region of the state to the DEP annual fish tissue monitoring program
- Need information/data on freshwater shellfish.
- Need to collect data on microplastics and nanoplastics in fish. It is unknown how human health is effected by plastics in fish.
- Need routine monitoring of contaminants in mussel tissue. Went back to Mussel Watch sites after Hurricane Sandy but no routine monitoring is done.
- Polybrominated diphenyl ethers or PBDEs were found to increase in mussel tissue after Hurricane Sandy. More monitoring is needed to see if concentrations are still increasing.
- Need routine sampling of persistent organic pollutants in fish and shellfish tissue after flooding events to better understand ecological effects/consequences
- Need to explore potential for turtle consumption advisories
- Need for more regular turtle assessment at commonly harvested sites