

**WAC  
Minutes  
October 7, 2016**

The Wastewater Advisory Committee to the MWRA met at the MAPC conference room, 60 Temple Place

**Attendees/Contributors:**

**WAC:** Taber Keally (chair), Mary Adelstein, Craig Allen (by phone), Adrianna Cillo, Karen Golmer, Karen Lachmayr, Martin Pillsbury (MAPC), Stephen Greene (phone), Zhanna Davidovitz

**Guests:** Betsy Reilley, Sean Navin, Katie Ronan, David Wu, Wendy Leo (MWRA), Kimberly Groff (DEP), John Shields (Charles River Alliance), Elisabeth Cianciola, (CRWA), Renata von Tscharnier (CRC)

**Staff:** Andreae Downs (WAC)

**FUTURE MEETING DATES/TOPICS**

**NEXT:** Friday, Nov. 4, 10:30am: **Climate Change & Adaptation, Joint with WSCAC at the Water Works Museum** 2450 Beacon St, Chestnut Hill (**note change in location**)

**VOTES:**

June 2016 minutes approved

Approved a comment letter concept on the Ma Department of Agriculture (MDAR) on draft regulations

**CHAIRMAN'S REPORT:**

MWRA meeting yesterday on city water redundancy was in the Globe—lot of logistics and coordination of action. This is a multi-billion dollar project with several possible options—of interest to WAC to see how MWRA is presenting a lot of technical information on a vital infrastructure project to the public.

Martin Pillsbury reminded WAC that the last time MWRA engaged in a similar process was around CSO (combined sewer overflow) control—a highly technical, but important public discussion.

Main redundancy issue that public needs to understand is that if this pipeline fails, it will mean no water for hospitals, fire suppression, toilets or drinking—and building evacuations. A failure costs ca. \$1b/day.

**EXECUTIVE DIRECTOR'S REPORTS:**

The Department of Agriculture has promulgated new regulations on Phosphorus in fertilizers, including biosolids. They treat sludge and biosolids the same, and don't recognize the

difference between phosphorus that can dissolve and the biosolid phosphorus that does not easily dissolve. Suggest she write a letter to ask for those issues to be clarified to allow the sale of Bay State Fertilizer (MWRA biosolids) in state. Also no clarity on to whom the regulations apply—home gardeners? Deadline for comments is Oct. 27

Wendy volunteered to forward WAC MWRA's comments on the earlier regulations.

UMass is working on guidance for Phosphorus in fertilizers at a Nov. 2 workshop, which Andreae will attend and WAC members are welcome to. This guidance would apply to the new regulations.

A MassRivers Advocacy workshop Andreae attended was very helpful—she summarized some of the lessons learned & offered to give any WAC member the outline.

Oct. 27 is the semi-annual Outfall Monitoring Science Advisory Panel (OMSAP) and Public Interest Advisory Committee, 1pm at EPA's downtown offices. WAC members are welcome. WAC asked for a synopsis

WAC's newest member is James Guiod of the Advisory Board staff. He has volunteered to add WAC members to AB email lists so WAC members only get one email.

### **MWRA REPORT**

The new, final Clinton permit is imminent. Probably contains co-permittees, as did the 2013 draft. Will make it difficult to figure out who is responsible for I/I.

### **PRESENTATIONS & DISCUSSION:**

#### **Kimberly Groff, MA Department of Environmental Protection, Watershed Planning Program—Massachusetts' Surface Water Monitoring Program**

Data at the heart of MassDEP's clean water act programs. EPA provides guidelines, but the state has some flexibility on how it implements its programs,

The scope of the MassDEP's watershed planning program includes developing Surface Water Quality Standards, monitoring and assessing the condition of the Commonwealth's waters, developing pollution control strategies for restoration and protection, and determining how effective pollution control has been. The program elements described support permits and compliance and enforcement activities.

#### **MassDEP Watershed Planning Program Scope**



There are three types of monitoring networks: Deterministic (targeted), Fixed site, and Statistical-valid (probabilistic).

MassDEP's program has historically focused on "deterministic" or "targeted" monitoring up

### EPA Rationale for Probabilistic Monitoring

- Clean Water Act (CWA) Section 305(b) – condition of all waters
- Cost-effectiveness – Census vs. Probability surveys
- Provides a more complete and less biased assessment of water quality condition in the state (**sample clean and dirty**)
- Potential to improve resource allocation among competing monitoring objectives
- Potential to streamline CWA Section 305(b) reporting
- Encouragement from EPA to include statistical surveys in the state monitoring strategy = **Funding**
- **National Assessment of Water Quality**

until about 2011—taking site-specific information to determine location specific water quality conditions. This was carried out by rotating between 5 basins in the state to collect data. The data collected and evaluated forms the basis for the 305(b) and 303(d) list.

Fixed-site networks – collect data over long periods of time for trends analysis- an example is the USGS gauging stations that are maintained for decades—Fixed site networks are expensive to operate and maintain, and

MassDEP has not established such a network, however, the agency has conducted limited fixed site monitoring to answer project specific question and to develop TMDLs.

“Probabilistic” monitoring randomly selects sites to monitor. Allows state-wide statements about water quality. It is not practical to test every stream and lake in the state—probabilistic monitoring provides a method to determine the statewide conditions of a waterbody type (e.g., wadable stream) with existing staff resources.

For instance, MassDEP recently complete a 5 year study of wadable streams—the objectives included unbiased selection of streams (not just looking at those MassDEP knows are impaired=biased). They looked at sources of impairment—If the study is repeated in a few years it may be possible to evaluate trends in the condition of streams, and may be able to develop biological criteria eventually.

### What is Probabilistic Monitoring?

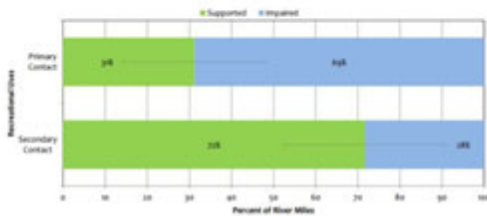
*Uses a randomly selected subset of a defined target population to provide an unbiased estimate on the condition of the target population along with a statement on the uncertainty of the estimate.*

- Randomly selected subset – ensures “representativeness” or unbiased estimate
- Target populations – Lakes, wetlands, wadeable streams, cold water fisheries, large rivers, marine and coastal etc.
- Uncertainty statement – ex. 53% +/- 3% of lakes support aquatic life

The probabilistic streams study monitored 182 sites, over a 5-year period. Samples were tested for bacteria, nutrients, clarity, metals, dissolved oxygen, macro-invertebrates, fish, and temperature. Some example results are shown in the below figure (missing from the talk) for the streams study. The data provide the calculation of the percentage of river miles that support primary contact recreation.

## Example Results

Percentage of river miles in the target population supporting Primary Contact Recreational Use and Secondary Contact Recreational Use. Error bars represent the 95% confidence intervals.



Water Act (CWA).

This year, MassDEP initiated a probabilistic study of lakes in the Commonwealth. This will be a 3 yr study. The study design included lakes greater than 2 ha surface and >2m deep.

### Observations

- Solving water quality problems is expensive and complex—and becoming more so—As problems are solved others may emerge as part of a cycle of continuous improvement under the Clean Water Act (CWA).
- The science and information that we base decisions on needs to be good. Technology can help, and provides us with opportunities for data-sharing, especially as more volunteers and water treatment professionals collect data.
- Data collection is expensive so it is important to get it right. It is important to develop a Quality Assurance Project Plan (QAPP)<sup>1</sup>. This allow MassDEP to determine the usability of water quality data collected by non-DEP programs for assessment and other purposes.
- MassDEP provided a list of all the non-DEP data that is used for assessment and that includes MWRA. MassDEP is also looking to expand its use of information collected by volunteer watershed groups and others. MassDEP as developed protocols and data submission guidelines to stream line our review of non-DEP data<sup>1</sup> and evaluate its usability for assessment and other program elements.

### Data Submission Guidelines:

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>

<http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/cn000-72b.doc>

### DISCUSSION:

How much of your **external** data meets the highest standard? KG: can find out. Just getting through the backlog of DEP's own data. Now trying to expand the use of outside data, but aren't fully there yet.

MP: Many of our watersheds are collecting good data, and can help state bolster what it's doing.

<sup>1</sup> Document that explains what you will do, what questions you want to answer, guidelines for what samples you will collect, how samples will be analyzed, detection limits, etc. Important because you need a plan and also helps determine if anything went wrong.

KG: agreed. In many cases, haven't been back out to check on some of the locations (we have a list of about 363 locations) that were assessed according to 305(b) and 303(d) and we'd like to re-visit these locations. This may be an opportunity to solicit assistance from non-DEP data collectors.

ACillo: when you find a problem, do you fix it or just collect the data?

KG: If it is a problem that can be fixed easily we pull in the regions. Once a waterbody is listed on the integrated report it is an expensive process to develop plans to address water quality, and takes a long time to develop a TMDL (total maximum daily loading for each impairment). It is a challenge to determine the best approach to develop plans for all these listed water bodies as quickly as we can.

Watershed groups are driving a lot of activity at the local level to address these problems. And soon there will be a non-point source tool to develop a 9-element plan for a watershed based plan. Once there's a plan, an organization can apply for 319 grant funding to implement BMPs.

Any additional questions can be sent to [Andreae.wac@gmail.com](mailto:Andreae.wac@gmail.com), and can be forwarded for answers.

Betsy Reilley: **MWRA Monitoring: Charles & Mystic:**

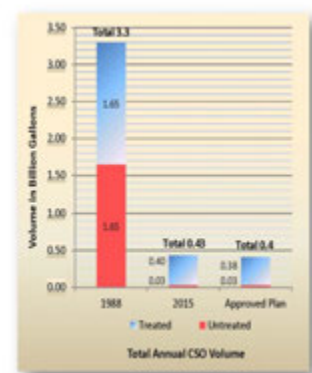
MWRA has variances from EPA and MassDEP for water quality on both these rivers as it implements its Combined Sewer Overflow (CSO) control program.

1996—long term CSO control program, updated. \$900m spent for work, plus community projects. 184 milestones. Just December 2015 finished last of construction projects.

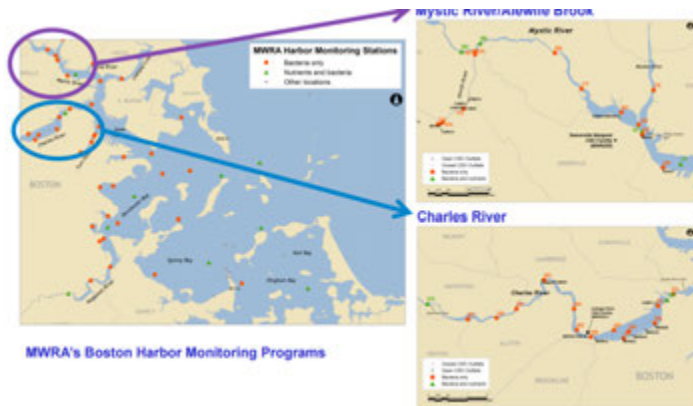
Now have a chance to see whether MWRA is meeting the goals of the plan. MWRA has until 2020 to evaluate the success of the program before additional regulatory changes and expenses.

The graph here → shows how much discharges have been reduced since the start of the program.

Remaining two milestones are to monitor the performance of the system, and to report on that by December 2020.







← map of monitoring stations on Charles & Mystic

MWRA will continue to monitor all three rivers (Charles, Mystic/Alewife, and Neponset), but will focus on the variance areas to measure the long-term

effects of any CSO discharges. Have already implemented the longer-term (2-week) sampling window this year, although the plan hasn't yet been reviewed by MassDEP.

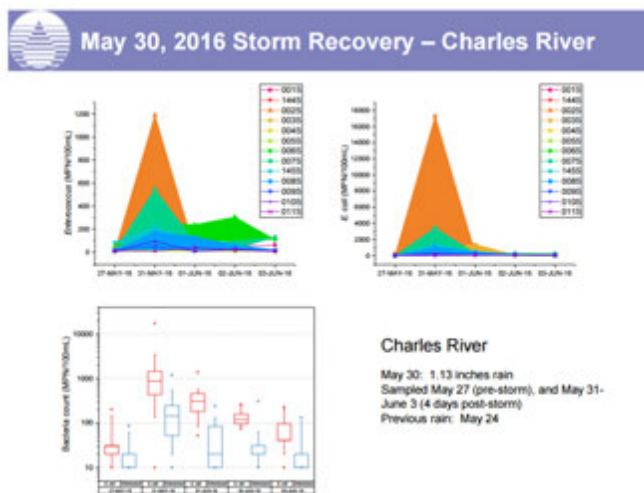
Monitoring is also being done by the watershed organizations. MWRA does the lab analysis of their samples.

MWRA's sites bracket the CSO outfalls from the main stem of the rivers and on Alewife Brook. They are sampling for bacteria, nutrients, total suspended solids, dissolved oxygen, chlorophyll.

The sampling, monitoring, and analysis of the data require staffing. It's a big effort.

Data and analysis show that the rivers have improved over time, but things are generally worse in wet weather. MWRA will be adding analysis of whether a CSO discharged or not to their reporting. Many times, they do not (Cottage Farm discharges, on average, once a year). Alewife Brook is one of the areas of most concern.

With the modifications in the sampling program, MWRA is hoping to see where the issues are, and how long they persist. Example is the graph below, from a heavy rain in May:



You can see the bacteria counts spike, then go down—pattern where the count goes up, but not at all sites. Some are worse than others.

The orange one—002—clearly does. But it is upstream of all active MWRA CSO locations. The ones with lower levels are downstream. What we may be seeing is that stormwater is the real issue. Or illicit sewer connections.

Q: Where is the stormwater coming from? Pipes? Parking lots?

MP: that's the type of information municipalities need to map out for the municipal stormwater permit (MS4). Including finding illicit connections.

TK: The second highest—006s--one is downstream of Cottage Farm facility. Not high the first day, but afterwards. What's going on?

That one surprised us. It is measuring enterococcus, which can survive longer in the environment. Cottage Farm did not discharge during that event.

We were really excited by this data set under the new monitoring plan, because this is good information. I would caution not lumping the whole river into one dataset—it's all location dependent.

KL: is all this data collected by MWRA employees?

BR: yes.

RvT: Does anyone compare your data with other data?

BR: Excellent point. (watershed groups and DEP are monitoring all of the data)

EC (CRWA): sometimes we are within a few hours of each other.

RvT: so there's no other public agency that collects all that data.

BR: DEP would use our data

How many watershed organizations does MWRA do lab work for?

BR: Neponset, Charles, Mystic, Saugus. Other people ask, and we will do so sometimes.

TK: it's been a boon for us. Lab work alone costs a lot.

BR: MWRA does all of the work in-house.

KL: How big is ENQUAL (wastewater and drinking water quality) now?

33 people are in the ENQUAL department—not actually doing the monitoring. Laboratory Services has 55 people, but they have a lot of other responsibilities. There is a team that handles the sampling and field testing (~5 staff), they also do some of the lab testing. Other Lab staff perform other analyses. Enqual staff conduct the reporting and analysis.

Q: Once you have the data, what do you do about it? Is there a coordinating agency looking at the big picture, monitoring the location and the cleanup?

That would be DEP. We do share information. But that's an important part of solving this problem. How to coordinate all the data and what it tells us is an important function.

What's the status of the DEP central database of outside data?

KGroff: We have a central warehouse for data, but we pull it only when we are looking at a particular watershed.

BR: having all the data in the same format in a single place is a huge resource.

KG: We want to process the data, but it's not resolved that we will manage all the data. Working on doing it just for DEP data. Not there yet. And the data from outside DEP could completely eclipse the amount of data DEP has. Hard to think about how we could manage it all. That's a whole different topic.

EPA has a WQX (water quality exchange) system. It is developing a data discovery tool. EPA is encouraging everyone to upload their data, and the idea is that anyone who needs data, can pull out anything in that WQX.

TK: We at Neponset River Watershed get calls all the time about problems on the river. But we monitor all the same locations over the last 25 years. Always been contaminated, always been un-swimmable. But when we see a spike, we need to investigate what made things really bad. Typically, we've found them, and Boston Water & Sewer has been very helpful in going to find those leaky spots. But we don't have the financial wherewithal to go after those upstream who are polluting.

MP: at least with the MS4 now there's a tool that can help get municipalities to track this sort of thing down.

BR: MWRA will be updating our data analysis, but we are now posting MWRA CSO discharges on our website, so people can know. There is an interactive graphic, easy to use, to see where they are. ([http://www.mwra.com/harbor/html/cso\\_reporting.htm](http://www.mwra.com/harbor/html/cso_reporting.htm).)

AD: WAC has been looking at stormwater, because it clearly is part of what is polluting the nearby rivers, and MWRA traditionally has been blamed for pollution—even though it does not really cover stormwater. WAC has a presentation December 2 from Boston Water & Sewer (BWSC) on how they are planning for and prioritizing Green Infrastructure (stormwater) installations to meet their permit (which is different from the MS4 permit).