



May 7, 2021
Remote via zoom

Attendees:

WAC Members: **Karen Lachmayr** (Chair), **Wayne Chinouard** (Vice-Chair), **Adrianna Cillo** (BWSC), **Craig Allen**, Dan Winograd, **George Atallah**, **James Guiod** (AB), **Kannan Vembu**, **Martin Pillsbury**, **Mary Adelstein**, **Philip Ashcroft**, Stephen Greene, Taber Keally (Members in attendance in **bold**)

Guests: David Granados, Wendy Leo, Matt Horan, Sally Carroll (MWRA), Charlie Jewell (BWSC), Lou Taverna (AB), Joseph Savage, Save the Harbor; Clarke Frazier. Juliet Simpson, MIT SEA Grant, Vandana Rao, EOEEA, Van Du, MAPC; Bill Kiley (BSC), Lexi Dewey,

VOTE: April Minutes

REPORTS:

MWRA: Tuesday, May 11 OMSAP meeting. Briefing on CSO May 21st.

AB: May AB meeting May 20th--big meeting to approve our comments & recommendations on the MWRA budget. Will recommend rate revenue requirement lowered from 3.6% to 2.95%, by using debt service assistance, loan repayments, lowering budget for unfilled DCR positions. Also, May 20th meeting will include a forum on lead & copper rule changes.

Director: June meeting is to look back at previous fiscal year, plan for the next fiscal year. Also having leadership change vote--Karen Lachmayr stepping down after 2-3 years as chair, Wayne Chinouard will become chair and Kannan Vembu will be vice-chair.

Annual report draft will be coming to WAC members ahead of the June meeting.

PRESENTATION: Boston Water & Sewer Commission's (BWSC) Climate Change Strategies

Charlie Jewell--BWSC, director of planning and sustainability

Outfalls and tide gates: looked at Storm drain system, to see which had tide gates--to determine whether pipes might be letting water in to flood neighborhoods. Found 5 locations that will need tide gates. Some water will go over land if can't go up through the pipes. Then realized that not just BWSC & other government entities--private outfalls may lack tide gates. Currently examining who has jurisdiction and can tell the private entities to add tide gates.

Discharge to the coast. BWSC pipes own deeper, and with SLR the system can run backwards & cause inland inundation. So, install Tide Gates.

With SLR and storm surges it becomes more difficult to drain the inland areas. Not going to rebuild our system. How use to maximum efficiency we can, given higher and more intense rainfall?

Did project to look at upland areas where can strategically store stormwater in major events-- release after storms. Private developers are also installing green infrastructure to address storm water quality. Now looking at managing storm water quantity. In those areas for storing stormwater, can we also add water treatment?

Stony Brook conduit--drains a significant area of Boston. Can detain some water (45 acre feet in one location). Looked again and with real-time controls and adjustment of timing of storage (low tide--let flow, high tide, detain), to see how BWSC can take pressure off the system.

How big an issue is phosphorus in stormwater? --TMDL for phosphorus in the Charles River. EPA permit requires Boston to cut Phosphorus releases by 62%. Upgraded our model to determine where it's coming from. Differences in opinion. One area may be the surface (parking lots, roads). We also contend illicit sewer connections are a significant source. We need to address both--GI and also cross connections. Also defects in system where sewage CAN enter system.

Did a plan (BMP plan) and now measuring performance against the plan. Measuring where Phosphorus is coming from, ensure ratepayer money is being used to address the most significant sources. Can be \$200-500m total cost. What we are putting in, we are testing its efficacy.

I worry if only work on the surface but leave pipes alone, are we leaving out a major source. We need to deal with all of it.

2015 Master Plan, looked at stormwater and inundation: It was a bathtub model, that looked at static water. BWSC were seeing water where didn't expect it. Using other models put out by other agencies. Saw there were discrepancies where water was appearing vs. where supposed to appear.

SLIDE

2017 Harvey hit Houston--caused a lot of flooding and damage. Mayor's question was how would a similar storm affect Boston? Where would water go/ where are people who should be moved & where move them to?

SLIDE

Now have a dynamic 2D model. Ground & pipes moving water. Estimate depth and duration of flooding, and the potentially impacted population.

Then looked at kind of storms we needed to run through the model. Not a generic storm X-city, but storm that behaved like often do--coming from one direction, dropping water in different areas at different times. Also impact the system differently.

Other agencies across the region also look at this. MassDOT uses Woods Hole numbers, so BWSC adopted their numbers for coastal conditions. Want to use same information for consistency when we talk with other agencies.

Divided city into 7 sections, ran the storm for each section--each section took 60 hours to run. Consultant ran the storms on cloud computers, but took almost a year. How do you present this information? Now have a link, to an online model. It's a nice tool can pick storm, intensity, tide, sea-level rise, rainfall amounts.

SLIDE

Zoom in to see 2D 30' mesh grid and can see how much water in various areas. What critical things (schools, hospitals, shelters) are impacted? Yellow dot gets you a picture of what the depth will look like, so people can visualize what a flood there at a certain level will look like. IF NOTHING is being done.

SLIDE

City of Boston, Climate Ready Boston looking at mitigation measures to address SLR and storm surge.

The model can account for different scenarios in rainfall. Looked at history and found storms that corresponded with our model storms, looked at the rain, and then where it fell, and then updated to correspond with Atlas 14.

Anyone can access the BWSC model information. Developed another tool for other agencies to help answer the question of who needs to be evacuated, for how long, what critical infrastructure is impacted, etc. BWSC will publish after health and other agencies have had a look

SLIDE

What will we do with this? Climate Ready Boston developing projects and plans for what kinds of mitigation might address SLR and storm surge. That deals with water from the surface-up. BWSC needs to deal with surface-down. If we have coastal barriers, the water coming from inland needs a place to go. Doing stormwater discharge analysis. What measures do we need to look at, design for and eventually build to keep water out during major events.

Looking at:

- Storage tunnels
- Pump stations
- Collection & discharge

Fort Point channel -- 9% of Boston drains into this area. Climate Ready Boston is looking at putting a barrier around FPC to keep the sea from entering area. But it doesn't help stormwater drainage. FPC alone has 60 outfalls along it. If a barrier is erected, there are potential problems inland.

SLIDE

BWSC is considering: Can we build a deployable temporary barrier along the mouth of the channel, deploy after low tide empties channel? Let the outfalls discharge there. No pumps, FPC this year could hold a current 10-year storm. Later might need pumps.

Are other cities doing this? Is this the best of the best option? Yes--NYC, Holland--Hurricane Sandy was a good wake-up call. Florida dealing with sea level rise. Each a little different. Always looking to see what works for other cities and what doesn't.

Using sloshing, wind, waves. Not for pictures, but for modeling.

Climate Ready Boston proposing barriers at coast. BWSC is looking at temporary barriers and pumps. Need to identify locations for future. Make sure that we have room for the water, and that we reserve it so development isn't happening on those spots.

Also looking at how to coordinate with Climate Ready Boston. Put tide gates in when barriers are proposed so that they are lined up and tight. Absolutely not doing this in a vacuum.

What about flooding the towns upstream on the Charles and Neponset rivers and how not to flood them further?

BWSC is looking to the time with tide and tide cycles and how & when to let the water go; will look at when to let the water go and when to wait. Don't want to overtop the dam.

Talking to other agencies and to be sure we coordinate. May not be exactly the same, but want roughly the same numbers.

Climate Ready Boston is the lead agency on storm surge sea level rise modeling. BWSC is not supplanting their numbers. Our model was to answer a question from Mayor Walsh. Different reason than the CRB models.

Other efforts:

“Smart Sewers” --how sewers function normally, how they may respond to storms. We investigated the Dorchester Interceptor--7 or 9 locations, meters for 3 years to show what is that pipe doing during major events. Can we extend that metering, and see how more of our pipes respond during a storm event?

How does this interface with plans to develop along the waterfront?

I have the shape files for each area, so developers can see the projected water levels around their site, to use it to make their base floor elevation & critical supplies routes.

Shouldn't this be a more regional discussion? Water doesn't know political boundaries.

Yes--you are right. Definitely being thought of. Need to build to a consistent level. Coordinating with DCR, Cambridge, other towns. Mystic River collaborative. Using Woods Hole numbers, and anyone can use these. If Boston does all this, other communities don't, the water will go around and come in another way. We need to all work together.

Woods Hole just did a state study, and their numbers are consistent with what Boston is using already. Every few years have to update with newest data.

Woods Hole includes the rainfall and flow from inland.

Metro Mayors Climate Task Force--14 of the region's cities and towns, Malden, up to Revere, also neighboring communities. Meets every 2 months. Not sure they have taken this information, but they should. Built in audience of the climate specialists from those 14 cities and towns.

Can Boston share methodologies with the surrounding towns--nobody should have to pay for that twice?

Another question for the surrounding towns is which populations are affected and how easily can they be evacuated in a storm?

That's an analysis that may be the city's, not BWSC. Mitigation will be very expensive and has to be paid for. But if you don't do the work, what is the cost of the destruction there? Even with Federal numbers, it's not that easy. For instance, Dorchester--if the flooding takes the Red Line down, now the economic damage has increased dramatically. Now the South Shore can't get into Boston. Can explode very quickly. But we can go through the analysis for years.

Mass Public Health is also looking at Heat Island Effect, social / economic effects & water/green infrastructure.

Transportation needs to be included for which evacuation routes impacted, health centers, fire stations, hospitals. Overwhelming how much may be impacted.
Longwood Medical is critical to the country & world, and it has to stay open.

A barrier around the harbor would shift the water to other communities--and that's not fair either.

Isn't that why hospitals are moving equipment to the roof?

Yes--but patients and the supplies have to get in somehow. And the water won't just be standing, there may be wind and waves.

Remember--people are making progress, looking at what will work. There's an overwhelming amount of stuff to think about. You pick a problem; start somewhere and keep going. Don't try to do it all at once, pick a problem and go.

WAC May 7 meeting: BWSC modeling storm surges, sea level rise, flooding. 10:30 am. By Zoom