Minutes
Jan. 16, 2025
Remote

Attendees:

WAC Members: **Kannan Vembu** (Chair), **Dan Winograd** (Vice Chair)**,** Adriana Cillo (BWSC)**, Craig Allen**, Wayne Chouinard (Belmont), George Atallah, **Dr. Karen Lachmayr, Martin Pillsbury** (MAPC), **Taber Keally** (NepRWA), **Alfredo Vargas** (Newton), **Christine Bennett (**Advisory Board), **Jonathan Smith** (Somerville), **Felina Silver** (LWV), **Zhenyu Tian** (Northeastern). **(**Members in attendance in **bold**).

MWRA Liaison: David Wu

Guests: Moussa Siri (WSCAC), David Stoff, Kristin Anderson, Ann McDonald (StAB), Catherine Woodbury (Cambridge DPW), Devon Winkler, Colleen Rizzi, Kristen Hall, Becky Weidman, Maret Smolow, Michele Gillen, Chris Goodwin, Sally Carroll, Nicole Benoit, Troy Wall, Sean Navin (MWRA), Cathy Coniaris, Susy King (DEP), Erika Casarano (AECOM), Libby McLaughlon, Chris Mancini (Save the Harbor/Save the Bay), Julie Wood (CRWA), Beth Wilkinson (Newton Conservators), Claudia Mazure (Water Resources Commission), Daniel Senna (Mass Rural Water Association), Juliet Simpson (MIT SeaGrant,OMSAP), Kerry Snyder

Partners' representatives (for questions): Richard Raiche (Somerville IAM/Advisory Board), Lucica Hiller (Cambridge DPW), Jeremy Hall, Coleen Rizzi, Chris Goodwin (MWRA)

Staff: Andreae Downs

VOTES: November Minutes

UPDATES:

CHAIR—Kannan Vembu summarized WAC's 2025 work—PFAS and biosolids discussion and comment; productive year and look forward to a productive 2026. Thanks membership and MWRA for all the work.

ADVISIORY BOARD- Christine Bennett: The FY25 Water & Sewer Rate Survey is published. Appendix E talks about stormwater fees and communities that are adopting stormwater utilities.

MWRA—David Wu: Executive Director Fred Laskey is retiring this spring. Andreae will be drafting a thank you letter for him from WAC.

WSCAC—Moussa Siri: Drought conditions in the western part of the state. DCR is drafting an invasive species management plan with possible use of glyphosate in the watershed.

CSO LCTP Discussion, continued:

Complete set of slides here

Andreae noted that she had invited the CRWA to present to this meeting in December; that resulted in some discussion about the length of time for a presentation, and in the end CRWA asked that MyRWA be included and that they get 15 minutes to present. However, they were not ready for this meeting.

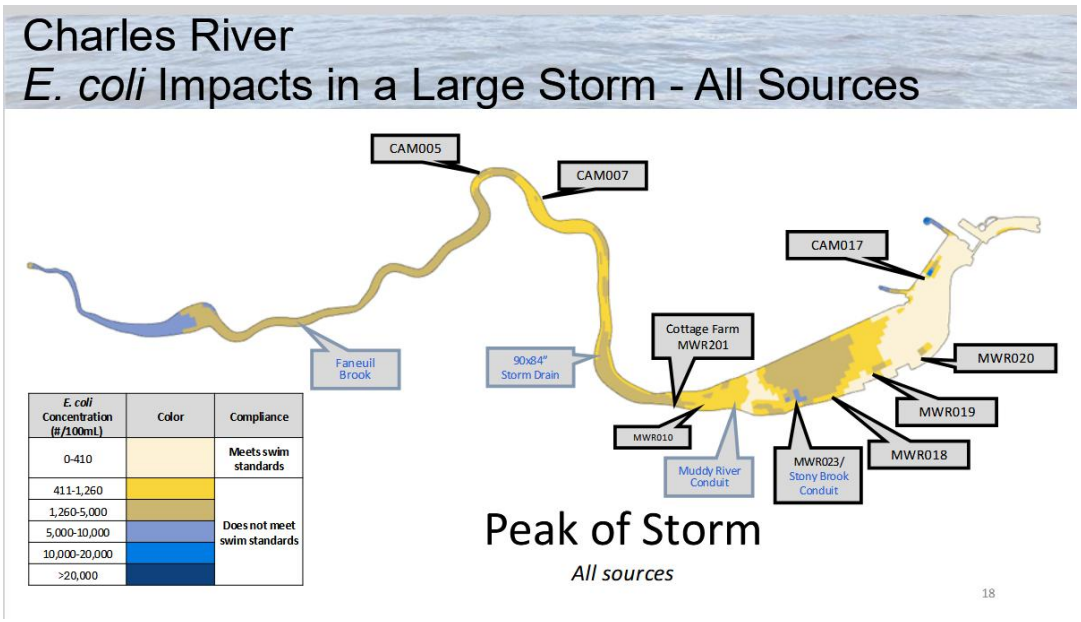
They will present after the budget presentations at WAC's February meeting, now moved to the 26th because of the MWRA Board's decision to postpone its budget discussion until Feb. 25th.

Questions

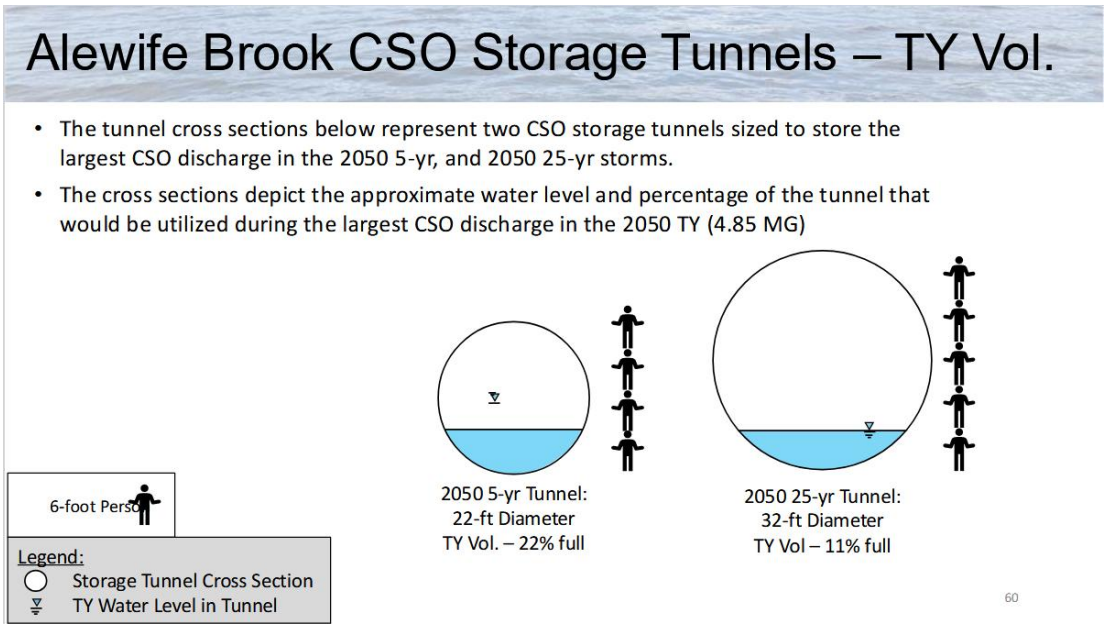
Andreae complimented the Partners on how much clearer their presentation was at the January 15 public meeting—especially outlining the impacts of the work outside of water quality.

Q: a question on the metrics for swimming standards.

A: MWRA measures both *e. Coli* and *enterococcus* in the rivers. Swimming standards are set for *e. Coli* in fresh water, although *Enterococcus* can also be used. Both indicators are in the state water quality standards for fresh water.

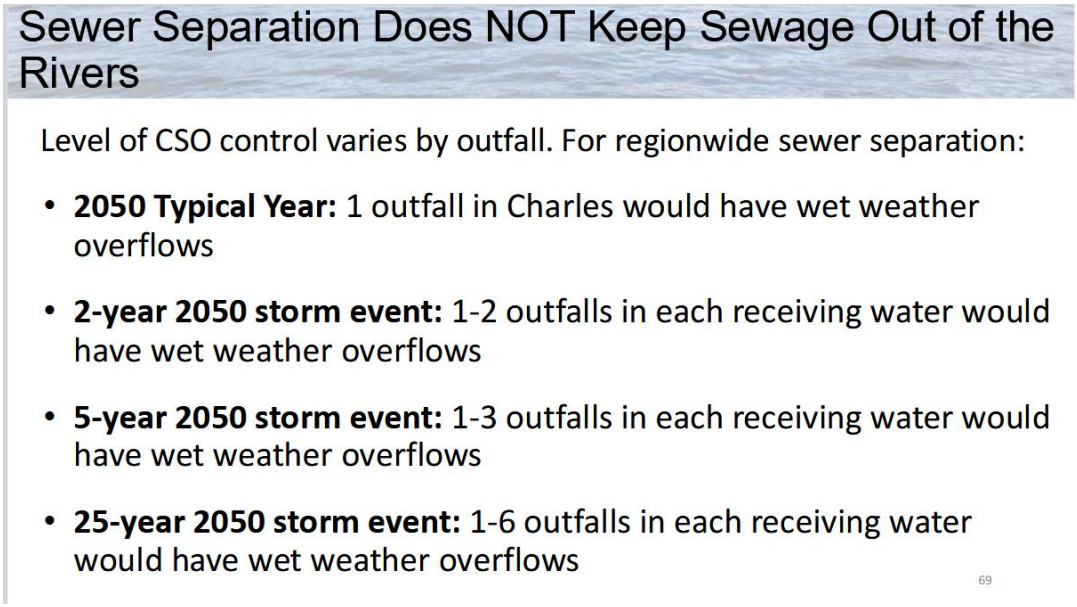


Q: In this slide, showing the tunnel diameters and water levels: Is the implication that these storage tunnels will usually have unused capacity and are inefficient?



Rizzi: Yes. The water level is what you would expect in a Typical Year. It's just to demonstrate that in the 10- and 25-year alternatives, these would be highly underutilized and to give people a sense of scale.

Q: Another question raised last night that was confusing—the notion that with separated sewers there would still be combined sewer overflows?



Q: How is that possible?

Raiche: Explained inflow/infiltration and how separated sewers throughout the system continually develop leaks, so the models have to assume I/I depending on the size of the storm. Downstream of the separated sewers, older interceptor sewers were built with relief points that are now called combined sewer outfalls.

If you separate sewers in an area, you still get overflows—they could be called sanitary sewer overflows (SSOs), although the SSO would discharge to the former combined sewer outfalls, which would be less dangerous to public health than an SSO in a street or basement.

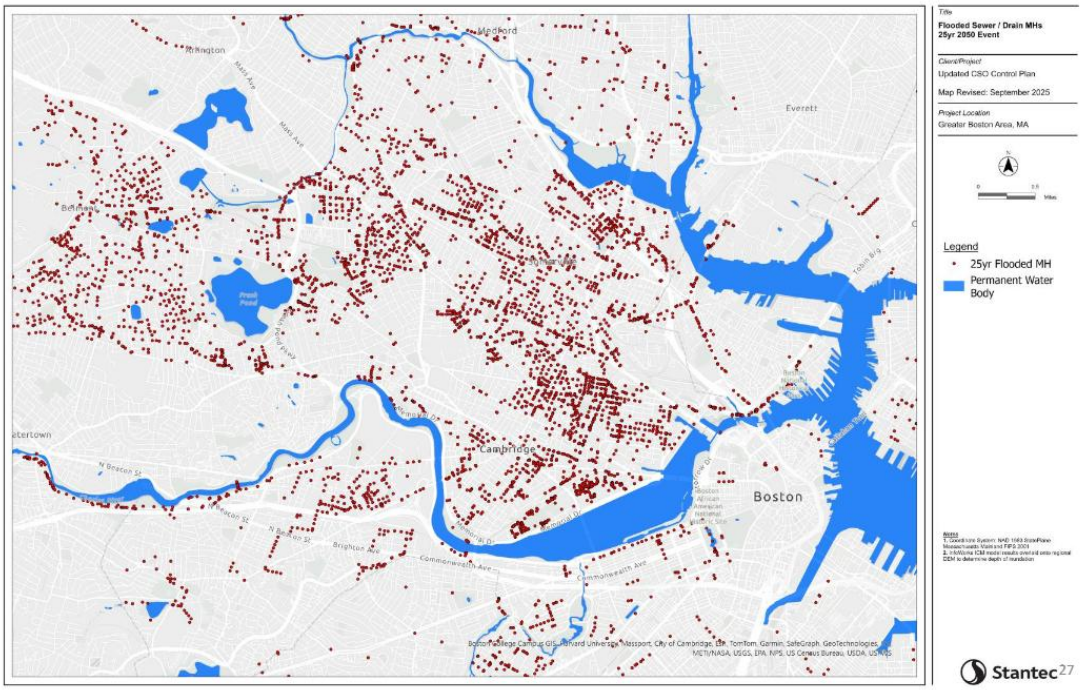
Q: What are the operational implications of storage? Does it mean more stormwater at Deer Island?

Raiche: Yes. Storage detains water that is pumped out when there's capacity at Deer Island.

Wu: Storage will require additional pumping, pump stations—permanent above-ground real estate, and operation & maintenance costs.

Q: When there's a sewer overflow, how do you prevent human exposure to the bacteria?

Andreae: Unless it's a treated CSO, the bacteria enter the water bodies, but that dissipates after 6-24 hours of dilution, exposure to oxygen and sunlight. In an SSO, the sewage can end up in unexpected places, streets and basements, where it's more likely to be encountered by humans.

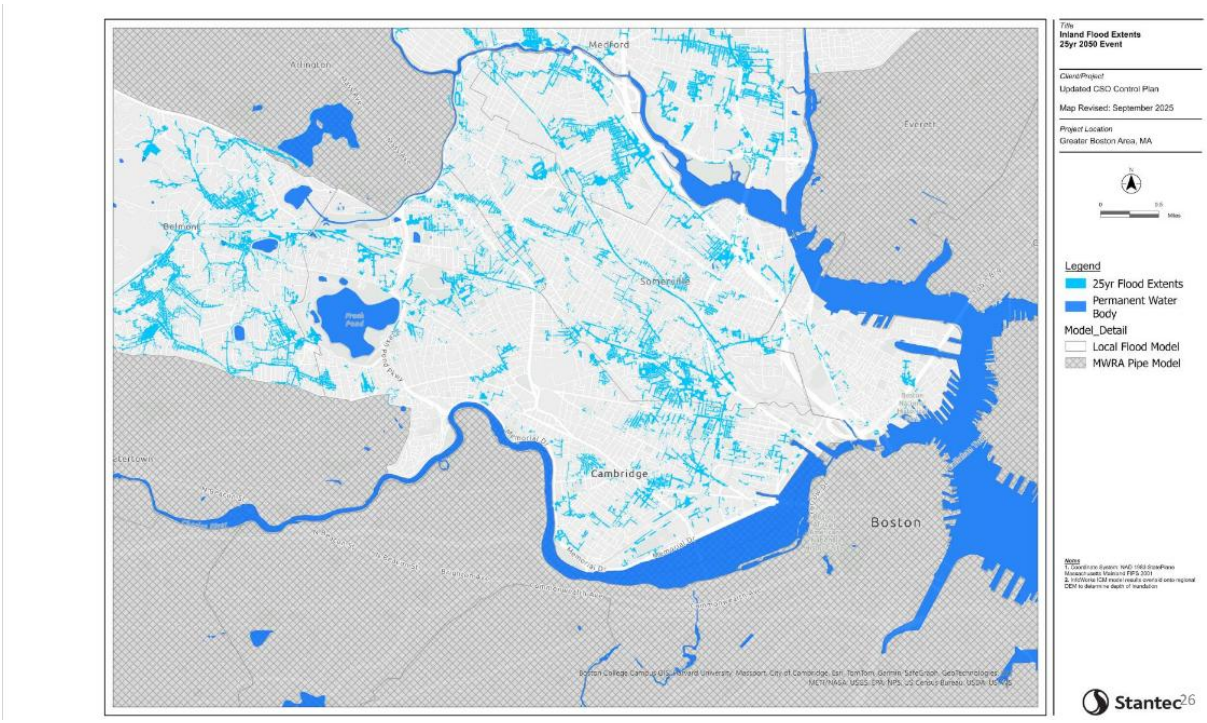


This slide shows the manholes that we know will be affected in a 25-year, 2050 storm, for instance. If they pop off, sewage will be in the streets there.

If you remember the rainfall in March 2010, the area got 10.3 inches of rain in a 59-hour period. Manhole covers were popping off as the pressure in sewage lines got too high, and low-lying streets were under water. In 2050, that amount of rain represents something between the 10- and 25-year storms.

Raiche: That's only the collection system that we have a high-resolution hydraulic model for. Some other areas aren't on the map yet because we didn't have the data. Absence of a red dot doesn't mean an absence of a problem.

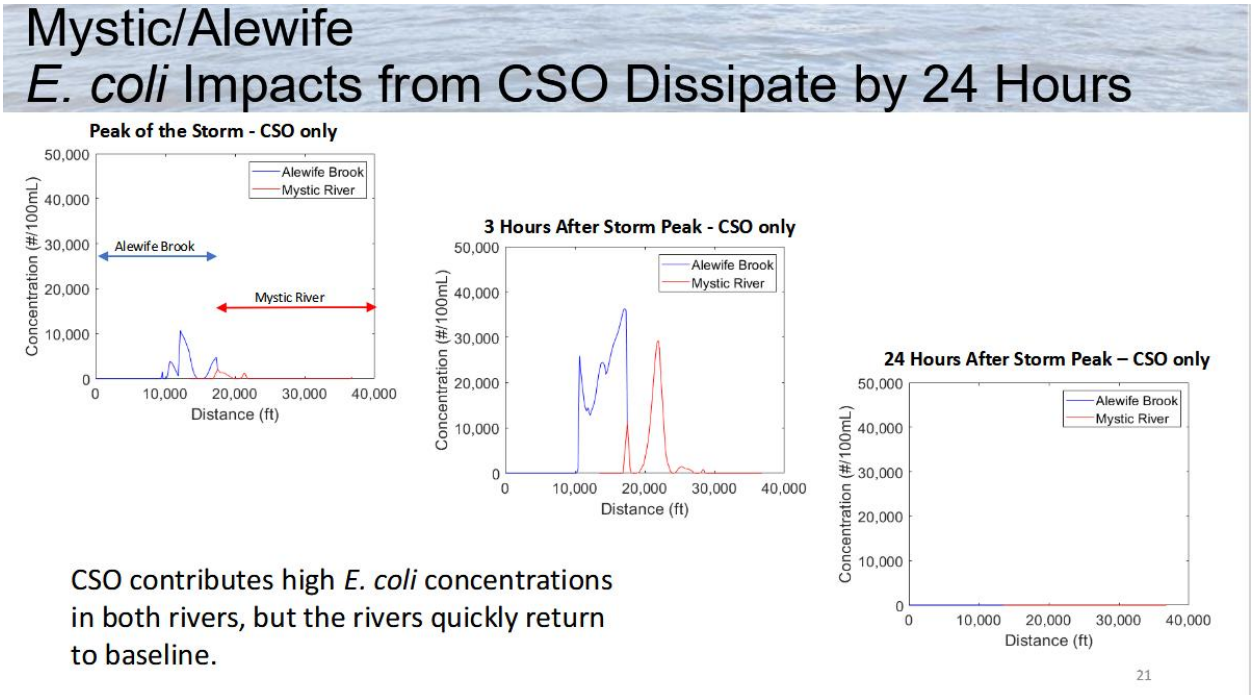
And we didn't model with walled-off CSO outfalls.



And this slide shows flood zones that will flood in the 25-year 2050 storm.

Q: Will backflow devices on homes prevent basement flooding?

Raiche: Backflow preventors aren't infallible. They are often installed and then forgotten. They need regular maintenance.



Q: High bacteria concentrations in this slide show dissipation in 24 hours. But DEP's Public notification regulations do not require real-time notification. Is the notification system adequate when it fails to provide notification within this 24-hour window of high bacterial concentrations?

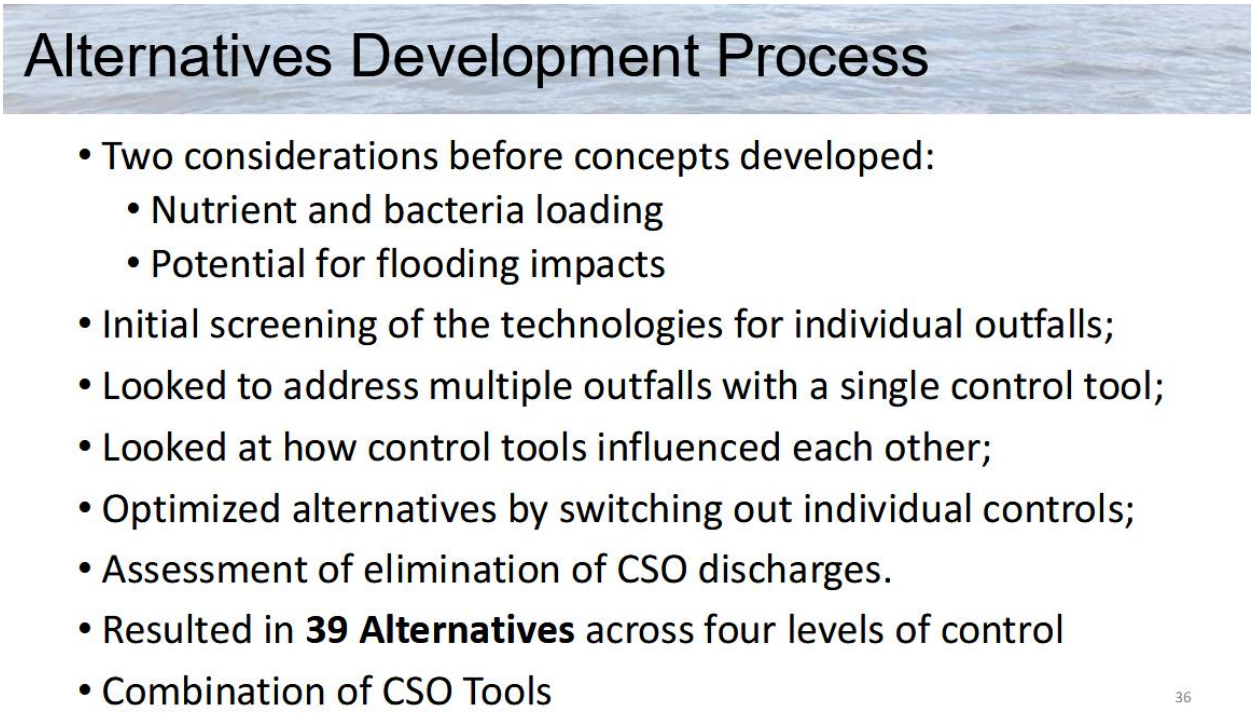
A: There are new tests that allow for quicker verification of bacterial levels.

Wu: DEP regulations require notice within 2 hours. It's not instantaneous, and MWRA can typically get it out in 20 minutes.

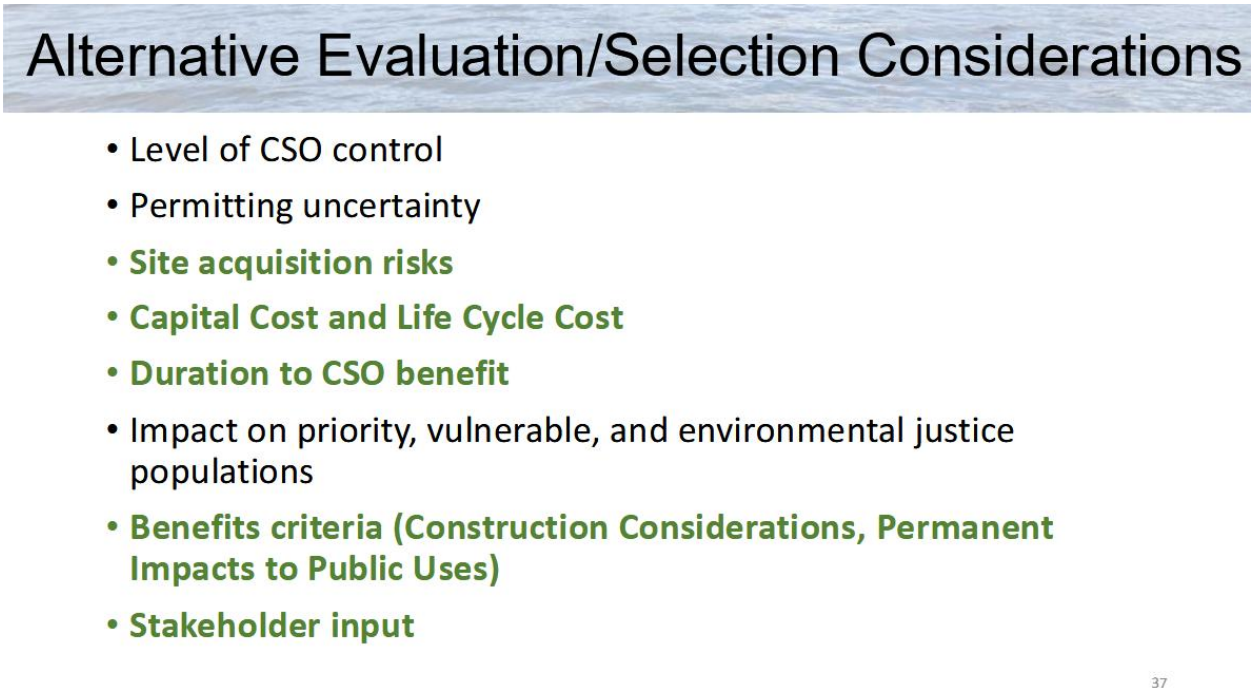
Q: How will the Partners select a level of control to recommend to the MWRA Board and DEP?

Rizzi: That's in process right now. We are looking at a number of alternatives, level of control, and a balance between the water quality benefits and other impacts—not just one factor.

Here's the slide on how alternatives were developed:



And here's the factors that the Partners will consider in making a recommendation—the most important of which are highlighted in green:



Andreae: WAC's focus and the watershed group's focus has been mostly on water quality impacts. WAC is also somewhat interested in affordability, since stormwater carries most of the bacterial pollution and funds will need to be focused there. But we understand that public utilities also must look at impacts on the public of the construction projects—including access to your local park and traffic impacts.

Q: Do we have any way to predict which homes will have SSO backups?

Raiche: It depends on how detailed the model is. We don't have the data for Watertown and Arlington, but in Cambridge and Somerville we can understand which houses have the most risk. We haven't done that yet, but we can.

Q: Where can we see where flooding will occur?

Andreae: That's a little outside of a combined sewer project's scope, but MAPC and FEMA have both put together maps of flood zones as well as areas that flooded in 2010.

Q: Alternative 7—0 CSOs in TY is now limited CSOs. How and why did that change?

Charles River: Summary of Alternatives Under Consideration

0 CSOs in 2050 Typical Year	Limited CSOs in 2050 Typical Year	0 CSOs in 2050 5-year Storm	0 CSOs in 2050 25-year Storm
1.CR Integrated 2 tanks (3.1 MG) + 2-mile-long deep tunnel (17 ft diameter) + 2 storage conduits **$1.1B, 13-18 years**	**8.CR Hybrid 1** 1 tank (2.5 MG) + 268 acres of sewer separation + 1 storage conduit **$360M 23-28 years**	**10.CR Tunnel** 4.5-mile-long deep tunnel (24 ft diameter) +1-mile-long Microtunnel **$1.9B, 15-20 years**	**12.CR Tunnel** 4.5-mile-long deep tunnel (32 ft diameter)+ 1-mile-long Microtunnel + 1 storage conduit **$2.6B, 15-20 years**
2.CR Hybrid 1 1 tank (2.5 MG) + 80 acres of sewer separation +2-mile-long deep tunnel (17 ft diameter) **$1.2B, 13-18 years**			
3.CR Hybrid 2 2 tanks (12.7 MG) + 284 acres of sewer separation +0.75 mile-long Microtunnel + + 2 storage conduits **$750M, 23-28 years**			
4.CR Hybrid 3 2 tanks (12.6 MG) + 446 acres of sewer separation + 2 storage conduits **$690M, 28-33 years**	**9.CR Hybrid 2** 1 tank (2.5 MG) + 80 acres of sewer separation + 0.75 mile-long Microtunnel + storage conduit **$300M, 8-13 years**	**11.CR Tunnel + GSI** 10.CR + GSI (90 acres) **$2B, 15-20 years**	**13.CR Tunnel + GSI** 13.CR + GSI (90 acres) **$2.7B, 15-20 years**
5.CR Tunnel 4.5-mile-deep tunnel (12 ft diameter) + 2 storage conduits **$1.4B, 15-20 years**			
6. CR Tunnel + GSI 5.CR + GSI (90 acres) **$1.5B, 15-20 years**	**7.CR Full Separation** 4,400 acres **$4.5B, 50+ years**		

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Hiller: Through modeling, we saw one outfall in the Charles that would still overflow in a typical year even with full sewer separation in 2050. Not new modeling, but looking more closely at level of control. Also, since the team was working on the slides up until the presentation, there may be some typos.

Q: What is the role of the Partners in alleviating flooding as part of this CSO LCTP?

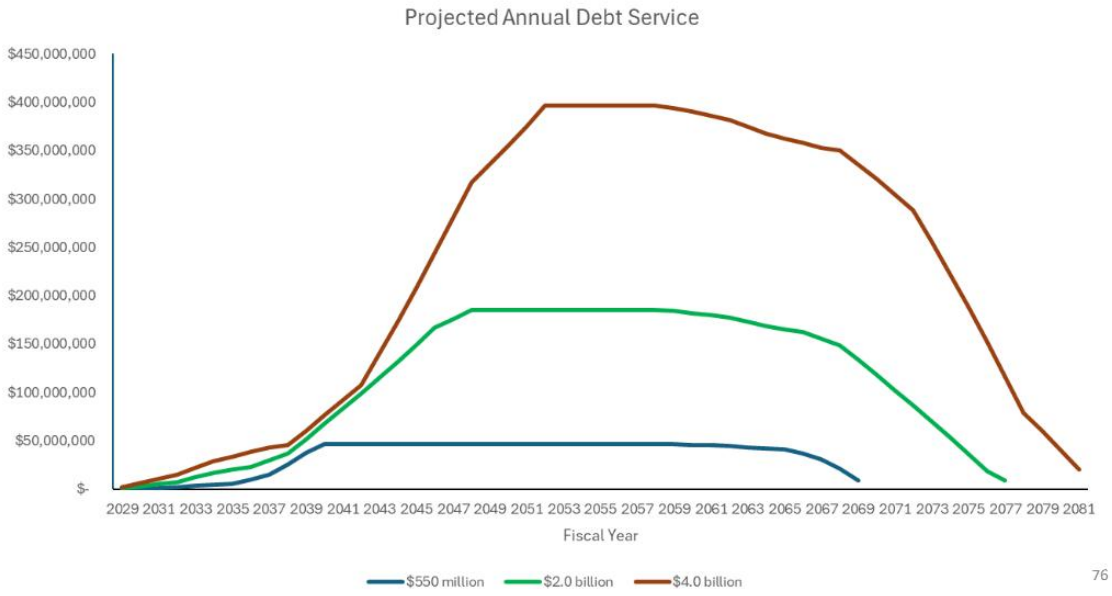
Raiche: It depends on the specific area for sewer separation. Somerville is looking at a sewer separation project in Winter Hill that does both – reduces CSO and flooding. In other projects that we've looked at, sewer separation would exacerbate flooding in Davis Square.

Q: How do the storage options in the alternatives compare to the North Dorchester CSO Storage Tunnel?

Hall: That tunnel is similar to the one option of 18' diameter tunnel to store a 5-year storm.

Q: The costs of some alternatives are very high, and MWRA communities that are nowhere near these three waterbodies would be picking up the cost—can you talk about the rationale for spreading out those costs?

Projected Debt Service



Raiche: Right now, it's technical staff working on the alternatives. They aren't authorized to determine the final split between the three parties. I'm hoping we can run the financial and rate impacts of a range of plausible scenarios so that the right people at the right level can have the discussion about fairness and equity.

Somerville is making a generational equity argument. The root issue is how the system was built between 1860-1920. It's fundamentally unfair that Somerville residents who happen to live in the communities between 2026-2080 would have to bear the preponderance of that cost burden for a regional benefit. It's an important part of the regional conversation that needs to be had.

Sewer Rate Revenue

- MWRA funded through assessments to member communities.
- 43 communities fund the operating and debt service costs for the sewer system.

Scenario	Total Debt Service	Peak Debt Service	Final Maturity
$550 million (2028-2039)	$ 1,394,732,713	$ 46,491,090	2069
$2.0 billion (2028 -2047)	$ 5,553,694,951	$ 185,123,165	2076
$4.0 billion (2028 - 2051)	$ 11,884,463,852	$ 396,148,795	2081

Q: When the watershed organizations talk about "more" CSO, what does "more" mean? Volume? Concentration? Number of discharges?

Julie Wood: We say that because the original preferred alternative for the Charles as for limited CSO in TY. Amount of sewage in a TY under that plan is close to 30 million gallons a year for 9 of the 10 outfalls. The current requirement for 10 outfalls is 13.1 million gallons a year. Climate change is bringing more intense storms that bring us combined sewer overflows. It's not about the amount of water overall, but how quickly it is falling. And we're seeing more large storms.

So the plan put forward did not keep up with climate change—it let things get worse—although not as bad if we did nothing.

Increased Rainfall Due to Climate Change

- Looking into the future to select a 'Preferred Alternative' – the 2050 Typical Year and 2050 Design Storms
- Selected the 2050 planning horizon for the CSO Control Plan (first in the nation!)
  - 2050 Typical Year (TY)
    - 98 storms in TY
    - More Storms with high intensity
    - More Storms with higher volumes
    - Largest Storm 3.3-in over 24-hrs.
  - Identified 2050 design storms

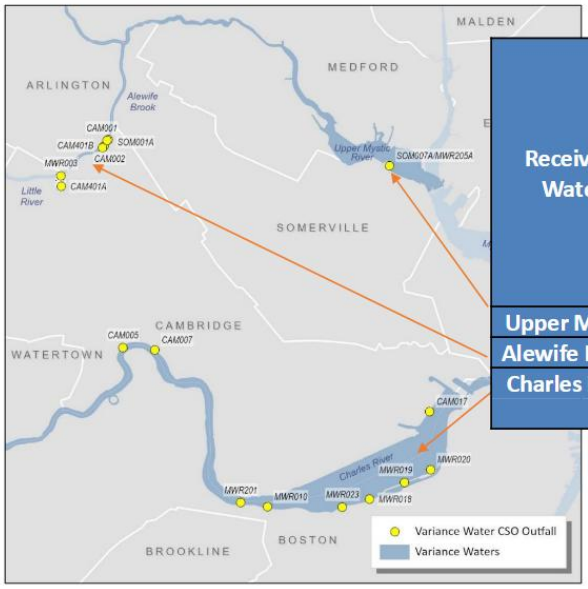
24-hr Precipitation Depths (in)		
Return Period	Current & Actual Storms[1]	Future 2050 Storms[2,3]
2-yr	3.3	4.0
5-yr	4.3	5.3
10-yr	5.2	6.4
25-yr	6.3	7.8
March 2010	**6.2** (24-hr depth around the peak) **10.3** (over 59-hours)	Between 10 & 25-yr
Ida (Sept, 2021)	5.2 (over 17 hours)	Approx. 5-yr

REFERENCES

1. Perica, S., Pavlovic, S., St.Laurent, M., Trypaluk, C., Unruh, D., Martin, D. 2015. NOAA Atlas 14: Precipitation-Frequency Atlas of the United States; Volume 10 Version 3.0: Northeastern States. https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html
2. Steinschneider, S., & Najibi, N. (2022). Observed and Projected Scaling of Daily Extreme Precipitation with Dew Point Temperature at Annual and Seasonal Scales across the Northeastern United States, Journal of Hydrometeorology, 23(3), 403-419. https://journals.ametsoc.org/view/journals/hydr/23/3/JHM-D-21-0183.1.xml
3. Climate Resilience Design Standards & Guidelines. Climate Resilience Design Standards Tool. https://resilientma.org/mrat_home/design-standards/

The above slide shows rainfall under the climate change scenario, and the below slide shows the increase in CSO in the 2050 climate change scenario without any changes to the system, but we know that as we speak the Partners are all working on CSO reduction projects:

CSO Increases Due to Climate Change



Receiving Water	Hydraulic Model Predictions						
	Activation Frequency		CSO Discharge Volume (MG)				
	Prior TY	2050 TY	Prior TY	2050 TY	2050 Largest Storm in TY 3.3 - inches	2050 5-year Storm 5.3 - inches	2050 25-year Storm 7.8 - inches
Upper Mystic	2	8	1.3	29.3	10.5	17.4	27.2
Alewife Brook	8	13	9.9	20.9	4.84	20.9	40.1
Charles River	3	4	6.6	29.8	10.1	33.8	55.9
	3	6	1.4	8.2	3.9	31.6	64.6

Green Numbers - Treated CSO
Blue Numbers - Untreated CSO

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Q: Do any of the LCTP preferred alternatives increase the Typical Year activation frequencies or discharge volumes over the current activation frequency and discharge volume?

Hiller: We are endeavoring to not have alternatives that will increase the activations or volumes as compared to the LCTP goals. We are taking additional activations and frequencies because this is forward-looking.

Raiche: This has never before been done in history of this country –evaluating against climate change. It makes for a great click-bait headline to say that MWRA is going to make things worse with this plan. But the reality is that we are looking at climate change conditions and reporting them. It's odd to compare that to historical performance, particularly in the 1992 TY. You could say, more accurately, that an alternative doesn't keep up with climate change, but to say that the plan intends to increase discharges is odd.

Wood: I strongly disagree. You should consider what's happening now when you think about what will happen in the future. To the people that use the river and are worried about getting sick from the river it matters.

Q: When is the data going to be released to the public, so we can have a look at it?

Raiche: When the draft report comes out—there will be thousands of pages of data, so everyone can see and check the work. So then we can have a discussion as a region.

Q: Will this be like a variance, permit comments, water quality comments?

Raiche: there will be room for public comment—written and a hearing.

Susy King (DEP): There's a requirement for a public process as part of updating the variance, and the comments will be on the plan—everything in the plan. The public has heard about the changes in the typical year.

Typically, the technicians work out a proposal, the board votes on it and they put out a draft plan for public comment—but this time the public was brought in early in the process.

Q: Question about the alternatives and why some are in green and some aren't.

Rizzi: In each column, there are different alternatives to achieve different levels of control. The green boxes indicate the alternatives that rose to the top in terms of reasonableness and achievability—some took more time, or required more trucking than an alternative with the same level of control.

Q: What kinds of green infrastructure were considered?

Hiller: The costs of green infrastructure, especially with our poor soils and constrained space vary greatly. We just estimated how much stormwater the GSI could capture. The range of options include permeable pavers, constructed wetlands, bump-outs, rain gardens. But we looked at costs of phosphorus treatment rather than look to site hundreds of thousands of installations.

Somerville has a page of various GSI alternatives they use.

Q: Save the Alewife Brook has created our own alternative. Can we go over that with the project planners and discuss it?

Raiche: I'm not opposed to it in theory, but in practice it is impractical. We have a lot of work to do to meet our next deadline.

Anderson: We think this is cheaper and gets more control, so we'll wait, but we would like to save the public money and get a better result.

Andreae reminded members of the next meeting, noting that it will cover the MWRA budgets and that WAC will hear from the Charles and Mystic watershed organizations then. She thanked the Partners presenters for making themselves available to WAC to answer questions.

She added that since the Board will vote on its preference for the draft plan before WAC's next meeting, there won't be an opportunity to comment until the draft plan is issued.

Next meeting is THURSDAY, February 26, 10 am- noon.