



Massachusetts Water Resources Authority

Presentation to the

***MWRA Advisory Board
Water Supply Citizens Advisory Committee
Wastewater Advisory Committee***

Priorities for FY2024

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Executive Director

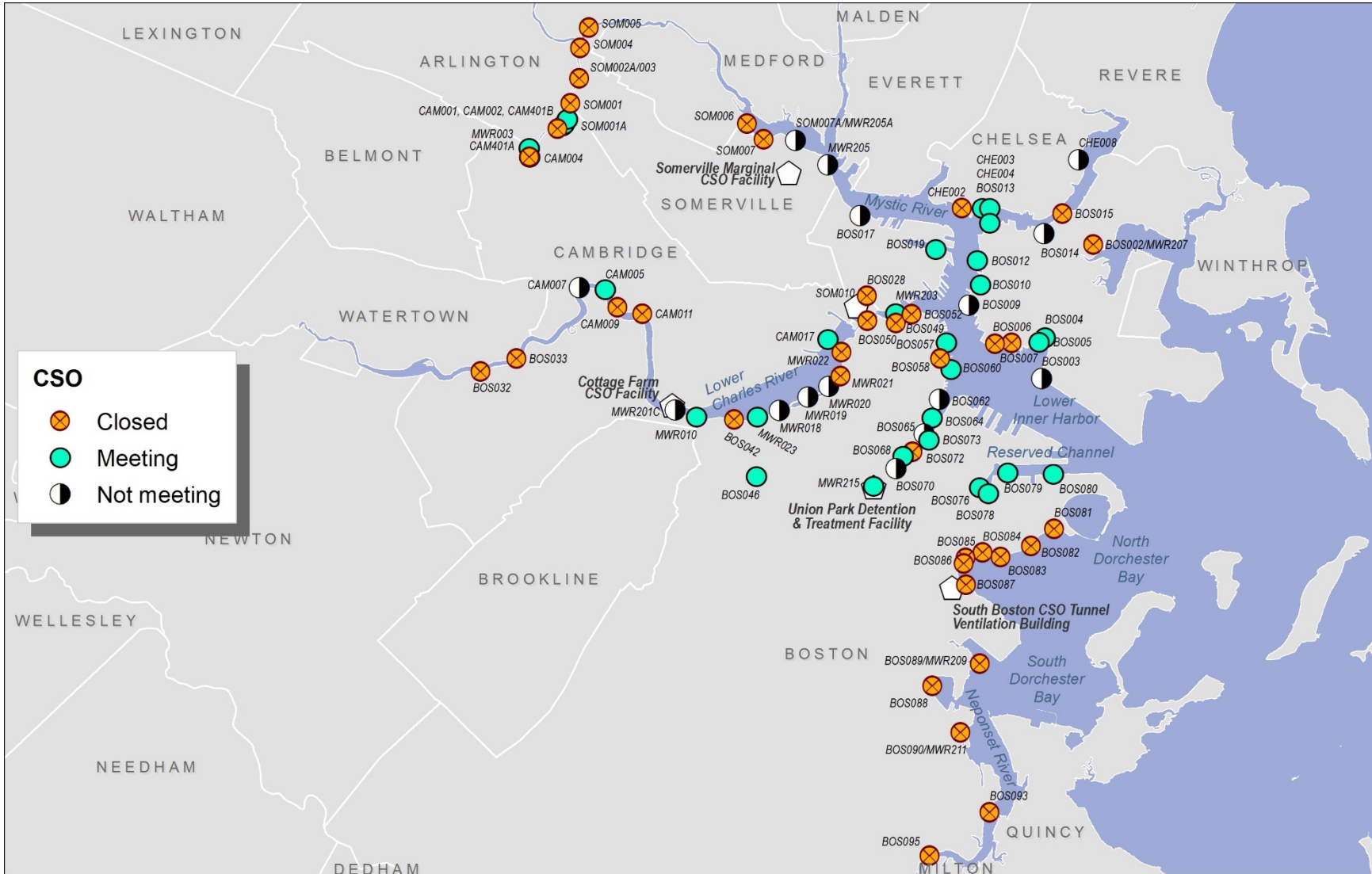
September 21, 2023



Long-Term CSO Program/NPDES Permit



CSO Performance Assessment Results for 86 Outfalls



- 35 Court Ordered Projects Completed
- \$912 million spent to date
- 40 of 86 CSO outfalls closed
- 3.3 billion gallons of CSO reduced to 396 million gallons today (88% reduction)
- 94% of remaining CSO volume is treated
- Met the overall goal system-wide



CSO Outfalls to Variance Waters



New Long-Term Control Plans required for remaining CSO outfalls in Variance Waters:

- 6 CSO outfalls to Alewife Brook
- 1 CSO outfall (treated) to Upper Mystic River
- 9 CSOs outfalls (1 treated) to Charles River



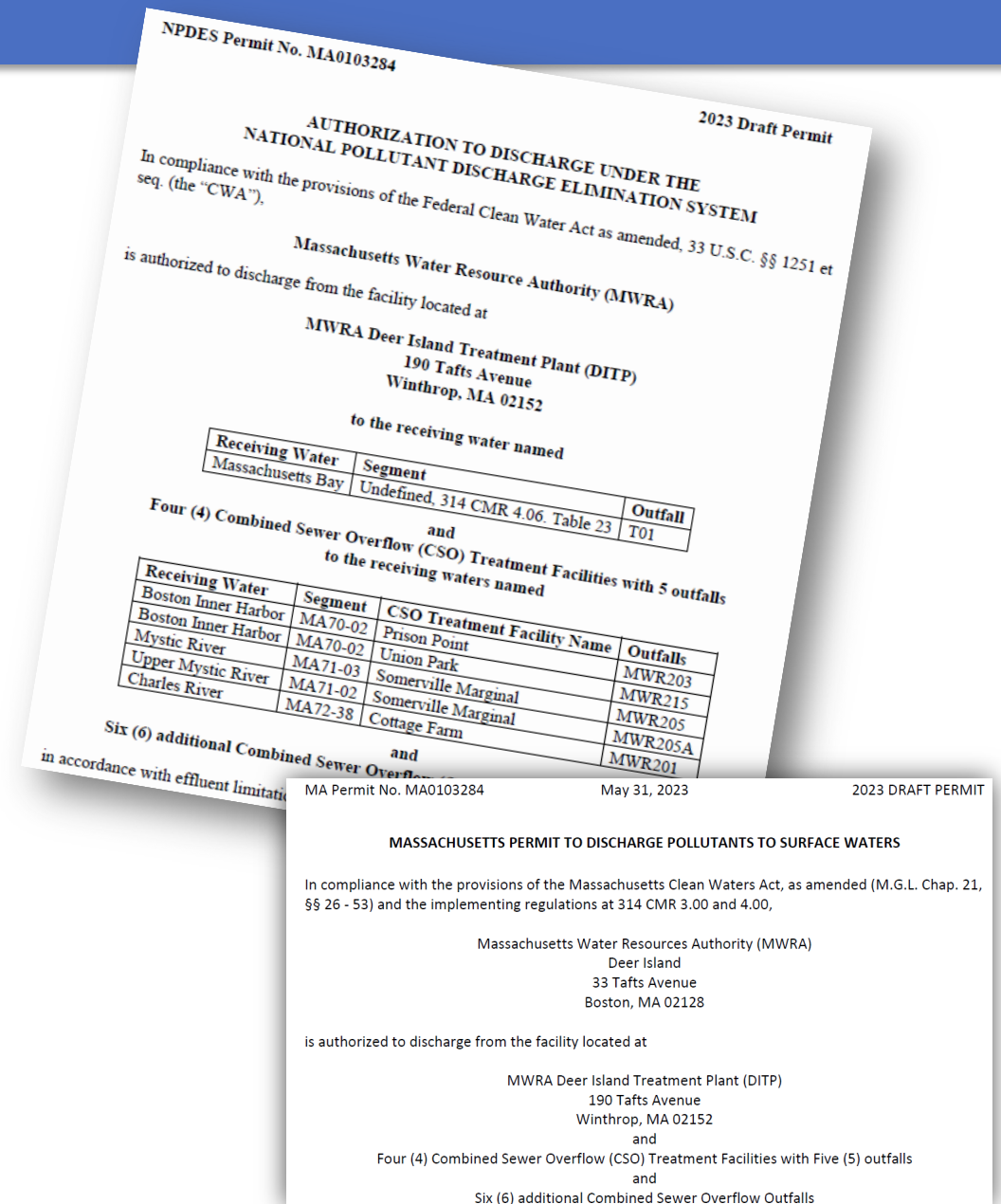
Long-Term Control Plan Current Status: Final CSO Performance Assessment Report

- Not all outfalls met goals:
 - ~~16~~ 14 outfalls did not meet Long-Term Control Plan
 - Plans underway for ~~10~~ 8 of these to meet Plan goals by 2024
- Remaining six ("incurrigible") outfalls present significant challenges
 - Not expected to meet Plan goals by December 2024
 - Alternatives analysis underway
- Receiving Water Modeling (in the rivers) showed that even under current conditions, compliance with water quality standards ranges from 97.9-99.9% if CSO were the only source of bacterial contamination
 - Compliance with water quality standards ranges from 48-64% if stormwater were the only source of bacterial contamination



Draft Deer Island NPDES Permit Issued

- On May 31, EPA issued a draft NPDES Permit for the Deer Island Treatment Plant; DEP issued a draft permit as well. Public comment period is through November 28th
- This permit also authorizes discharges from CSOs
- All 43 connected community sewer system communities are named as co-permittees in this permit. The 4 CSO communities are “CSO-responsible” co-permittees
 - The 4 CSO communities’ NPDES permits are incorporated into this permit





Watching the Weather

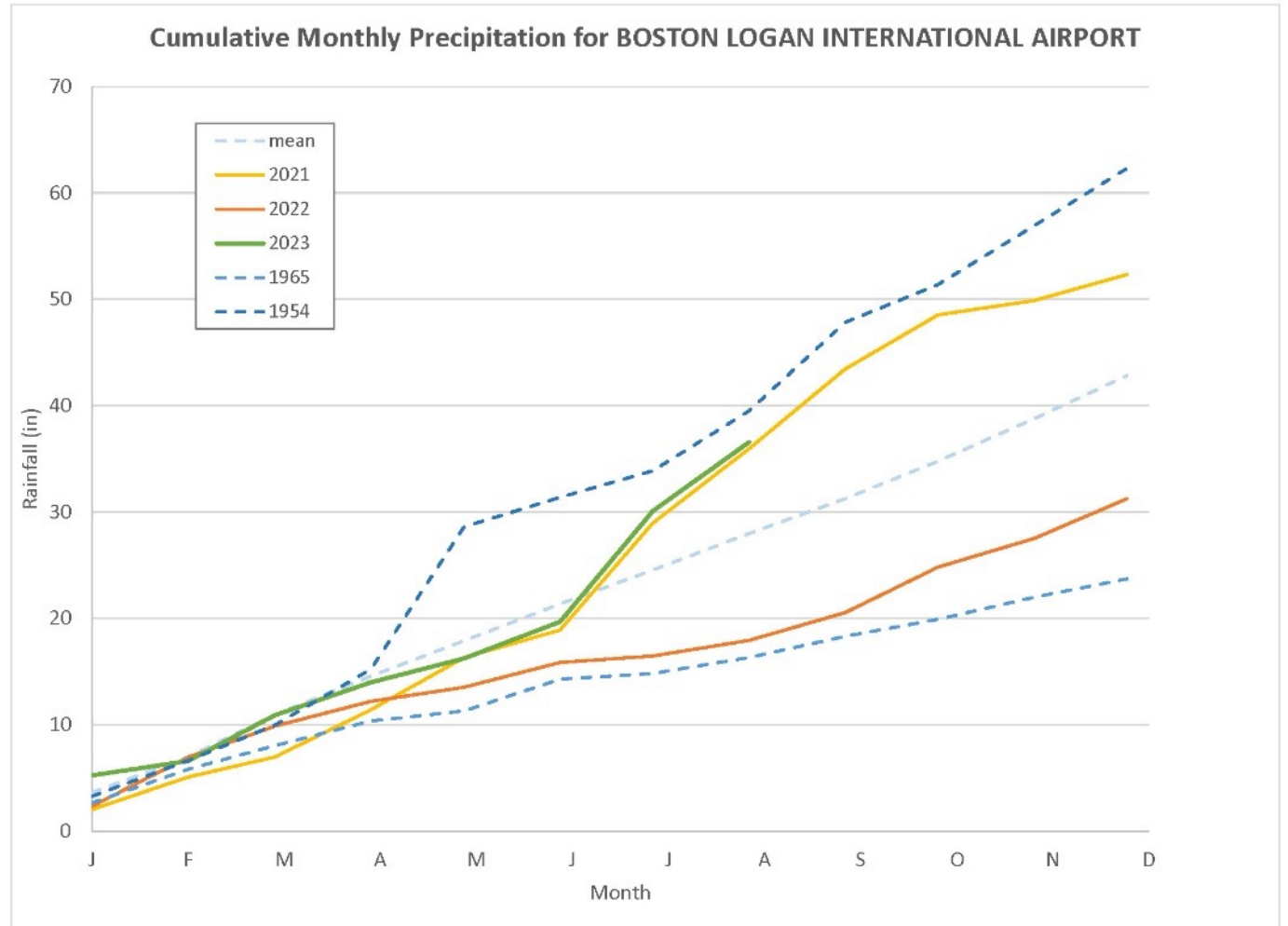


Summer 2023 Precipitation

- Historic levels of precipitation

| Year | Total Rainfall (June, July, August) |
|------|--|
| 1955 | 24.89 |
| 2023 | 20.33 |
| 1959 | 19.68 |
| 2021 | 19.64 |
| 1982 | 19.64 |

- High intensity events - peak hourly intensities of 1.5 to 2 inches per hour

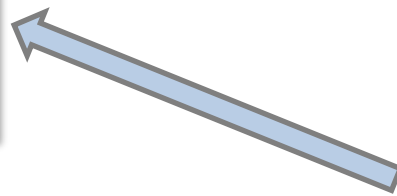




Sewer System Response

- High intensity events quickly fill the wastewater system, increasing system levels requiring the activation of the CSO treatment facilities
- If levels continue to increase, the untreated CSOs are activated which prevent backup into streets and homes

11:36am Prison Point discharging
11:35am Ward St screen #3 misaligned, maintenance on site
11:23am Columbus Park screen 1 tripping, maintenance responding
11:17am Cottage Farm filling tanks
11:13am Ward St choking gates
11:12am MWR205A discharging
11:03am Prison Point filling tanks
10:57am BOS019 filling compartments
10:56am MWR-003 discharging
10:46am Union Park filling tanks
10:45am Framingham PS online
10:36am Somerville Marginal online



LOG

4:37pm Rain has left the service area, last snapshot for this rain event unless one is warranted
4:20pm BOS019 stopped filling compartments
4:05pm Framingham PS offline
4:04pm Prison Point stopped discharging
3:46pm Columbus Park free flow
3:45pm Chelsea screen #1 repaired
3:30pm Chelsea Creek free flow
3:22pm Ward St free flow
3:00pm Cottage Farm stopped discharging
2:28pm Chelsea Screen House closing sluice gate #1 to wet side
2:06pm Somerville Marginal offline
1:48pm Ward St screen #3 repaired
1:35pm Union Park stopped discharging
1:23pm Chelsea Screen House opening sluice gate #1 to wet side
1:04pm Chelsea Creek screen #1 misaligned, maintenance responding
12:49pm MWR018 stopped discharging
12:33pm MWR023 (RE046-019 & RE046-100 & RE046-381) stopped discharging
12:29pm MWR010 (RE037) stopped discharging
12:29pm MWR019 stopped discharging
12:27pm MWR205A stopped discharging
12:26pm MWR-003 stopped discharging
12:23pm MWR020 stopped discharging
12:17pm Columbus Park screen #1 back online
12:15pm Staff visually confirmed signs of an SSO at two MHs on the BMC on Storrow Dr.
EnQual staff are reporting to regulators as required
12:13pm MWR010 (RE037) discharging
12:11pm Columbus Park choking
12:11pm BOS019 Compartment #1 is full, filling compartment #2
12:11pm Union Park discharging
11:57am MWR020 discharging
11:56am Cottage Farm discharging
11:52am MWR019 discharging
11:52am MWR018 discharging
11:43am MWR023 (RE046-019 & RE046-100 & RE046-381) discharging

11:36am Prison Point discharging
11:35am Ward St screen #3 misaligned, maintenance on site
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10:46am Union Park filling tanks
10:45am Framingham PS online
10:36am Somerville Marginal online
6:45am Prison point hydraulic pump motor #1 failed maintenance responding Second hydraulic

August 8th event: 57.4 MG Treated vs 1.49 MG Untreated



Combined Sewer Overflows

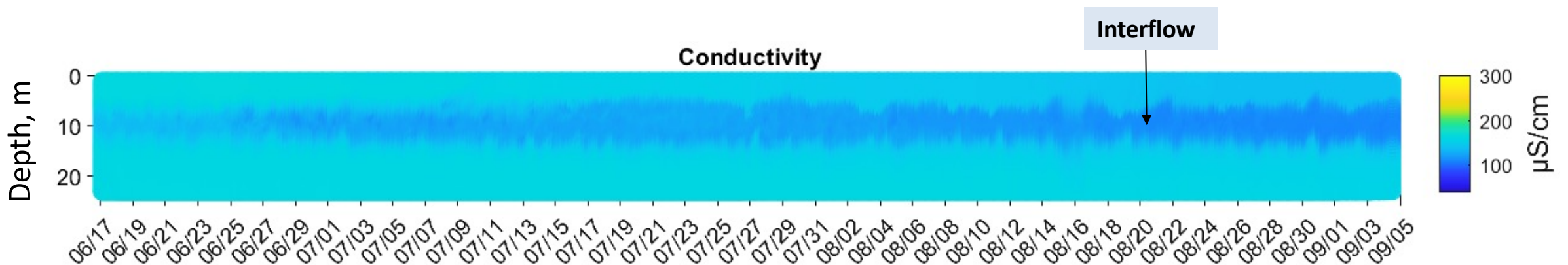
- The majority of CSO discharges receive partial treatment (screening, some solids removal, disinfection and dechlorination)
- CSO is mostly stormwater
- **There are no CSO discharges to the Boston area Beaches**
- But there are **stormwater** discharges to several beaches: Wollaston, Tenean, Malibu and Constitution





Reservoir Water Quality and Wet Weather

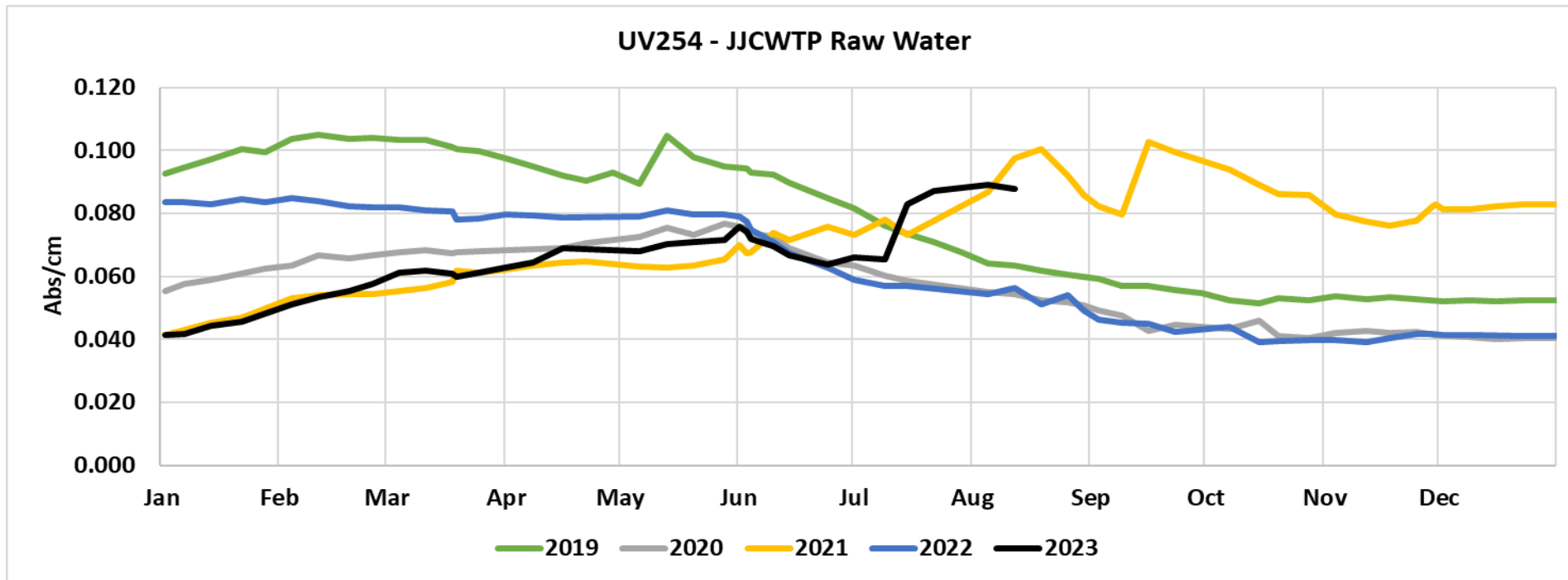
- Transfers of Quabbin water through Wachusett creates a band of high quality water (interflow)
- Benefits include decreases in UV254, and reduced ozone and chlorine demand
- Since July, precipitation events have reduced our ability to maintain higher transfer rates
- Buoy monitoring stations are helpful to watch water quality trends





UV254 Trends in Wachusett Reservoir

- Elevated UV254 results in increased ozone demand, chlorine demand and decay, lead solubility





Climate Change

- Climate forecasts predict:
 - Longer periods of drought
 - Periods of increased rain intensity and volume
- The higher the intensity of the rainfall, the more likely it is that more CSOs will discharge during the storm
- Future planning for CSO control will incorporate climate change projections
- There are also measurable impacts to water quality

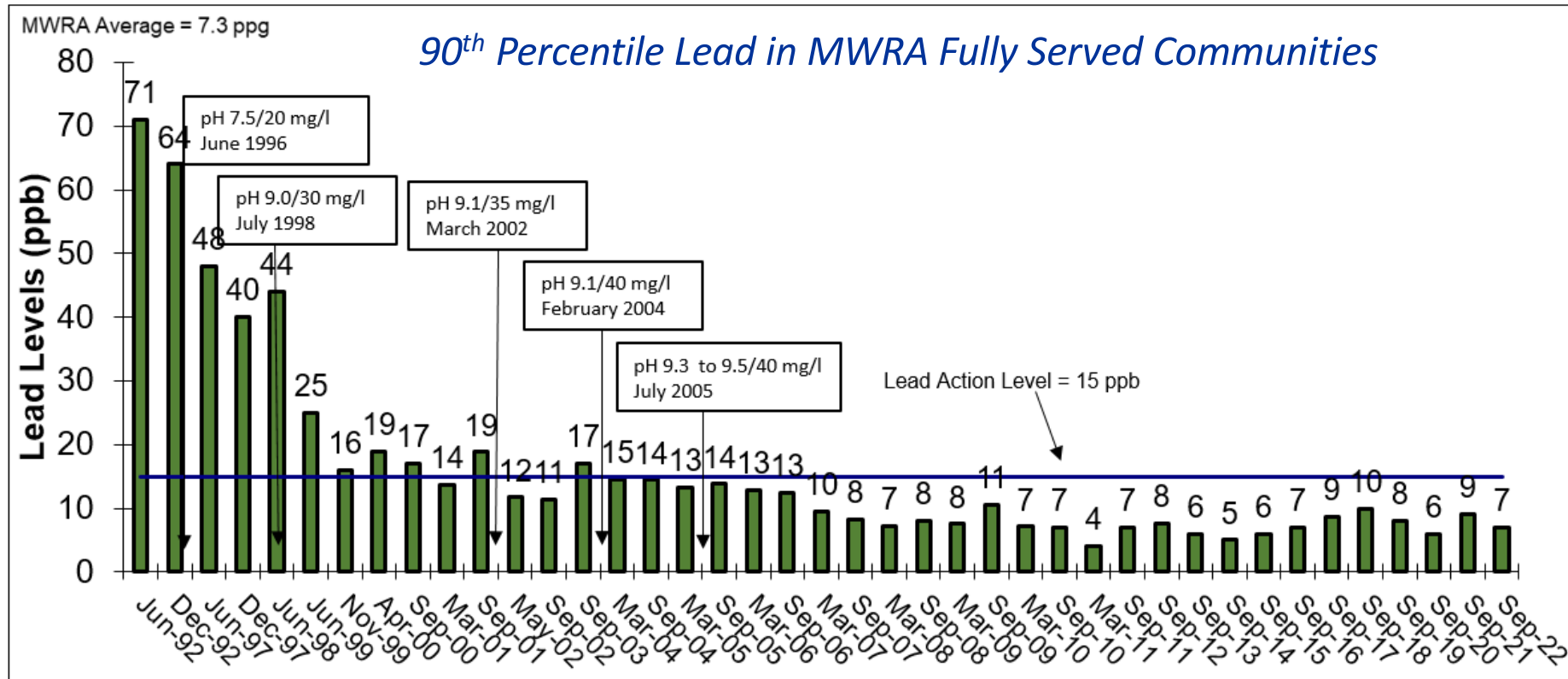


Lead and Copper Rule



Current Corrosion Control Status

- Current corrosion control includes pH and alkalinity adjustment
- 90% reduction in lead levels since mid-1990s





New Regulation Revisions

- Compliance with new Lead and Copper Rule Revisions required by October 2024
- New trigger level of 10 ppb (compared to current 15 ppb action level)
- May be tough to achieve with new sampling methods
 - 5th liter more representative of water in lead service line
- Annual Community Lead and Copper Rule sampling occurring this month



John J. Carroll Water Treatment Plant Corrosion Control Optimization Study



- Evaluating potential treatment alternatives to meet current and future requirements
- MWRA staff constructed 6 pipe rigs with Lead Service Lines collected from Boston homes
- Expert panel assembled to assist with evaluation



Lead and Copper Rule Updates

- EPA anticipated to issue additional rule changes this fall
- Changes could include the following:
 - Sampling protocols
 - Reduction of lead Action Level
 - Mandate for replacement of lead service lines
- Possible changes could result in:
 - More communities exceeding the Action Level / required to issue public notification within 24 hours
 - Mandate for MWRA to complete a corrosion control study
 - Increased speed of lead service line replacements



MWRA's Proactive Steps to Reduce Lead and Cooper Rule Exceedances

- Lead Service Line Replacement Loans
 - In March 2016, MWRA established \$100 million in zero interest loans for lead service line replacement
 - To date, \$36 million in loans have been distributed to 15 member communities
 - Continued and increased community interest due to impending regulatory changes



Metropolitan Water Tunnel Program



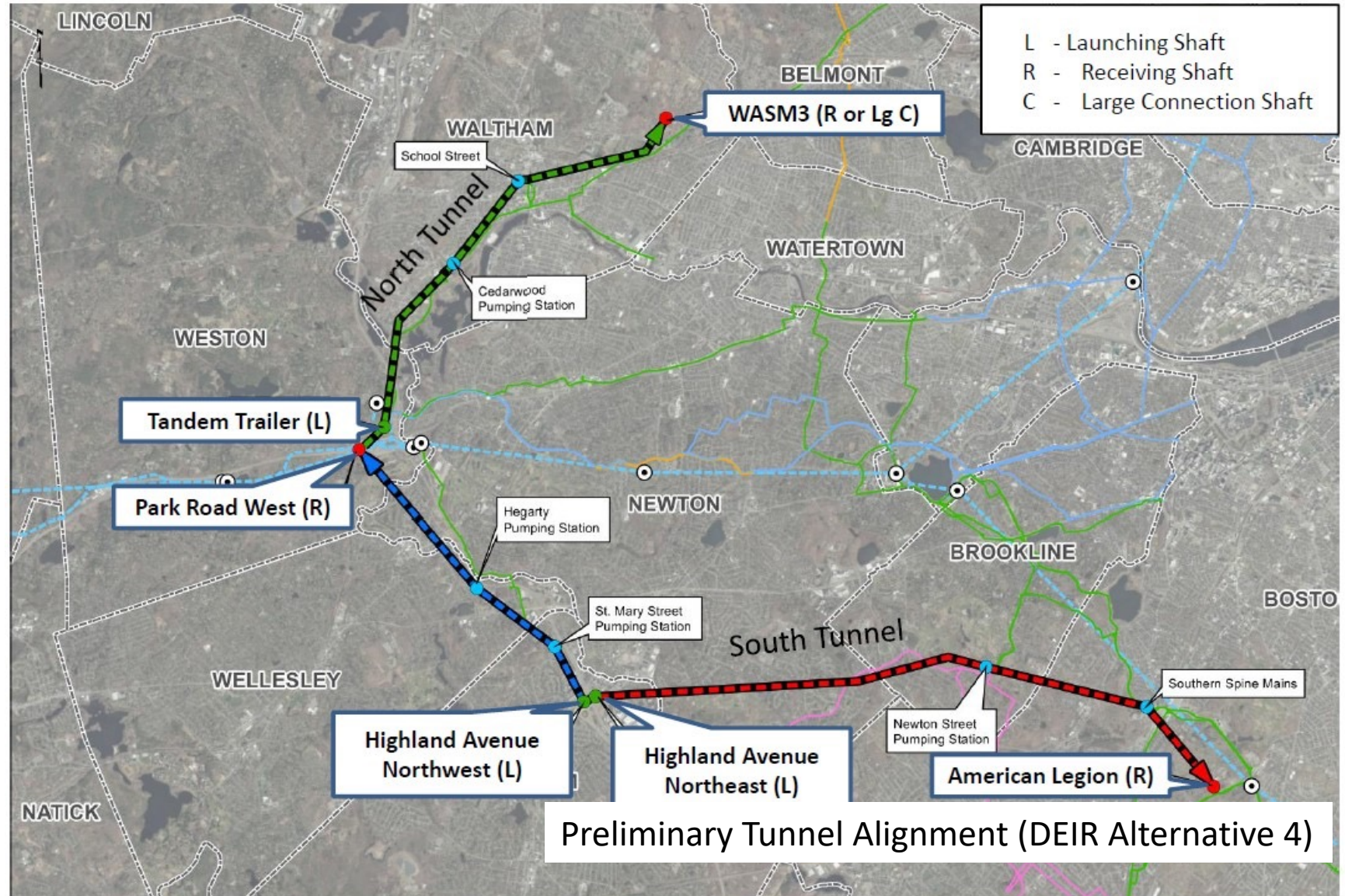
Metropolitan Water Tunnel Program

Construction Shaft Sites

- WASM3, Waltham
- I90/I95 Interchange, Weston
- Highland Ave/I95 Interchange, Needham
- American Legion, Boston

Connection Shaft Sites

- School St - Lexington St Pump Station, Waltham
- Cedarwood Pump Station, Waltham
- Hegarty Pump Station, Wellesley
- St. Mary Street Pump Station, Needham
- Newton Street Pump Station, Brookline
- Southern Spine Mains, Boston





Tunnel Program Schedule

- Overall Program Schedule
 - Preliminary Design is ongoing through early January 2024
 - A large geotechnical investigation is about to start and run through 2025
 - Targeting Final Design to start in mid 2024
 - Targeting first tunnel construction contract to bid in 2027
 - Program completion by 2040
- Current Design Status
 - Geotechnical investigations
 - Environmental Impact Reports
 - Preliminary Design Report
 - Establish contract packages
 - Refine Program cost and schedule (to be reflected in FY2025 CIP)





Design Status

- First Draft Preliminary Design Report and Drawings are done
- Currently undergoing reviews
- First Preliminary Bottom-up Cost Estimate is pending
- Final Design will start in 2024
- One Final Design contract
 - Maintain design consistency between construction packages
 - Better management of overall design schedule / flexibility





Status of Environmental Impact Reports

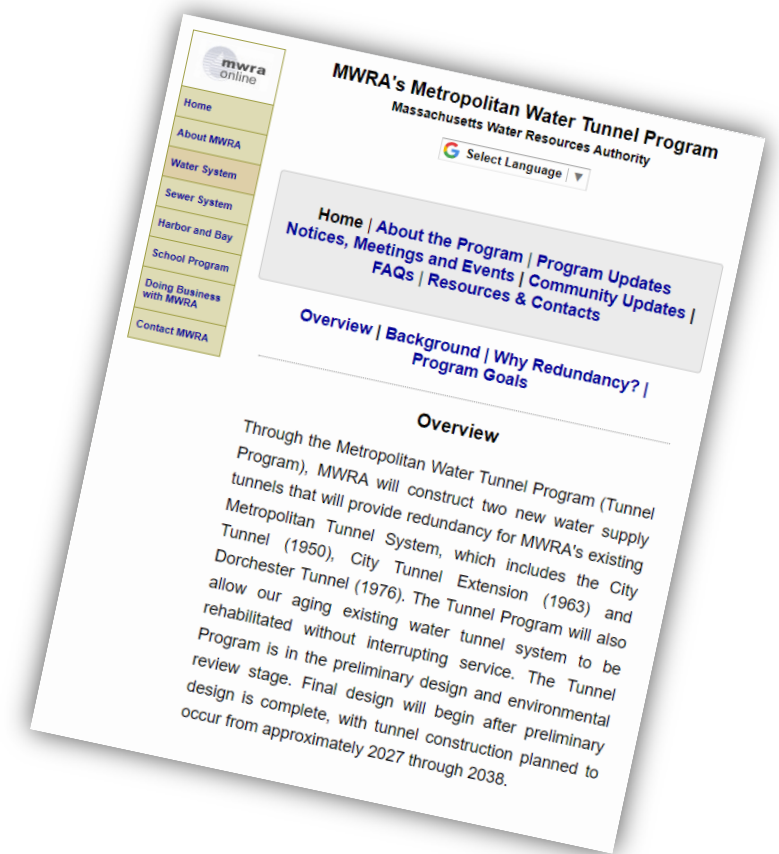
- ENF submitted in March 2021
 - Certificate received in May 2021
- DEIR submitted in October 2022
 - Certificate received in December 2022
- SDEIR submitted in summer 2023
 - Respond to comments
 - Expand Environmental Justice and Green House Gas analysis
 - Alternate North Tunnel end point
- FEIR plan to submit in late 2023/very early 2024
- Goal is to maintain overall Program schedule even with an additional EIR submittal

} Unplanned



Community and Stakeholder Outreach

- Ongoing meetings with Working Group - representative from each community
- Met with departments from key communities in which the tunnel will be constructed:
 - Town Management, Public Works, Public Safety/Fire Departments, Con-Coms, etc.
- Program Website <https://www.mwra.com/mwtp.html>
- Multiple Fact Sheets – translated into 4 languages
- Outreach will continue throughout design and construction





Interim Improvements Underway

- Projects to:
 - Reduce risk of failure/breakdown
 - Improve access for emergency use
 - Improve response capabilities
- Nearly \$40 million in projects completed or underway:
 - Top of shafts improvements (1 phase complete)
 - Commonwealth Avenue Pumping Station improvements
 - WASM 3 Rehabilitation (1 phase nearly complete)
 - PRV improvements (nearly complete)
- Several projects being designed





Other Things We're Watching



Other Things We're Watching

- Projects in local streets
- Bids for the successor Operating Contract for the Pelletizing Facility are due in on September 29th
- PFAS
- Staffing continues to be a struggle, but we are starting to see small signs of improvement
- We continue to work with communities pursuing admission to MWRA's water system:
 - Lynnfield Center Water District
 - Wilmington
 - South Shore communities
 - Metro West communities
 - Walpole



WELCOME TO THE WATER SYSTEM, BURLINGTON!

