THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for May 9, 2024

Meeting conducted remotely via Zoom meeting platform, 1:00 p.m.

Minutes approved August 8, 2024

Members in Attendance:

Vandana Rao	Designee, Executive Office of Energy and Environmental Affairs (EEA)
Chris Kluchman	Designee, Executive Office of Housing and Livable Communities (EOHLC)
Duane LeVangie	Designee, Department of Environmental Protection (MassDEP)
Tyler Soleau	Designee, Massachusetts Office of Coastal Zone Management (CZM)
Anne Carroll	Designee, Department of Conservation and Recreation (DCR)
Kate Bentsen	Designee, Department of Fish and Game (DFG)
Hotze Wijnja	Designee, Department of Agricultural Resources (DAR)
Thomas Cambareri	Public Member
Christine Hatch	Public Member
Vincent Ragucci	Public Member
Kenneth Weismantel	Public Member
Samantha Woods	Public Member

Members Absent None

Others in Attendance:

Alison Brizius	CZM	Katharine Lange	Mass Rivers Alliance
Andreae Downs	MWRA	Katie Paight	DCR FHMP
Andrew Brolowski	MassDEP	Marcel Belaval	USGS
Becca George	EOHLC	Moussa Siri	WSCAC
Caitlin Spence	EEA	Nadia Madden	DCR FHMP
Colleen Rizzi	MWRA	Paul Barlow	USGS
Dan Crocker	MA DCR	Purvi Patel	EEA
Erin Graham	OWR	Rebecca Quinones	MassWildlife
Gardner Bent	USGS	Richard Bradley	Superscape Landscape & GIA
Jason Duff	DCR OWR	Richard Friend	MassDEP
Jason Carmignani	MassWildlife	Sara Cohen	DCR
Jennifer Pederson	MWWA	Stephen Boksanski	Green Industry Alliance
John Scannell	DCR	Viki Zoltay	DCR
Kara Sliwoski	DCR OWR		

Rao called the meeting to order at 1:01 p.m.

VC - Agenda Item #1: Welcome and Introductions

Rao introduced herself, welcomed attendees, and asked all to put their name and affiliation in the chat for the purposes of the meeting minutes. Rao announced that the meeting was being

recorded and all votes would be taken by roll call. She invited those who wish to speak during the meeting to indicate this in the chat window. A roll call of members in attendance was taken; a quorum was present.

JD - Agenda Item #2: Executive Director's Report

Rao introduced the new CZM director, Alison Brizius. She then reviewed the items in the meeting package. One item of importance was the Littleton interbasin transfer request, which was originally a request for determination of insignificance, but is now undergoing a full review. Rao mentioned that she may need to schedule a short additional meeting to vote on this request. It is currently going through the MEPA review process, and she will update commissioners accordingly.

Rao also reviewed the announcements that were included in the meeting package, including several grant opportunities and a draft TMDL currently open for public comment. She mentioned that the Office of Water Resources flood management team is looking for an intern to work on the flooding/environmental justice project, and Madden provided the link to this posting in the meeting chat.

She then reminded commissioners that this week is Drinking Water Week, an annual campaign spearheaded by AWWA. She mentioned that DCR shared a post on their social media for the campaign, and that EEA shared the post on their accounts.

Lastly, Rao announced that the June commission meeting would be held in person at the MA Fish and Wildlife office in Westborough from 12-2:30pm. She also mentioned that the plan is to continue to have two in person meetings each year, including one in December.

Kluchman announced that Community One Stop for Growth is a consolidated grant program that includes 12-13 individual grant opportunities. It is currently open and will close on June 5th. The grants are available primarily to municipalities for capital funding, but there are some programs that apply to private developers. More information about the program can be found at mass.gov. She also advised that she must leave at 2pm for another meeting.

Hatch described a project that UMass is working on involving restoring ditches near farms for protection against floods. Hotze asked if they were having any interactions with MDAR or the UMass extension, to which Hatch replied that MDAR has been involved in discussions to some extent, and that they would also like to talk to DER because some of the farms are already protected.

Soleau announced that the CZM Coastal Habitat and Water Quality Grant RFR has been posted. Communities in coastal watersheds are eligible, as well as other organizations in partnership with municipalities. The RFR closes at 5pm on June 7th.

Weismantel explained that there has been a lot of discussion in Hopkinton about PFAS and PFAS testing where the ground at sites might have been contaminated. He said people feel pretty good about the testing in water supplies, but he recommends having MassDEP come to a commission meeting to talk about PFAS testing for ground sites.

There were no other updates or announcements.

Soleau leaves 1:22pm

Agenda Item #3: Update: Hydrologic Conditions

Rao introduced Graham to present the Hydrologic Conditions Report for April 2024.

- *Temperature:* Monthly average temperatures were mostly normal with some areas, particularly in the central part of the state, above normal.
- *Precipitation*: April regional precipitation was normal across the state. A few gages were above normal, and two were below, but overall precipitation was normal.
- *Snow Cover*: There was no snow cover remaining at the end of April. A storm on April 4th brought snow totals in the mostly less than 1" to 4" range with some spots in the 6" to 8" range.
- *Evapotranspiration:* This is the first time the Evaporative Demand Drought Index (EDDI) maps are being shown using the MA Drought Plan percentiles and map colors. As of April 30, 2023, the 1-month EDDI categories were normal except for the Western Region, which had less demand than normal, and the Islands Region, which had more demand than normal. The 2-month EDDI categories, which are used in the MA Drought Plan monitoring, were normal except for the Western Region, which had less demand than normal.
- *Keetch-Byram Drought Index*: At the end of April KBDI values were in the normal range
- *Streamflow*: Streamflow was mostly normal to above normal.
- *Flooding:* The Norton/Boston and Albany NWS E-5 Monthly Reports had not been received as of the writing of the Hydrologic Conditions Report so flooding at river forecasting points could not be confirmed. Two storms in April resulted in flood warnings. For the April 4th Nor'easter three flood warnings were issued at forecasting points. For the April 12-13th storm there were two flood warnings issued at river forecast points and two areal flood warnings issued. There were no inland flood storm reports or flash flood warnings during the month of April.
- *Groundwater*: April groundwater levels ranged from below normal to much above normal at individual wells. Regional medians were normal to above normal. The Nantucket well was still below normal at the end of April but is in the normal range now in early May. There was question about the level of the Beckett well. It was below normal at the end of April but is in the normal range in early May.
- *Lakes & Impoundments*: Above their 30th percentile and/or were at or near 100% full. The Quabbin's upper spillway started spilling in early March.
- *MA Drought status*: Level 0 Normal Conditions for all Regions.
- *US Drought Monitor (USDM)*: At the beginning of April, Nantucket was in D1 Moderate Drought. The mid-April map changed Nantucket to D0 Abnormally Dry. The April 30th map cleared Nantucket and no other drought conditions were shown.
- *NOAA Climate Prediction Center outlooks*: For May, outlook shows a 33-40% chance of above normal temperatures in the eastern half of the state, a 40-50% chance of above normal temperatures in the western half, and no strong signal for precipitation. The seasonal outlook shows a 50-60% chance of above normal temperatures, a 33-40% chance of above normal precipitation in the southeastern parts of the state, and no strong signal for precipitation for the northern part of the state.
- Both the monthly and seasonal drought outlooks show no drought development.

VC - Agenda Item #4: Vote on Meeting Minutes, February 2024

Rao invited a motion to accept the meeting minutes for February 8, 2024.

VOTE	A motion was made by LeVangie with a second by Weismantel to approve the meeting minutes for February 8, 2024. Hatch noted a correction that she was not included as either present or absent at the meeting. The motion was amended to accept the meeting minutes after incorporating Hatch in the list of attendees. The motion was made by Hatch with a second by LeVangie. The roll-call vote to approve was unanimous of those present.

VZ - Agenda Item #5: Monitoring Network Expansion Overview

Rao provided background on the project which started two years ago with USGS to take a detailed look at the hydrologic monitoring network, the signals they are providing and their coverage of the state. Additional funding was also received for next year which is great timing to be able to implement the network analysis results. Rao introduced Zoltay to provide the presentation.

Zoltay started by reviewing the current MA-USGS Hydrologic Network with the number of stations of each type of monitoring – weather, tide, streamflow, groundwater real time and groundwater monthly. Many uses have been identified, from drought monitoring and flood forecasting to wetland restoration work. This coming year the budget will increase from $1.06 million to $1.89 million which is great timing with the completion of the network analyses which will inform the network expansion.

The objective of the network analyses was to assess and update the streamflow and groundwater networks to provide comprehensive monitoring of conditions that meet the needs of stakeholders. To start, state and federal partners were consulted to identify uses, needs and gaps. Three actions were then considered: remove sites, add sites and upgrade sites to real-time data provision. For groundwater, only overburden wells were assessed. There are only 10 bedrock wells and they were excluded.

Kluchman leaves 1:58pm

Zoltay showed the groundwater and streamflow network maps that currently exist. She then reviewed the three steps of the analyses: 1) collect continuous data where only monthly data exist, 2) evaluate data to look for potential impacts such as pumping, and 3) filling spatial gaps. Gaps were filled using active sites that haven't been part of the 'least impacted' network used for drought monitoring or sites in neighboring states that are within 10 miles of the border. If these sources were insufficient, then discontinued sites were sought. Remaining gaps required the establishment of new sites.

Zoltay walked through two example maps that are the main results of the project. Behind each map is an extensive database of site characteristics and condition status. Finally, some overall recommendations have been made including regular upkeep of the databases and maps, conducting network analyses every 10 years, assessing the potential for a bedrock network,

adding sites for representing headwater streams and various landscape positions such as valley bottoms or hilltops, and considering the impact of sea level rise on coastal sites and how to flag such sites for data users.

Rao added that the additional funding is also being considered for soil moisture monitoring or additional sites for the lakes and impoundments network. In addition, the precipitation network is being re-examined. Discussions with the National Weather Service may result in them taking on some of the sites to have one coordinated place for precipitation data that is subject to extensive quality control, which might free up some funds to go towards the other state networks. Rao acknowledged the USGS staff involved with the project and their time and expertise.

Comments, questions, and responses:
Cambareri commended the project. He commented that many wells on the Cape have shown sea level rise and impacts from increasing water withdrawals that are discharged elsewhere from their withdrawal point. He requested general comments regarding the Cape wells. Zoltay responded that with so many wells on the Cape she thought some might be redundant and be removed. However, the Cape and Islands are groundwater-dominated systems with few streamflow sites so it makes sense that there would be more groundwater sites instead. A couple of problem sites are getting replaced but no other sites are being removed. There were two special meetings with Cape experts, and even with all the wells some spatial gaps were identified. Cambareri asked whether sea level rise was noted in any particular areas. Zoltay answered that while she did not know off the top of her head, most but not all sites were coastal sites. A study done by USGS on the Cape and starting now for Martha's Vineyard may lead to quantifying rates of sea level rise. Cambareri asked whether wells were ranked in any way. Zoltay answered that wells were not ranked in any way and the approach for this round of analyses was relatively simple and focused on looking at spatial gaps. The team did consider sea level rise but there were not sufficient data to attribute groundwater rise to sea level rise. Rao added that both sea level rise and land subsidence are being considered. In the coming years staff will be thinking through how these effects are considered when using data for drought monitoring and similar work. Cambareri noted that after this study is completed, it would be good to dig into the details not just on sea level rise but other changes such as increased water withdrawals.

Ragucci appreciated the informative presentation and asked about the cost of the wells. Zoltay answered that they are about $10,000 per year. Ragucci noted that there are new clean energy sites being developed that install weather stations and wondered whether there are any requirements for locating such facilities where there are existing monitoring sites. It may be mutually beneficial given that these new facilities also need to know about weather and flooding on their property. Rao thanked Ragucci for this point especially since the State has been looking for partners to contribute to funding the networks. In addition, there have been some initial conversations about establishing a mesonet with sites that measure weather and additional hydrologic monitoring. Rao and staff will reach out to EEA staff working on the energy side.

Hatch expressed her appreciation for the networks and utility of that data in conducting studies about climate change and water resources across the Commonwealth. She commented that some of the automated sites do not always work but they are great when they do. Rao

commented that real-time sites are more expensive, but the State has been working to upgrade sites to real time across the state.

Brolowski asked about the transducer data and the pumping pattern shown on one graph in the presentation and whether there are programs that this data is passed through assuming that there are not people who are picking out these patterns daily. Zoltay answered that quality control is done by USGS staff and that is partly why real-time sites cost more because they produce so much more data to check. Most people use the daily average of the 15-min interval data so minor, transient pumping does not necessarily have a big enough effect to remove the site from the network. In the future there will likely be artificial intelligence filters that the data can be passed through to identify pumping or other patterns.

KS- Agenda Item #6: Draft WRC FY25 Work Plan

Rao introduced Carroll to present the FY2025 WRC work plan. Carroll explained she would give a brief orientation to the plan for some changes made since the last presentation and then share some highlights. She thanked Curran and all staff for reorganizing the document.

Highlights included:

- Inclusion of links to regulations, enabling legislation, and any major plans
- Within each major program section, there is the ongoing background work, and any special projects, which are bolded
- Drought management: new research led by Zoltay, Graham and other staff investigating the fire danger and soil moisture products available. Two major ongoing projects: lakes and impoundments drought index with USGS and development of guidance for local drought management plans statewide.
- Hydrologic conditions: projects led by Zoltay, assistance from climate staff and Rao on low flow and climate and stream flow projections
- Water conservation: lead by Duff, thoughts of a statewide campaign morphed into the water efficiency advisory committee which includes Commissioner Woods, representatives from the Danvers and Ipswich water supply communities, Katherine Lange from Mass Rivers, and LeVangie from DEP, among others. The group has been advising the campaign on water efficient landscaping, the Native Plant Palette.
- Interbasin Transfer Act: many ongoing projects, but staff anticipate coming back to the commission with the performance standards updates soon
- Water data management: staff are working with DEP and EEA to develop one centralized data system for all existing, various sized databases to be combined into. Input will be sought from anyone interested once the project is underway.
- Flood program: Duperault, working with the Army Corps and MEMA, is taking the lead on the statewide floodplain management framework. Madden, with assistance from Zoltay and Spence, is leading the flood vulnerability assessment. Staff are also working on the building code and groundwater flooding vulnerability (led by Zoltay).
- Public Law 566 program: Bill Salomaa of DCR's Dam Safety Program leads this and has offered to provide annual updates to the Commission about the program. Salomaa and his federal partner at NRCS will likely present at the September WRC meeting.

- Board of Certification of Operators for drinking water: Graham has agreed to serve in an open seat on the board under the mentorship of Salomaa, as he has always represented the Commission on the board and continues to do so.
- Stakeholder engagement: Cohen is working with the North Shore Task Force and has been advising a similar effort in the south and southeast. Duff is on the steering committee for the Old Colony Planning Council regional water study looking at future water demands and supply alternatives for their region., which is being done in conjunction with CDM Smith and the Alliance for Water Efficiency.

Rao noted that all programs within the commission have been integrated into the work plan, with staff identified on the first page, except for the climate staff, who have been helping on a number of WRC projects. Rao added the climate and streamflow projections project just began recently and is in the first of three fiscal years. EEA has established a separate scientific advisory committee that includes leading scientists in climate, climate projection, and climate-water resources, which has bimonthly meetings. Rao said the meetings have been helpful to discuss technical points and to get feedback on the climate projections project to ensure peer review processes are occurring. Rao reminded that looking at water resource data is part of the core duties of the WRC, so this collaborative effort will provide a centralized source for agencies and can be provided in a simple way to the public.

Weismantel asked about the status of the MWRA MetroWest 495 area feasibility study. Downs noted that MWRA has almost completed the MetroWest study and were starting the areas around the Quabbin. Rizzi added that the MetroWest study is complete, and all three studies can be found here: https://www.mwra.com/02org/html/expansion.html.

Carroll added that a more detailed briefing of specific projects can be provided upon request, or if anyone has relevant feedback to share to please reach out to her, and that the work plan will be back on the agenda for approval in June.

Kluchman asked if the flooding program coordinates and collaborates with MassDOT's small culverts and bridges program. Rao said MassDOT has been part of the broader floodplain management framework and thanked Kluchman for her question and feedback. Rao acknowledged that she and Kluchman intend to coordinate on housing and water use intersections.

SC - Agenda Item #7: Massachusetts Low-Flow Statistics at Gaged and Ungaged Sites

Rao introduced Zoltay who provided a brief context for the study. StreamStats is a program capable of calculating streamflow statistics at any stream location in the state. Some of the data with which the tool was developed is now about 24 years old. The current project involves updating the equations that drive that tool, reflecting changes in streamflow statistics since the development of the tool. Zoltay introduced Gardner Bent from the US Geological Survey (USGS) to present on the project.

Bent pointed out the groundwater network that was just reviewed is an important component in the present analysis. Bent's full presentation slides are available at: https://www.mass.gov/info-details/review-the-meetings-of-the-water-resources-commission.

Woods leaves 3:15pm

Highlights of the presentation include:
The tool is used for a wide range of regulatory, planning, and research contexts, as the source of flow statistics for all ungaged sites. There are more than 20 years of newer data since the original analysis of low flow statistics in MA in 2001. There are also new GIS coverages available to test as explanatory variables, as well as data to help fill in geographic data gaps in the original analysis. The regression equations for low flow statistics are based on the 149 gages with 10 or more years of record that are classified as "unregulated" – i.e., on streams with the lowest available level of flow impacts from dams, water withdrawals, and discharges.

- The study identified which gages show a statistically significant trend in low flow metrics over various timeframes (30 – 90 years).
- Gages showing statistically significant trends in annual 7-day low flow were variable across the gages that showed these trends, with some increasing and others decreasing, creating no clear overall trend.
- The low flow statistics for each site were then correlated with basin characteristics, land use, geology, and climatic factors.
- New USGS research from other parts of the country developed methods for assigning a streamflow variability index (SVI) value to gages based on the slope of the flow duration curves. Partial records were leveraged to estimate complete flow duration curves for many sites that had only partial records.
- Regression analysis demonstrated, as with the original StreamStats program, that the confidence intervals get less tight at the lower end of the flow duration curve (the lower flows). However, the confidence intervals are still quite good at the very low flows.
- On Cape Cod and the geologically similar Plymouth Carver aquifer, there are only 4 gages with more than 10 years of data. However, 14 additional sites with partial records were able to be included by generating simulated flows based on their correlations with the long-term gages.
- On the Cape and Plymouth Carver aquifer, the surface water and groundwater contributing areas don't overlap with each other that closely. Instead of using surface drainage areas, the analysis in this area was based on groundwater contributing areas mapped by USGS in previous studies.
- Conclusion is that groundwater contributing area and storage in water bodies and wetlands were the two primary explanatory variables for low flow statistics in this part of the state. Overall, the confidence levels of the statistics generated by the final equations are lower, due to the lower number of sites, but they are still useable.
- Next steps include publishing the scientific investigation report, releasing the underlying data, and updating StreamStats with the new equations.

Discussion:
LeVangie questioned the designation of the Parker River as "unregulated". Bent acknowledged that in geographic areas with few available unregulated gages, they have to use the sites that are least impacted by regulation compared to the rest.

Crocker commented that the Stillwater River near Sterling, MA just hit the 30-year mark and is unregulated, which could help fill the geographic gap in central MA. Bent replied that the Stillwater River was used in the original regression analysis.

Brolowski asked if the water table ratio being controlled by topography or recharge would be another significant variable for the SVI curves. Bent replied that he believes this is true, but there are a lot of components that are not completely understood.

Friend asked if StreamStats would be able to delineate the groundwater contributing area. Bent explained that the contributing areas for every cell in the program were pre-computed for this area of the state and the statistics will be delivered for each cell that gets clicked, but the program will not draw the boundaries of the groundwater contributing area the way you can with surface water contributing areas in other parts of the state.

Bent finished by emphasizing the importance of new gages that fill in the geographic gaps for supporting this research and the StreamStats product.

Rao thanked Bent and the state staff that have worked with USGS on this effort.

VC

V O T E	A motion was made by Ragucci with a second by LeVangie to adjourn the meeting. The roll-call vote to adjourn was unanimous of those present.

Meeting adjourned, 3:49 pm.

VC - Documents or Exhibits Used at Meeting:

1. WRC Meeting Minutes: February 8, 2024
2. Draft WRC FY25 Work Plan
3. Interbasin Transfer Act project status report, April 25, 2024
4. Hydrologic Conditions in Massachusetts, April 2024 (available at https://www.mass.gov/info-details/monthly-hydrologic-conditions)

Compiled by: WRC staff

Agendas, minutes, and other documents are available on the web site of the Water Resources Commission at https://www.mass.gov/water-resources-commission-meetings. *All other meeting documents are available by request to WRC staff at 10 Park Plaza, Suite 6620, Boston, MA 02116.*