THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for October 12, 2023

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

Minutes approved January 11, 2024

Members in Attendance:

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

Members Absent

Todd Richards	Designee, Department of Fish and Game (DFG)
Thomas Cambareri	Public Member
Vincent Ragucci	Public Member

Others in Attendance:

Andreae Downs	WSCAC
Becca George	EOHLC
Bob Worthley	Town of Foxborough Water Department
Chris Bruet	USGS
Erin Graham	DCR/OWR
Jason Duff	DCR/OWR
Jason Pollender	USGS
Jennifer Pederson	Mass Water Works
Kara Sliwoski	DCR/OWR
Moussa Siri	WSCAC
Patty Gambarini	Pioneer Valley Planning Commission
Paul Barlow	USGS
Read Porter	EEA
Robert Bradley	USGS
Sarah Bower	Mass Rivers Alliance
Vanessa Curran	DCR/OWR
Viki Zoltay	DCR/OWR

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

Agenda Item #1: Welcome and Introductions

Rao introduced herself, welcomed attendees, reminded all to put their name and affiliation in the chat for the meeting minutes, to use the chat for any questions and to keep microphones on mute until called upon. She also mentioned that the meeting was being recorded for the purpose of the meeting minutes. A roll call of members in attendance was taken by Duff; a quorum was present.

Agenda Item #2: Executive Director's Report

Rao announced the release of the ResilientMass Plan, the state's Climate Hazard and Resilience Plan, formerly known as the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP). Rao explained this used to be the Climate Hazard Mitigation Plan put out by MEMA, but a few years ago the State combined the plan with climate adaptation and resilience actions. The plan is now in its second iteration which examines how climate will change in Massachusetts and implementing response actions into state programs, projects, grants, etc., to look at how Massachusetts should be adapting to be more resilient. The ResilientMass Plan is an interagency effort that has been committed to over the next five years. Rao noted this is an exciting time to do this in a comprehensive manner and base the adaptation decisions on real science and analysis of climate projections. The Climate Hydro project that Rao leads along with WRC staff and presented at previous WRC meetings has been instrumental in getting those climate predictions incorporated into the ResilientMass Plan. Rao encouraged all to review the plan and actions in it.

Woods joined at 1:09 pm.

Rao introduced Moussa Siri, the new Executive Director of the Water Supply Citizens Advisory Committee (WSCAC), who's position was previously held by Lexi Dewey until she retired recently. Rao noted WSCAC has an important presence in water related issues in the state, and they represent the interests of the Connecticut River Valley and the broader MWRA system. Rao thanked Siri for joining the meeting. Siri added that he is currently a PhD candidate at UMass working on watershed management issues on the Volta River in West Africa. Siri thanked everyone for having him and sharing information. Rao thanked Siri for attending and added that she's looking forward to collaborating moving forward.

Rao explained though the WRC meetings are all virtual now, the December meeting is a great time to have an in-person meeting, and thanked Wijnja for finding and reserving a space at the MDAR office in Southborough. Rao said this location is more centrally located for everyone and anticipates the meeting will begin slightly earlier than usual so it ends earlier for everyone to travel home easily. Woods asked if everyone would be having lunch together, Rao replied that if people want to stay after the meeting, then yes. LeVangie inquired about available office space at MDAR to take a conflicting meeting, Wijnja replied that there is available space where a reservation can be made. Kluchman noted that she has a conflicting meeting during most of the proposed WRC meeting time but will either have her designee attend for her or try to juggle both meetings. Rao added anyone who needed space could connect with Vanessa, who will give the final list to Wijnja.

Agenda Item #3: Update: Quarterly Update on WRC Special Projects

Rao explained WRC staff have been extremely active currently managing and leading twelve scientific research projects, some are ongoing from last fiscal year(s) and some are new. Updates included:

- Climate Hydro Risk study – Rao is the lead; currently in phase two; working with the Office of Climate Science team and teams from USGS, Tufts and Cornell; they are currently working to finalize the climate metrics or parameters for the climate projections

- Low Flow study, Groundwater Flooding Vulnerability Mapping study (Dr. Boutt presented on this at the September WRC meeting), and Drivers of Low Flow study – Zoltay is the lead; projects are all ongoing at different levels of completion
- Monitoring Network Analysis study – Zoltay is the lead; an in-depth look at the groundwater and streamflow monitoring network that WRC staff manages in collaboration with USGS; to determine if additional locations are needed, if the current locations are in the best sites, if there is redundancy; to have a better spread of data across the state
- Modernization of Groundwater Monitoring – Zoltay is the lead; ongoing for many years to bring stations into real-time data relay; funded through USGS grants
- Evaluation of the Lakes and Impoundments Drought Index – Graham is the lead; project is being conducted in collaboration with USGS
- Guidance for local water suppliers on developing a local drought management plan – Cohen is the lead
- Drought retrospective for 2020-2021 – Duff is the lead; undergoing final review to be ready in a few months
- Updated drought outreach materials – Duff is the lead; development of videos and graphics targeted to specific water conservation aspects
- Environmental Justice (EJ) and Flooding – Madden is the lead; mapping flooding frequency with EJ populations to assess vulnerabilities, understand causes and develop mitigation work; received $400,000 from the SHMCAP Grant
- State Floodplain Framework – Duperault is the lead; interagency coordinated effort with MEMA, US Army Corps of Engineers, and many EEA agencies; to develop a framework for a flood management plan for the state; project is just beginning

Rao commended the WRC staff's work on better understanding water resources. Gambarini asked if the quarterly project document could be shared, Rao replied that she will put it on the WRC website but told Gambarini they'd confirm she is on the mailing list as the document went out with the monthly meeting packet. Rao asked for questions from commissioners, which there were none.

Wijnja left at 1:28.

Rao alerted commissioners of the MEPA letters that were submitted to MEPA in the last month and were part of the meeting package, specifically the MWRA Supplemental DEIR letter. She noted the Interbasin Transfer Act (ITA) was setup in the 1980s because of the transfers from the Connecticut River Valley to Boston and much of what the commission did in the early years of the ITA was to regulate those transfers. However, there is an exemption for ITA review where if any project is done for purposes of redundancy, among a few other things as outlined in the regulations, that project does not come under the purview of the ITA. The project MWRA is undertaking is a 1-billion-dollar tunnel redundancy project, which will construct a tunnel in the ground in a section of their system which does not currently have redundancy. As such, it is not subject to the ITA as long as MWRA doesn't increase the capacity and transfer that they are currently doing; so they are not using the redundant amount to increase the amount or ability to transfer more water. Staff very carefully look at all MWRA transfers to ensure clarity of when it is or is not jurisdictional, which is shown in the letter. Rao added the other letters included in the meeting package that were sent to MEPA on behalf of the commission have to do with either Interbasin Transfers or the commission's authority to help implement the National Flood Insurance Program.

Rao asked if any commissioners would like to share announcements from their agency or organization. LeVangie mentioned that the SWMI and M36 grants from DEP Water Management are out now and close on October 17; if public water suppliers have an interest in pursuing either mitigation or minimization requirements and need money or would like to conduct an M36 audit, now is the time to apply. Rao added the audits have been helpful in finding losses in a system and hopes communities take advantage of the funding.

Agenda Item #4: Update: Hydrologic Conditions

Rao introduced Graham to present the Hydrologic Conditions Report for September 2023.

- *Temperature:* normal to above normal across the state; 8th warmest September on record.
- *Precipitation*: above normal except for the Western region which was normal.
- *Evapotranspiration:*
  - Crop Moisture Index (CMI): Wet and Excessively Wet conditions across the state.
  - Evaporative Demand Drought Index (EDDI) 1-month and 2-month: normal to below normal.
- *Keetch-Byram Drought Index*: normal conditions across the state.
- *Streamflow*: much above normal except for the Cape Cod region which was normal; some new daily record highs were set.
- *Flooding:* significant flash flooding with severe damage in Leominster on September 11; minor flooding with no impacts in Andover on September 20; 51 reports for urban and stream flooding from the Iowa State University Local Storm Report App.
- *Groundwater*: below normal to above normal. Regional medians were much above normal in Central, Northeast and Southeast regions; Islands region is at index severity level 3.
- *Lakes & Impoundments*: above their 30th percentile and/or were at or near 100% full.
- *Drought status*: all regions are in Level 0 Normal Conditions as of July 14, 2023.
- *US Drought Monitor*: no areas of drought shown across the state.
- *NOAA Climate Prediction Center outlooks*: For October, 40-50% chance of above-normal temperatures, a 33-40% chance of below-normal precipitation for the eastern half of the state, and a 40-50% chance for below-normal precipitation for the western half of the state. The seasonal outlook through December shows a 40-50% chance of above-normal temperatures, a 33-40% chance of above-normal precipitation in the southeastern part of the state, and equal chances for above-normal, normal, or below-normal precipitation for the remainder of the state. The monthly and seasonal (through December) drought outlooks both show no drought development.

Wijnja returned at 1:42.

Rao commented on Islands groundwater deficit and how the Islands 24-month precipitation is at index severity level 2. Hatch asked if groundwater reflects the scarcity of the resource there. Zoltay replied that it has been decreasing ever since May; Graham said it never truly recovered fully before decreasing like it usually does, and the Islands have been behind in precipitation. Rao added that groundwater is the only index currently tripping, though it is a more long-term systemic sort of index, while other indices are normal, so there won't be a Drought Management Task Force meeting called as yet.

Pederson noted the Edgartown water supplier is not seeing similar impacts in their GW monitoring wells. Rao said the precipitation looks fine for September, but this is a long-term impact seen on the island's wells. Zoltay noted an interesting pattern seen in the Island wells during network analysis is along the shoreline of the two islands, the wells are in the normal range, whereas everything more inland is below normal range, and this is for more than just the two index wells shown on Graham's presentation. Zoltay said they think there must be something going on with sea level rise resulting in pushing groundwater levels toward the surface to see that kind of pattern, which is a phenomenon that is occurring, but they need more data to confirm. Carroll asked Zoltay where the municipal wells are in relation to the coast, which Zoltay said she was unsure of but would be interesting to investigate. Bruet said USGS is confident in the readings for the discrete wells as they are remeasured when there is any uncertainty. Pollender added the Island real-time wells have second sensors in them, in the event of a malfunction so they are backed up. Rao added to Zoltay's comment about sea level rise impacting the Island wells and said USGS has looked at sea level rise on Cape Cod and perhaps something similar is happening at the Islands. Zoltay said of the Edgartown wells, three are right on the coast and two are more inland. LeVangie added he believed the monitoring well is more inland near the airport, which USGS could confirm. LeVangie inquired about the level of variation from average high to average low during the year; Bruet said it's approximately a two-foot range in the last year (from 24.5 to about 26.5 feet from the surface). Rao asked what is considered normal, which Bruet said 24.5 is in the middle of the normal range and below normal is around 26.5. Graham noted that the graphs show the wells never peaked in May/June as they usually do. Bruet confirmed and added it continued to decline to present day, just barely touching below normal.

Pederson noted Martha's Vineyard has been dealing with PFAS issues, especially around the airport, so it may be worth checking to ensure there's nothing going on with groundwater remediation related to PFAS that may be drawing something. Rao asked Bruet if USGS can investigate that possibility, which he confirmed. Rao asked for final questions, thanked Graham, and reminded all that the HCR will be available on website for viewing or sharing.

Agenda Item #5: Vote: Meeting Minutes, July 2023

Rao invited a motion to approve the July 2023 meeting minutes.

VOTE	A motion was made by Weismantel with a second by Wijnja to approve the meeting minutes from the July 13, 2023 WRC meeting. The roll-call vote to approve was unanimous of those present.

Agenda Item #6: Discussion: Draft WRC Annual Report, FY2023

Rao reminded that by statute, WRC has to publish an annual report in December to highlight work from the previous fiscal year, discuss what the commission does and who is on it. Rao said this is a great tool to showcase the work of the commission and communicate it; once it is published, she will make it available to all to share. She also said the vote to approve the annual report will be on the November agenda. Rao introduced Carroll to review the draft report.

Carroll reviewed the layout of the report and highlighted some specific areas, as follows:

- The time period is fiscal year, July 1, 2022 through June 30, 2023
- A background of the roles and structure of the commission and major responsibilities
- Each major program has a narrative plus some highlights of key things worked on

- A full page dedicated to special projects, which Rao reviewed earlier in the meeting
  - Eight projects listed in the report, six of which are focused on components of drought
- Tracking hydrologic conditions because climate change is water change and staff have been trying to better understand droughts and improve response to them
- Summary of the drought that began in 2022 and ended in January 2023
- Working with the Northeast Regional Climate Center at Cornell to improve the Drought Dashboard
- Amount of work done by the small flood staff team
- Oversight of state water programs and the commission's votes on recent Water Management Act and Watershed Permit regulations
- Development of social media graphics for water conservation efforts, in coordination with Pederson and a group of water suppliers
- Staff's involvement at a national level through participation in Alliance for Water Efficiency (AWE) committees, including the education and outreach committee and the research committee, to ensure the state is learning from others' experiences.

Carroll mentioned the format of the report may change to a PowerPoint next year for ease of viewing and asked for any questions or comments, which Rao opened to commissioners first. Hatch gave kudos for the tremendous amount of excellent work and clean and clear report. Rao commented that it is challenging to put so much information in a small space but appreciates all the work the staff have done to make things concise and clear. Rao also asked if commissioners have any edits to email them to her. Pederson commented that there's been a lot of discussion at the commission about whether the AWE rankings seemed appropriate for the state, so she suggested possibly taking out the graphic so not to send the wrong message that we're falling behind in water efficiency. She noted that everyone who heard the AWE presentation wasn't sure our efforts were captured. Rao noted she understood Pederson's point and that the state's starting point is different than other western states and may not have been fully captured in the scorecard. Rao added the scorecard has helped to think about what we currently do and what the state can learn from other states' efforts. Rao thanked the staff again for their efforts and reminded commissioners the report will be back in November for a vote to approve.

Agenda Item #7: Presentation: Annual Update on the DCR-USGS Cooperative Hydrologic Monitoring Program

Rao noted the USGS Cooperative Program dates back to around 1905 and is between the state and USGS, which has been very beneficial and proof of the investments the state has made in getting high quality data. Additionally, the program works with all parties to maintain and expand the network and understand the data. Rao introduced Pollender and Bruet to speak, and acknowledged Zoltay's efforts as she is the staff person managing the program on behalf of the commission. Zoltay thanked Rao and added the program includes streamflow and groundwater, but also other networks. As mentioned previously, Zoltay and USGS are doing an analysis of streamflow and groundwater networks, which have developed organically, but they have been successful in receiving federal funding for replacing wells and upgrading equipment to real-time monitoring. The funds have been mindfully invested, which has prompted the network analysis to be done. Zoltay said USGS will review all aspects, including funding, and handed it off to Pollender.

Pollender introduced himself as the Field Office Chief for the Massachusetts USGS office and noted his focus is primary in surface water throughout the state, though Bruet will be talking about

groundwater after. He added that last year's presentation was similar, but the focus this year will be on the shift to flooding from drought. The presentation can be accessed here.

Pollender's highlights:

- Summary of all stream gauge locations across the state, which is not limited to what DCR or the state funds, but inclusive of 12+ other cooperators or municipalities that fund the network
- 138 stream gauges are across the state, not all are visible as some are internal to USGS or the Army Corps of Engineers
- 58 real-time gauges funded by DCR Office of Water Resources; 13 funded by Engineering; 10 funded by Water Supply; the remainder are other sources
- USGS funds about $225,000 of the cooperative network
- Priority stream gauges receive about $69,000 in federal funding only
- DCR provides funding of almost 1 million dollars for a full monitoring network, which includes stream gauges of different types and sensors; current FY24 new install cost is approximately $17,000 for one discharge stream gauge
- There are 18 precipitation and/or weather stations across the state, some of which are coupled with groundwater wells or stream gauges; these range in price depending on the type of gauge. Many parameters on these stations are not published, so after 120 days the data is not available
- Stillwater and Quinapoxet stations are funded by DCR, but by other programs within DCR
- Four tide gauges measure the tide as it comes in and goes out, which is useful during storms; cost approximately $7,300 each in current FY24 costs
- USGS installed five new stream gauges around the Bedford Hanscom Air Force Base area this summer in cooperation with the US Air Force for a project they have ongoing for monitoring groundwater and surface water in that area; the agreement is only for one year, so they may or may not continue to fund them depending on how the project goes
- Summarized the different types of stream gauge sensors and which they typically use for which types of projects and noted ongoing research of using cameras more to identify elevation, flow, ice monitoring and other things
- Six to eight times a year most sites get a discharge measurement to use to correlate with stage data in discharge rating curves, which they have developed based on all measurements taken throughout the year
- Summarized statewide drought conditions over the last year
- Noted that July required a lot of field work collecting discharge measurements, some of which were the highest ever and included a list of flooding in 2023 with annual exceedance probabilities

Rao asked if USGS collects wind speed, which Pollender said some of their multi-parameter stations do but USGS has no way to verify that data against anything. Zoltay clarified that if something is approved or published, it has been quality controlled and gone through the QA process, whereas unapproved doesn't stay on the website didn't go through QA and does not become part of the permanent record. Pollender explained that sometimes precipitation data may be intended to be published, but when the equipment is reviewed and has debris or mechanical issues, the data is deleted from the record as it can't be corrected. Rao asked if anyone is using the wind data, as they're looking at predictions and using wind speed is helpful for fire danger assessments and decision making. Pollender said they do not know who is using the data and the backstory of why some of these stations were created may have been lost through the years.

Woods asked if there were any precipitation stations on the South Shore except Quincy, which Pollender said there is Fall River, though that's southeast and shared a map that shows all stations. Zoltay noted that DCR only pays for five of those stations shown. Gambarini asked if these stations are meant to supplement or complement the National Weather Service (NWS) monitoring or are they completely separate; Pollender replied that NWS may be interested in and use them, but are not instrumental in putting them in as far as he is aware, but those installs pre-date his involvement.

Graham asked if the 2023 data shown was for the water year or calendar year; Pollender said it is the water year, which is also USGS's fiscal year, from October 1 to September 30.

Bruet's highlights:

- 120 total groundwater wells in the network, about 70 of those are real-time with about 53 needing monthly measurements
- FY24 changes will include finishing upgrades of all Climate Response Network (CRN) wells to real-time, though currently experiencing property permissions challenges
- Annual O&M is approximately $400,00 total, with USGS funding $65,000 and DCR funding $335,000. For FY24, a real-time groundwater gauge is $6,000 and a discreet well is $1,100
- Explanation of a diagram of a well and methods of testing to ensure it is connected properly to an aquifer and measuring total well depth to ensure no significant annual changes
- Explanation of a groundwater gauge setup
- Maps of current real-time groundwater well network and future network once all discrete wells are upgraded.

Rao asked Bruet to explain what he means by property permissions. Bruet said many of their wells are on private property, which when the measurement is done manually each month, the property owners are agreeable with. However, when upgrading to real-time the well requires a larger box onsite, which not everyone is comfortable with; resolutions include either convincing them or potentially moving the well. Rao added that many of these wells have been on their properties for a long time and they may not even realize it, or was based on a verbal communication from the past owner. Bruet said that when a property changes hands, USGS doesn't have a formal written agreement with the new owner(s). Zoltay noted this is applies to the CRN, which are supposed to be the least impacted and only show the change of climate, but some have significant development impacts, and some new wells will be added that were constructed after the CRN designations were made. Bruet added that for future property issue prevention, any new wells are to hopefully be on state land so there will be no concerns about it.

Carroll left at 2:38 pm.

Rao thanked Pollender and Bruet and asked for any questions. LeVangie asked what the range of well depths is, approximately. Bruet said 12 feet is the shallowest and deepest would be a few of the several hundred feet bedrock wells; Zoltay said it may be in the 300-foot range and believes it is on the Cape. Kluchman asked if monitoring stations are monitoring for water quality and things like invasive species. Pollender said that mostly no, as it is not part of the local mission at a stream gauge, though he likes the idea. Zoltay added water quality is done on a project-by-project basis by the Watershed Planning Program, such as total maximum daily loads. Rao added there are

many other groups that do water quality monitoring, though USGS may do some as part of a particular project for a state agency, but not usually statewide.

Rao invited Curran or Sliwoski to comment on the invasive species portion. Sliwoski explained that she, Carroll and Curran are also part of DCR's Lakes and Ponds Program staff, which conducts monitoring and management of aquatic invasive plants at DCR waterbodies. Sliwoski noted they are trying to collect aquatic invasive plant data for waterbodies beyond DCR's to compile into a public database with a GIS website similar to MassMapper but does not have a timeline on completion currently. Kluchman thanked everyone and noted her understanding is that public education is crucial for controlling invasive species and would look forward to hearing about how the state is comprehensively thinking about it. Pollender reiterated that USGS does have some water quality monitoring for specific projects and needs, but the group he and Bruet manages is not involved in that work. Bruet added that the Conti Fish Lab in Turners Falls do invasive species work. Rao asked Sliwoski to talk about the non-DCR waterbodies, their monitoring and who is doing it. Sliwoski said it varies by waterbody depending on the local group organization, whether it is a lake association, municipality or small group that is concerned about water quality or invasive species; some groups have been actively managing waterbodies since the 1980s whereas others are only just beginning to. Sliwoski added the Lakes and Ponds Program provides public assistance and education to guide these groups and confirmed Kluchman's thoughts about education being key to prevention of invasive species spread. Curran added the Lakes and Ponds Program also includes Jim Straub and Tom Flannery and for private groups on non-DCR waterbodies, staff conduct weed watcher trainings where live plant samples and educational materials are supplied for teaching how to identify various invasive plants. Soleau added that CZM has a marine invasive program and conducted a rapid assessment survey this summer where a CZM team and citizen scientists visit and monitor coastal marinas to track species trends, distributions and look for new invaders. The results are documented to assess regional patterns and are reported, which Soleau noted will be shared when available. Rao suggested to Soleau that may be a good topic for a presentation sometime, to which he agreed. Rao thanked Pollender and Bruet and noted the immense work that occurs in the background in order for anyone to look at the data available.

Carroll returned at 2:53 pm.

Rao asked if anyone had any non-agenda items for discussion. Pederson commented that Imagine a Day Without Water is next week and the US Water Alliance has materials for social media outreach. Rao thanked Pederson, noted EEA is still considering what message to share, and encouraged everyone to check out the website and share the info through their own individual or agency/organization social media platforms.

Rao asked for a motion to adjourn the meeting.

VOTE	A motion was made by Weismantel with a second by Kluchman to adjourn the meeting. The roll-call vote to approve was unanimous of those present.

Meeting adjourned, 2:56 pm.

Documents or Exhibits Used at Meeting:

1. WRC Meeting Minutes: July 13, 2023
2. Quarterly Update on WRC Special Projects
3. FY2023 Draft WRC Annual Report
4. Correspondence on behalf of the WRC to the MEPA Office regarding the following projects:
   a. Letter dated September 8, 2023 on the Expanded Environmental Notification Form for the Lynnfield Center Water District Supplemental Water Interconnection with Wakefield/MWRA
   b. Letter dated September 22, 2023 on the Expanded Environmental Notification Form for the Northborough Reservoir Dam Partial Removal Project in Boylston and Shrewsbury
   c. Letter dated September 22, 2023 on the Supplemental Draft Environmental Impact Report for the MWRA Metropolitan Water Tunnel Program
5. Correspondence dated October 2, 2023 from the WRC requesting additional information for Littleton's Request for Determination of Insignificance under the Interbasin Transfer Act
6. Interbasin Transfer Act project status report, September 29, 2023
7. Hydrologic Conditions in Massachusetts, September 2023 (available at https://www.mass.gov/info-details/monthly-hydrologic-conditions

Compiled by: kms

Agendas, minutes, and other documents are available on the website 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.*