THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for November 12, 2020

Meeting conducted remotely via Zoom meeting platform

Minutes approved January 14, 2021

Members in Attendance:

Vandana Rao	Designee, Executive Office of Energy and Environmental Affairs (EEA)
Linda Balzotti	Designee, Department of Housing and Community Development (DHCD)
Anne Carroll	Designee, Department of Conservation and Recreation (DCR)
Kathleen Baskin	Designee, Department of Environmental Protection (MassDEP)
Hotze Wijnja	Designee, Department of Agricultural Resources (DAR)
Todd Richards	Designee, Department of Fish and Game (DFG)
Thomas Cambareri	Public Member
Marcela Molina	Public Member
Vincent Ragucci	Public Member
Kenneth Weismantel	Public Member
Samantha Woods	Public Member

Members Absent

Todd Callaghan	Designee, Massachusetts Office of Coastal Zone Management (CZM)

Others in Attendance:

Vanessa Curran	DCR, Office of Water Resources
Marilyn McCrory	DCR, Office of Water Resources
John Scannell	DCR, Division of Water Supply Protection
Jennifer Pederson	Massachusetts Water Works Authority
Duane LeVangie	MassDEP
Katie Ronan	Massachusetts Water Resources Authority
Sara Cohen	DCR, Office of Water Resources
Erin Graham	DCR, Office of Water Resources
Julian Burgoff	UMass Amherst
Lexi Dewey	Water Supply Citizens Advisory Committee (WSCAC)
Jennifer Sulla	EEA
Amy Coppers Constantino	Wright-Pierce
Tom Hayes	Town of Burlington
Kate Bentsen	DFG Division of Ecological Restoration
John Sanchez	Town of Burlington Department of Public Works
Paul Sagarino	Town of Burlington
Andreae Downs	Wastewater Advisory Committee
Jason Carmignani	NHESP
Nina Mascarenhas	Private citizen
Lynn Gilleland	EPA

Johanna Stacy	City of Northampton DPW
Ian Cooke	Neponset River Watershed Association
Pine duBois	Jones River Watershed Association
Dave Armstrong	U.S. Geological Survey
David Boutt	UMass Amherst
Julie Butler	MassDEP
Gardner Bent	U.S. Geological Survey
Joe Ayotte	U.S. Geological Survey
Jason Sorenson	U.S. Geological Survey

Agenda Item #1: Welcome and Introductions

Rao called the meeting to order at 1:06 p.m. She described the logistics and ground rules for this remotely conducted meeting. She noted that the meeting was being recorded, but only for the purpose of the minutes, and all votes would be by roll call.

Agenda Item #2: Executive Director's Report and Drought Response Updates

Rao gave an update of the Drought Management Task Force meeting held on November 5, 2020. Drought conditions have improved and the Task Force recommended to the Secretary an improvement of drought levels in several regions. The Southeast and Cape Cod regions remain at Level 2, and all other regions are at Level 1. In terms of drought responses this time of year, the main message and outreach efforts shift to a focus on indoor water conservation.

Cambareri noted that pond levels are down on the Cape with greater areas of shoreline visible. A lot of the rain received has perhaps improved soil moisture but not had any impact on improving pond level declines. Rao agreed and noted that while groundwater levels on the Cape are still in the normal range, they have been on a downward trend over the past few months.

Agenda Item #3: Update: Hydrologic Conditions and Drought Status

Graham provided an update on the hydrologic conditions for October 2020. Conditions have improved except on the Cape. Beneficial precipitation was received starting mid-month, with above-normal amounts in some regions. The 1-month SPI did not trip in any region. There are still some longer-term precipitation deficits. The Cape has missed out on some of the recent rain events. Streamflow has shown improvements overall, owing to the precipitation received, though some regions are still below the 30th percentile. Groundwater levels are mixed between and among regions. Some wells have still not recovered. The Cape has seen a decline in median values, though still above the 30th percentile as a region. The Southeast Region is still a bit worrisome. Lakes and Impoundments levels are mixed. For all regions except the Cape, some lakes/impoundments are below normal. Some reservoirs are at or just below drought levels but some are starting to recover. Some systems are below 2016 levels.

The KBDI for the week of October 21st shows improvement over what was seen during the summer, though some regions are still tripping the index. For the crop moisture index (CMI), the entire state is at Level 0. KBDI and CMI are reported seasonally and will not be reported starting next month. Season-to-date snowfall is reported because some was received at the end of October. For Boston it was the snowiest month of October, snowiest October day on record, and also second-earliest first inch of snow. The Walpole precipitation observer reported that with the snow on October 30th, and the late spring snowfall on May 10th, the intervening time period of

172 days with no snow is the shortest on record. Simultaneously this October was the 19th-warmest on record for Massachusetts. The Drought Monitor at the end of October shows improvements over the month, except for the Southeast, Cape, and Islands. More precipitation is still needed to help with recharge. The 6-month SPI still shows some significant deficits.

Woods asked what the overall precipitation deficit is. Graham will research and send some information to Woods.

Agenda Item #4: VOTE: Meeting Minutes August 2020

Rao invited a motion to approve the minutes of August 2020. There was one minor change made on pg. 7 to correct the spelling of Jennifer Pederson's last name.

VOTE	A motion was made by Weismantel with a second by Cambareri to approve the minutes of August 13, 2020. The roll-call vote to approve was unanimous of those present.

Agenda Item #5: VOTE: Final Staff Recommendation for the Town of Burlington's Application for Approval of an Action to Increase the Present Rate of Interbasin Transfer of Water from the MWRA System

Rao noted that this project has been before the WRC for some time now. The Commissioners have previously reviewed the Draft Staff Recommendation and their comments have been incorporated into the Final Staff Recommendation.

Carroll discussed a summary of changes to the final Staff Recommendation. There was a good discussion last month and comments from Weismantel were addressed, such as the use of "should" vs. "shall". Sulla reviewed these sections and "must" was used in the final version. The final version also provides greater clarity in some of the conditions. Burlington reached out to WRC staff regarding condition #4 (quarterly billing) with the concern that town meeting approval is needed to hire an additional staff person to administer quarterly billing. There is precedent for applicants to come back before the WRC if at any point in time a community is unable to meet a condition.

Weismantel noted that condition #8 (pertaining to industrial use) still says "should" and thinks it should be "must". Condition 7 also says "should" but he is ok with leaving it as such. Rao referenced that the approach to "should" vs. "must" has to do with the Water Conservation Standards. Sulla explained that the standards are divided into standards and recommendations. Items that are standards generally say "must", and items that are recommendations generally say "should". It was ultimately decided to be consistent in all conditions (as conditions are requirements) and use "must" for all. Weismantel noted that if he votes against this proposal, it is not because he thinks Burlington doesn't need the water, but rather because he feels the decision is overreaching on billing and pricing.

Rao acknowledged staff from the Town of Burlington and its consultant. Sanchez thanked WRC staff and the town needs the water so can comply with the conditions. He also clarified that the town has reduced water use over the past 10 years and it continues to decline. Sagarino thanked everyone involved for their professionalism and support throughout the process.

The vote is contingent upon making the discussed minor edits to language in the conditions section to ensure consistency among the conditions.

VOTE	A motion was made by Ragucci with a second by Balzotti to amend conditions 7 and 8 of the November 12, 2020, Burlington staff recommendation to change "should" to "must". The roll-call vote to amend the staff recommendation was unanimous of those present.

VOTE	A motion was made by Ragucci with a second by Balzotti to accept the November 12, 2020, staff recommendation to approve the Town of Burlington's request under the Interbasin Transfer Act to purchase water from the MWRA Water Works System, as amended. The roll-call vote was 10 in favor of the motion and 1 opposed (Weismantel).

Agenda Item #6: Discussion: Draft WRC Annual Report, FY2020

Rao explained that by statute the WRC is required to develop an annual report to be disseminated to the legislature and the public by the end of the calendar year. Today the draft report will be shared and a vote will be taken at the December WRC meeting. The report highlights accomplishments and also serves as an outreach tool to legislators and others to learn more about the WRC. Carroll walked through the draft. There are summaries of each program area and then the updates for the fiscal year. Some highlights:

- For hydrologic conditions: the revision of the Drought Management Plan occurred in FY20. In addition, staff have been working on a Drought Dashboard with Cornell University to be completed within the next fiscal year.
- Flood Hazard Management Program: staff has been very busy and able to continue their work despite COVID and working from home. There were 22 community assistance visits, over 500 technical assistance contacts, and they also updated the model flood plain bylaw. Coordinated with DCR on climate change adaptation efforts.
- Water Needs Forecasts: staff consulted with 13 public water suppliers in 7 basins, to review, revise, or prepare new forecasts.
- Water Conservation Standards: staff spent a lot of time developing a new website which is being finalized and tweaked.

Ragucci congratulated Rao, Carroll, and the staff. The team hasn't skipped a beat since Michele Drury's retirement. He has heard great feedback from legislators pertaining to the drought and other WRC efforts. Woods seconded Ragucci's comments and feels great progress has been made, especially with the water conservation messaging. Rao asked for any additional feedback on the annual report prior to the next WRC meeting in December. She also noted that the DCR OWR Assistant Director position (Drury's former position) has been posted.

Agenda Item #7: Presentation: Sources and mechanisms by which water is transported to New England streams and groundwater: Implications for understanding drought

Dr. David Boutt from UMass Amherst gave this presentation, which is available on the WRC website (https://www.mass.gov/water-resources-commission-meetings). Research has focused on understanding hydrologic changes in NE and relies heavily on data collected by USGS and states. Groundwater controls the hydrologic response of watersheds to different changes. The

2020 drought shows a significant negative groundwater anomaly comparable to the 1960s. Rao asked how many/which wells are included in the water table anomaly graph: it includes USGS wells in active level groundwater network (the same wells that WRC staff look at). Cohen asked if the "age" of the water means the length of time since the precipitation event that brought it to earth: yes, it's a residence time. Butler asked if the sample sites are the same as in 2016: generally yes, though there have been some minor changes to the well monitoring network. Woods commented that precipitation appears similar to the 1980s but groundwater is similar to the 1960s. Boutt agrees that is an interesting observation and needs to dig more into the relationship between the precipitation anomaly and the groundwater anomaly.

The amount of water that infiltrates into the ground is very sensitive to the time of year that it falls, whether it is the growing season or not. The current precipitation deficit is remarkable as it occurred primarily during the growing season. Most precipitation during the growing season goes to vegetation and to replenishing soil moisture. We are coming off a period of wet years but still sensitive to short-term precipitation deficits which can cause deficits in groundwater. On the other side we seem to make up the deficits quickly if there is enough precipitation. It's important to note that the growing season is lengthening. During droughts, the main way we lose water is evapotranspiration (ET). Plants use less water during times of drought. Increases in temperature only represent very small changes in ET. As the growing season lengthens, we are going to see a change in our water budget due to the ET rate. In this area we receive about the same amount of precipitation each month of the year and what drives the hydrologic cycle is ET. This drives streamflow to be high in the spring, low in the summer, and rebounding in the fall, when plants stop using water. High summertime temperatures are not major contributing factors to drought – longer growing season is key. In areas with less ET (aging or damaged vegetation) streamflows and groundwater flows are expected to rise.

Precipitation patterns are very sensitive to tropically-derived moisture in the summertime. Tropical cyclones are an important component of the water budget. The isotopic fingerprint of water that came into the system during Hurricanes Irene and Lee was detectable until 2015. It took a year for base flows to return to normal. Butler: in the Harvard forest woolly adelgid study, was the hypothesis tested by examining groundwater levels in that area? Boutt was not involved in that particular study. The study authors made a prediction that water yields would increase but it has not been evaluated in a quantitative sense. Boutt and others are trying to get some funding to study it further.

One insight that hydrologists have gained using environmental tracers is the understanding of what happens to rainwater. Up to about 80% of the water that comes into a stream during a discharge event is not the water falling out of the sky. It is coming from subsurface pathways. The water table drives water to the stream under base flow conditions. A lot of the rain or melt goes into the water table and pushes the water table into the stream. The process by which water moves from the sky to the streams is facilitated by subsurface flow paths. This has implications for water quality.

There are some questions remaining to be understood about New England climatology. What's happening to the water cycle that's causing these changes in water table and streamflow from the 1960s to the 2016 and 2020 droughts? Is it changes in land use and urbanization or something else? What are the impacts of these more frequent droughts on our systems? What will be the impact of the lengthening growing season on water availability and drought impacts?

How is water management and urbanization impacting hydrologic response to drought in New England?

Wijnja: with vegetation being an important factor, has the type of land usage been examined (urban, suburban, agricultural)? Boutt responded that many studies are in forested catchments. There is a proposed study to look at more urbanized watersheds in comparison to forested watersheds. Woods asked what was driving the groundwater anomaly this year, is it ET over a longer period of time? Boutt responded that he is still understanding the data. Primarily the timing of precipitation and recording a deficit during the growing season (June, July, August) has a lot to do with it. Wet summers prevent these types of drop-offs. Ninety-degree temperatures are a red herring related to drought. It impacts how people are using water but at a larger scale the warmer days don't seem to have an impact on drought severity.

Weismantel made a motion to adjourn; Woods seconded. The roll-call vote to adjourn was unanimous of those present. Meeting adjourned, 3:17 PM.

Documents or Exhibits Used at Meeting:

1. WRC Meeting Minutes, August 13, 2020
2. Draft for Water Resources Commission Discussion: WRC Staff Recommendation, Interbasin Transfer Application, Proposed Connection to the MWRA Waterworks System, Town of Burlington. November 12, 2020:
    a. Clean version
    b. Redline version
3. FY2020 Draft WRC Annual Report
4. Report of the Findings, Justifications, and Decision of the Water Resources Commission Relating to the Approval of the Town of North Reading's Request for an Interbasin Transfer Pursuant to M.G.L. Chapter 21 § 8C
5. Interbasin Transfer Act project status report, October 30, 2020
6. Hydrologic Conditions in Massachusetts, October 2020 (available at https://www.mass.gov/water-data-tracking)

Compiled by: vc
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 251 Causeway Street, 8th floor, Boston, MA 02114.*