THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for July 11, 2013

100 Cambridge Street, Boston, MA, 1:00 p.m.

Minutes approved September 12, 2013

Members in Attendance:

Kathleen Baskin	Designee, Executive Office of Energy and Environmental Affairs (EEA)
Marilyn Contreas	Designee, Department of Housing and Community Development (DHCD)
Jonathan Yeo	Designee, Department of Conservation and Recreation (DCR)
Bethany Card	Designee, Department of Environmental Protection (MassDEP)
Gerard Kennedy	Designee, Department of Agricultural Resources (DAR)
Tim Purinton	Designee, Department of Fish and Game (DFG)
Todd Callaghan	Designee, Massachusetts Office of Coastal Zone Management (CZM)
Thomas Cambareri	Public Member
Raymond Jack	Public Member
John Lebeaux	Public Member
Paul Matthews	Public Member
Bob Zimmerman	Public Member

Others in Attendance:

Roger A. Hill	Town of Foxborough
Erin Graham	DCR
Alison Bowden	The Nature Conservancy
Kim Lutz	The Nature Conservancy
Tim Simmons	DFG/ Division of Fisheries & Wildlife
Peter Weiskel	U.S. Geological Survey
Keith Robinson	U.S. Geological Survey
Jennifer Pederson	Mass. Water Works Assn.
Gene Benson	MA Assn. of Conservation Commissions
Linda Hutchins	DCR
Duane LeVangie	MassDEP
Anne Carroll	DCR
Richard Verdi	U.S. Geological Survey
Becky Weidman	MassDEP
Carey Goldman	EEA intern
Laila Parker	DFG/Div. of Ecological Restoration
Michele Drury	DCR
Sara Cohen	DCR
Vandana Rao	EEA
Lexi Dewey	Water Supply Citizens Advisory Committee
Andreae Downs	Wastewater Advisory Committee
Trish Garrigan	EPA
Pam Heidell	Massachusetts Water Resources Authority
Jessica Bardi	EEA intern

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Baskin called the meeting to order at 1:04 p.m.

Agenda Item #1: Executive Director's Report

Hutchins provided an update on the hydrologic conditions for June 2013. Statewide average precipitation in June was 255 percent above normal, varying between 177 percent of normal in the western region and 306 percent of normal in the southeast region. Groundwater levels were generally in the normal or above-normal range in all areas of the state. Average streamflows were also above normal in all areas. Reservoir levels were generally normal for this time of year. Drought indices show normal conditions, and the Drought Outlook predicts normal conditions in the region through September 2013.

Baskin made the following announcements:

- The Environmental Business Council is hosting a forum/workshop on energy efficiency in water and wastewater treatment plants on July 23, 2013, featuring some of the work that MassDEP, Department of Energy Resources, and EPA have been doing.
- The Water Resources Commission received a letter from the Executive Director of the Hoosic River Watershed Association emphasizing the value of the USGS stream gages and concern about sustained funding for them. The letter will be in next month's meeting package.
- The agenda has been updated. Agenda Item 5, the follow-up discussion from the commission's retreat in May, will be postponed to the fall to ensure broader participation in the discussion.
- Baskin announced that Tim Purinton will be taking a one-year leave of absence to attend the Kennedy School of Government on a Governor Bradford fellowship. She added that this is great for the Commonwealth and wished him well.

Agenda Item #2: Vote: Staff Recommendation on Amendment to the Interbasin Transfer Approval for the Witch Pond Wells, Foxborough, Massachusetts

Drury acknowledged Tim Simmons, Natural Heritage and Endangered Species Program, who has worked very closely with staff on this issue, and Roger Hill from the Town of Foxborough. She reminded the Commission that staff presented its recommendation last month. Some changes to the staff recommendation were proposed at that meeting and have been incorporated. These are highlighted in red, in the latest version of the staff recommendation. One change was proposed by Commissioner Zimmerman: that Foxborough be required to throttle back use of the wells, as water levels in the deep peat approached the proposed new trigger. Drury explained that this is the practice with the existing triggers and will be required for the new trigger as well, through the required revision to the monitoring plan. This will need to be approved by the WRC. Another change is that Foxborough will be required to continue monitoring throughout the period when the emergency declaration is in place.

Hutchins reviewed the basis for the current staff recommendation. The Atlantic white cedar swamp is habitat for the Hessel's Hairstreak butterfly and spotted turtle. Foxborough's transfer was approved in 2001, and well use started in 2010. Based on a review of baseline water levels from the site and data from the period since the wells have been operating, there is an unexpected hydraulic response to pumping occurring in the wetland peat and a shift in wetland plant species to plants that tolerate dryer conditions. Therefore, staff is recommending a well shutoff threshold in the deep peat at the location of piezometer F7-PD when water elevations in this layer are at or below 153.3 feet. The water levels in this piezometer (indicating hydraulic

pressure in the deep peat layer) have responded almost exactly the same as the underlying aquifer at this location during very dry periods in the summer of 2010. This response suggests that water is flowing from the peat into the aquifer. The hydraulic response in both the shallow and deep peat at this location has exhibited a downward trend between 2007 and 2012, at the same rate as the aquifer. The downward trend was expected in the aquifer formation as a result of pumping the wells, but the peat was not expected to respond to pumping at the same magnitude as the aquifer.
She reiterated conditions for monitoring and surveying.

Baskin invited a motion on the staff recommendation.

VOTE	A motion was made by Jack with a second by Card to accept the Staff Recommendation to amend the September 13, 2001, Interbasin Transfer Act Decision for the Foxborough Witch Pond Wells to require maintenance of the water level in the deep peat adjacent to Witch Pond at an elevation above 153.3 feet, as measured in piezometer F7-PD. The vote to approve was unanimous of those present.

Baskin encouraged Foxborough to report back to the commission on progress with the construction of the water treatment plants.

Agenda Item #3: Presentation: Connecticut River Watershed Study: Developing a Flow Modeling Tool for Decision Making

Baskin introduced Kim Lutz of The Nature Conservancy (TNC).

Lutz explained that TNC has been working with the Army Corps of Engineers for six years on a study to understand how a very large watershed, such as the Connecticut River watershed, operates. She provided background on the study, explaining the differences between rivers with a natural flow pattern and those whose flow pattern is interrupted by dams and other obstructions. She explained that a natural flow regime has various aspects, including magnitude, duration, and timing and frequency of high flows and low flows. She added that the natural flow regime creates the character and structure of a river – including its depth, velocity, temperature, and habitat – and is therefore critical to maintaining both aquatic and terrestrial communities. She highlighted important life-cycle features of plants and animals that are affected by flow.

She described the characteristics of the Connecticut River, noting that the Connecticut River has the highest density of dams of any river system in North America. She noted that the study focused on the 65 major dams in the Connecticut River watershed and the ecological challenges they create. The study's purpose was to determine how management of various dams and water systems can be modified for environmental benefits while maintaining human uses such as water supply, flood control, and hydropower generation.

The first step was to create a basin-wide model of flows in the Connecticut River to help decision-makers in evaluating environmental and economic outcomes of management scenarios. She discussed the various publicly available open-source models used in the study. These included CRUISE (USGS), a tool used to understand historic, unimpacted flows in the basin; LINGO (University of Massachusetts), an optimization model used to find optimal solutions for operating dams; RES SIM (Corps of Engineers), a simulation model used to evaluate scenarios for operating dams; and VIC, a hydrology model to understand how different climatic conditions might affect flows.

Lutz discussed how the models are being applied, including in Federal Energy Regulatory Commission relicensing decisions. She concluded that watershed systems need watershed-scale solutions, and the modeling effort helps to isolate multiple benefits so they can be managed explicitly.

Questions addressed the use of multiple scenarios in the optimization model and whether the models can be scaled down for smaller-scale dams. Baskin asked if the model can identify locations where fisheries can benefit the most. Lutz explained that the model contains eco-nodes where important ecological features exist and users can run a series of scenarios to see where benefits are accrued.

Yeo commented that it should be pointed out that some large dams, like the Quabbin Reservoir dam, also have some positive impacts, including recreation, hydropower, significant wildlife protection, and excellent fishing habitat downstream. Lutz acknowledged Yeo's comment and clarified that the study aims to find ecological solutions while maintaining water supply, hydropower, and flood protection. TNC's focus, she explained, is on how dams can be operated better, given the impacts we know about.

In response to a question from Rao about what the model reveals about climate change, Lutz explained that the model is a planning tool rather than a predictive tool, and should be used to look at trends.

In response to a question from Hutchins, Lutz explained the FERC relicensing process and said TNC is providing recommendations on what studies should be done to determine the impacts of certain dams and which of those impacts should be mitigated for in the relicense. She added that the company with a dam in Massachusetts has chosen to use TNC's model in FERC relicensing.

Zimmerman noted that anyone using the model needs to understand the model's assumptions. He expressed concern that the model's default decision-making may favor hydropower and storage for water supply over natural systems or vice versa. Lutz responded that this was the reason TNC chose publicly available models and worked with a university to do the programming. She explained that constraints in the model are those things that are physical in nature to the facility or in a state law; everything else can be weighted by the user. She added that training is planned, so users can run scenarios themselves.

Agenda Item #4: Presentation: USGS Stream Gage and Observation Well Network in Massachusetts

Baskin introduced Richard Verdi, Peter Weiskel, and Keith Robinson of the U.S. Geological Survey.

Verdi outlined the mission of the U.S. Geological Survey, which includes collecting data and conducting research on the quantity, quality, and uses of groundwater and surface water. He provided a brief history stream gaging, which began in the 1880s, and the USGS cooperative program with the states.

He described the evolution of the techniques and equipment used to collect and transmit measurements of stage and discharge, from time-consuming manual data collection efforts to electronic systems capable of collecting real-time data. He noted that the more sophisticated technologies have increased accuracy and safety, but have also increased costs.

He outlined the history of major floods in Massachusetts since 1927, noting the increasing frequency of major flood events in the last decade. He focused on the record-setting flood of March and April 2010, during which USGS stream gages recorded peaks of record at eight of thirty long-term network gages dating back to 1904. He described the importance of having a long period of record and regularly updated flood frequency statistics, noting that having more data increases the power of statistical analysis. He noted that several USGS gages in Massachusetts provide more than one hundred years of data. He outlined the risks associated with not updating flood frequency statistics, including impacts on infrastructure, flood forecasting, the environment, and potential loss of life.

Verdi also reviewed the groundwater well network in Massachusetts, which has the most densely populated network of wells in the country. Data from this network are used for decision-making by the Drought Management Task Force, septic system site evaluations, updating of maps of the water table, and to assist the state geologist in research. He noted that the water table maps in Massachusetts are due for an update.

In response to questions, Verdi noted that USGS has recently signed an agreement with the Massachusetts Department of Transportation to update flood frequency statistics in Massachusetts. The study will begin in July and take three years to complete. Weiskel offered to provide a link for a similar study conducted in Rhode Island (available at http://pubs.usgs.gov/sir/2012/5109). Hutchins pointed out that flood frequency studies for Massachusetts are 30 years out of date, because funding has been redirected to maintain the gage network.

Zimmerman asked about the status of financial support to maintain the gages. Verdi and Robinson explained that, as a result of federal cuts, state cooperating agencies will need to pick up a larger share of the costs. Yeo noted that the state budget for gages is unlikely to be increased this year. Zimmerman noted that the gages are essential and recommended that the Water Resources Commission receive an annual report on the budget for gages, and that this report be provided at an appropriate point in the state budget cycle. Zimmerman made a formal motion.

Baskin explained that the Environmental Bond Bill is the mechanism through which the state defines how much money can be authorized for research over five years. She suggested November as the appropriate time frame to revisit the budget. Verdi and Weiskel noted that low-flow analyses in Massachusetts are also out of date, with the last detailed analyses being conducted in the late 1990s.

Baskin requested thoughts on a project that would holistically pull together information on flood frequency, precipitation, and low flows, as recommended by the Global Warming Solutions Act Adaptation subcommittee.

Baskin requested action on Zimmerman's motion.

VOTE	A motion was made by Zimmerman with a second by Yeo that the Water Resources Commission receive annual budget information in late Fall 2013 on USGS cooperative funding for gages and research so that commission members are aware and can support as needed. The vote to approve was unanimous of those present.

In response to a question from Baskin, Verdi explained that USGS is seeking to establish a collaborative that would bring all users of water data together. He added that such water monitoring councils have been established in other states and are useful in bringing other partners to the table to create a more robust network and longer-term funding resources. Rao added that EEA plans to convene a forum in the fall for users of the data to discuss long-term sustainability of the stream gages and long-term funding.

Cambareri described the role of Barnstable County in monitoring groundwater-level wells on Cape Cod. He noted the value of long-term monitoring and importance of the data to Boards of Health and other decision-makers. Hutchins added that the state geologist's office and the University of Massachusetts are helping to make up a funding shortfall this year by assisting USGS with monthly groundwater-level readings in western Massachusetts. MassDEP will provide staff to make monthly groundwater-level readings in eastern Massachusetts.

Agenda Item #5: Discussion: Follow-up to Water Resources Commission Roundtable and Policy Discussion

Discussion of this agenda item was postponed to a future meeting.

Meeting adjourned.

Documents or Exhibits Used at Meeting:

- Amendment to the September 13, 2001, Interbasin Transfer Approval for Witch Pond Wells, Foxborough, Massachusetts
    - WRC Staff Recommendation dated July 11, 2013
    - Link to Figures 1, 2, 3, and 4: http://www.mass.gov/eea/air-water-climate-change/preserving-water-resources/partners-and-agencies/water-resources-commission/ma-water-resources-commission-meetings.html
- Summary and excerpts from meeting minutes: WRC Retreat Discussion, May 9, 2013
- Correspondence dated June 24, 2013, from Water Resources Commission to Department of Public Works, Hudson, regarding an emergency connection with the Massachusetts Water Resources Authority
- Correspondence dated June 26, 2013, from Water Resources Commission to the MEPA Office providing comments on the MWRA Southern Extra High Service Project
- Interbasin Transfer Act project status report, 26 June 2013
- Current Water Conditions in Massachusetts, July 11, 2013
- Presentation by Kimberly Lutz, The Connecticut River Watershed Study: A Basin-Scale Approach to Finding Water Management Solutions for People and Nature.
- Presentation by Richard Verdi, U.S. Geological Survey. Massachusetts Surface Water and Groundwater Network.
- Link to USGS report: Zarriello, P.J., Ahearn, E.A., and Levin, S.B., 2012, Magnitude of flood flows for selected annual exceedance probabilities in Rhode Island through 2010 (ver. 1.2, revised March 27, 2013): U.S. Geological Survey Scientific Investigations Report 2012–5109, 81 p. (available at http://pubs.usgs.gov/sir/2012/5109)

Agendas, minutes, and meeting documents are available of the web site of the Water Resources Commission at http://www.mass.gov/eea/air-water-climate-change/preserving-water-resources/partners-and-agencies/water-resources-commission/ma-water-resources-commission-meetings.html.