THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for March 11, 2010

Minutes approved May 13, 2010

Members in Attendance:

Kathleen Baskin	Designee, Executive Office of Energy and Environmental Affairs
Marilyn Contreas	Designee, Department of Housing and Community Development
Anne Carroll	Designee, Department of Conservation and Recreation
Glenn Haas	Designee, Department of Environmental Protection
Gerard Kennedy	Designee, Department of Agricultural Resources
Joseph E. Pelczarski	Designee, Massachusetts Office of Coastal Zone Management
John Lebeaux	Public Member

Others in Attendance:

Michele Drury	DCR
Linda Hutchins	DCR
Bruce Hansen	DCR
Sara Cohen	DCR
Marilyn McCrory	DCR
Larissa Liebmann	DCR
Aaron Weieneth	AECOM

Agenda Item #1: Executive Director's Report

Baskin reported on a meeting of the MWRA staff, Board of Directors, and Advisory Board; EEA; other stakeholders; and a facilitator from the Consensus Building Institute to discuss expansion of water sales by MWRA. One component of the MWRA's proposal includes expedited review under the Interbasin Transfer Act (IBTA) and MEPA. She reported that the stakeholders agreed upon the concept of a consolidated donor basin application. All impacts associated with 12 mgd of new withdrawals from the MWRA system would be documented in this consolidated application. The Water Resources Commission would review this application for compliance with certain criteria of the IBTA. This review would not constitute an approval for an interbasin transfer, which would also require a review of criteria associated with the receiving basins. Participants in the meeting discussed proposals for expediting applications from the receiving basins. Participants also discussed how the MWRA would evaluate the adoption of Smart Growth principles by towns seeking admission to the MWRA system.

The participants agreed in principle on aquatic habitat enhancement projects, including dam removal on the Quinapoxet River, installation of a pipe to deliver 6 mgd of cold water to the McLaughlin Fish Hatchery, and delivering 6 mgd to the Nashua River watershed, keeping in mind MWRA's operating principles and system needs. The MWRA Advisory Board stated its preference that funding for these enhancement projects be contingent on income from new water sales. Baskin thanked all the agencies who participated in these discussions over the last few years.

Hansen provided an update on the hydrologic conditions for February 2010. He reported on an anomalous weather pattern that occurred at the end of February, causing minor flooding in the Sudbury/Assabet/Concord River Basin and wind damage, beach erosion, and widespread power outages in Essex County. As a result of this storm, average precipitation was above normal statewide for the month. Streamflows were generally normal, with the exception of the Sudbury River. Reservoir levels were above normal. Hansen noted that the snow pack has mostly melted, which may result in elevated fire danger. He reported no tendency for drought conditions to develop.

Agenda Item #2: Vote on the Minutes of December 2009, January 2010, and February 2010

Baskin invited motions to approve the meeting minutes for the three previous meetings. Separate motions and votes were taken on each document.

VOTE	A motion was made by Kennedy with a second by Lebeaux to approve the meeting minutes for December 10, 2009. The vote to approve was unanimous of those present, with two abstentions.

VOTE	A motion was made by Contreas with a second by Lebeaux to approve the meeting minutes for January 14, 2010. The vote to approve was unanimous of those present, with one abstention.

VOTE	A motion was made by Haas with a second by Kennedy to approve the meeting minutes for February 11, 2010. The vote to approve was unanimous of those present, with three abstentions.

Agenda Item #3: Presentation: Final results from the EPA Targeted Watershed Grant Study in the Ipswich Watershed

Baskin introduced Cohen, noting that Cohen's presentation would be a continuation of the presentation started at the January 2010 meeting of the Water Resources Commission. Cohen reviewed the purpose and structure of the grant and the features, research questions, and conclusions for the four low-impact development (LID) demonstration projects and the five water conservation demonstration projects. The LID projects include a green roof, an LID subdivision, an LID parking lot retrofit, and an LID neighborhood retrofit. The water conservation projects include weather-based irrigation controllers; rainwater harvesting; soil amendments at an athletic field; a water audit, rebate, and fixture retrofit program; and monthly water billing. (Ed. note: See the minutes of the June 2009 WRC meeting for detailed results from the water conservation pilots and the minutes of the January 2010 WRC meeting for detailed results from the LID pilots. Cohen provided one update since the June presentation. Due to a corrected calculation, the water savings from the zeolite soil amendment were 37%, not 63%.)

Cohen then described the second phase of the grant project, which involved a modeling effort by the U.S. Geological Survey. The modeling examined the effects on streamflow of widespread adoption, throughout the Ipswich River watershed, of the LID and water conservation measures studied. She described several simulations and reviewed the assumptions behind them. The first

simulation updated the original USGS HSPF model developed for the Ipswich River, to account for recent significant reductions in water withdrawals by the towns of Reading and Wilmington (as Reading is now entirely served by MWRA water, and Wilmington is partially supplied by MWRA water since the original HSPF model development), This updated withdrawal scenario then served as the baseline for the other analyses.

An LID retrofit simulation evaluated the effect on the Ipswich River of a 50% reduction in effective impervious area (EIA) for all existing development upstream of the South Middleton gage. Results showed a negligible response for most subbasins and the mainstem of the river. However, streamflow in the subbasin with the highest percentage of commercial and industrial land use showed an observable decrease in high flows and increase in low flows with the 50% reduction in EIA.

USGS also conducted a basin-wide buildout simulation, which assumed development of all buildable land, in accordance with current zoning. The results showed negligible streamflow response in most subbasins and the mainstem, reflecting that most remaining developable land in the Ipswich watershed is zoned low-density residential, which has a calibrated EIA of only 2.5%. The one subbasin that did have a significant percentage of developable land zoned as commercial/industrial demonstrated increased peak flows and decreased low flows in response to buildout. An LID buildout simulation was not conducted, once it was determined that conventional buildout did not measurably affect streamflows in most subbasins in this watershed.

To evaluate the effect on streamflow of reducing water withdrawals, four scenarios were compared: 1) existing withdrawals (updated baseline); 2) reduced withdrawals representative of wide-spread adoption of the five piloted water conservation strategies (reductions ranged by community from 1.4% to 8.5% of total withdrawals); 3) withdrawal reductions of 20% for all public water supply sources; and 4) elimination of all public water supply withdrawals. Relative to the baseline scenario, widespread adoption of the water conservation pilots resulted in negligible effects on streamflow. The 20% reduction in water withdrawals resulted in a small but observable increase in flow during low-flow periods, while the zero-withdrawal scenario resulted in a substantial increase in flow during low-flow periods.

Cohen explained that modeling done at the scale of the entire Ipswich River watershed likely eclipsed any localized impacts associated with LID improvements. Therefore, additional modeling was conducted at a smaller scale, evaluating the impact of varying levels of effective imperviousness on baseflow in a small stream at the outfall of a theoretical 100-acre watershed. Results showed much greater streamflow sensitivity to changes in effective impervious area at this scale, with more dramatic effects seen when the underlying soils consist of sand and gravel than when they consist of till.

Cohen said reports on grant results are expected to be available by the end of April 2010. She thanked EPA for funding as well as the project partners. The next step is to communicate the project results. She encouraged the LID community to continue to reflect on new research findings to refine some of the earlier assumptions prominent in the LID field. In particular, she cautioned close attention to scale when considering whether LID improvements could serve as a balance for withdrawals in situations of large streamflow deficits. In addition, she stressed that implementation of LID practices needs to be informed by an understanding of long-term maintenance needs.

Lebeaux asked if the specifications for the green roof soil mix required soils that did not have an inherent phosphorus content. He added that phosphorus is typically incorporated into lightweight soil mixes for horticultural reasons, to help the plants establish. Cohen responded that though the soil mix was engineered specifically for this project, at the time of design five years ago, the impacts of excess phosphorus in the green roof soil mix were not highlighted as a potential concern in the design community.

Haas announced EPA's new draft NPDES Phase II stormwater permit for municipal separate storm sewer systems or MS4s. He noted that the permits will require communities to adopt state standards for stormwater throughout the entire community, not just in wetland areas. The permits also require municipalities to identify any bylaws/ordinances that inhibit implementation of LID practices and to measure and track annually the amount of impervious cover in the community. Cohen commented that preserving open space and reducing hardscapes are beneficial from a number of perspectives, including water quality, water quantity, habitat, and quality of life.

Agenda Item #4: Update: Sustainable Water Resources Initiative

Baskin reported that the Advisory Committee, Technical Subcommittee, and agency staff continue to meet frequently and are on target to meet the deadlines for determining long-term safe yield for the Ipswich River Basin by August 31, 2010, and for the rest of the basins by November 3. She introduced Hutchins, noting that Hutchins's presentation represents the current thinking of the committees.

Hutchins provided a presentation on the Building Blocks for Sustainable Water Resources in Massachusetts, a concept presented and discussed at the Advisory Committee meeting on February 25, 2010. She described these building blocks as a road map of the topics that need to be addressed to provide a basis for safe yield, permitting, and allocation determinations. She called attention to the realities of water resources management in Massachusetts, noting that though the state receives abundant rainfall on an annual basis, and biological systems are adapted to this, water resources can become stressed in the summer. She noted that time and spatial scales must be considered in discussions of safe yield and allocation.

Hutchins reviewed each of the building blocks of safe yield, starting with the hydrologic foundation. She listed the ongoing data collection and scientific studies that have been completed or are in progress and which provide this hydrologic foundation. She reviewed some of the data on precipitation (dating to 1838), drought frequencies, and streamflow data from USGS gages, noting that even in the worst year of a drought (identified as the drought of 1883), Massachusetts still receives approximately 30 inches of rainfall.

She described a conceptual approach to determining safe yield in terms of a bucket of water, which represents the volume of water available on an annual basis in a normal year. Of this, the drought-year volume at an unimpacted gage represents the volume that can be counted on for allocation. From this, a drought reserve would be left as an environmental protection factor for the rivers. She provided a graph illustrating calculation of a drought reserve that falls below the annual basin yield for a particular drainage area. She stated that the committees must make decisions about which statistics to use in making these calculations, and they are considering such questions as, "how conservative do we need to be in choosing the drought-year flow?" and "what probability and recurrence interval are we willing to live with?"

She then reviewed the components of allocation, noting that analyses are being done at a smaller scale and on a seasonal basis. In addition to an annual allocation, decisions must be made about

how to manage withdrawals to protect seasonal flows. Hutchins displayed a map showing withdrawals authorized under the Water Management Act, by basin.

Hutchins reviewed some of the ongoing or completed scientific studies that provide the hydrologic foundation for safe yield and allocation decisions. These studies include the Massachusetts Water Indicators study, which indicates levels of hydrologic alteration; and the Target Fish Communities and Fish and Habitat studies, which will help in evaluating what is a significant alternation for a fish community. Ongoing studies are developing an understanding of the relationships between hydrologic and biological alteration.

She also outlined considerations in stream classification. Pelczarski suggested the committees determine how often they should revisit classifications and what the criteria would be for revisiting classifications. Hutchins noted that streamflow criteria are also being discussed, and this discussion will be informed by results of the Fish and Habitat study.

Other steps in the allocation process include identifying protection priorities and levels, identifying mitigation options, and incorporating streamflow criteria into an allocation scheme using predictable permitting decisions.

Baskin provided an update on the discussions related to the latest thinking on classification and categorization of streams. She explained that the term "categorization" is being used to describe the physical features of streams, such as drainage area and slope; these are characteristics that generally do not change. Categorization also involves identifying the fish community that would be expected in streams with different physical characteristics. The term "classification" is being used to describe anthropogenic influences, such as impervious surfaces and wastewater discharges.

Carroll added that staff will continue to keep the Water Resources Commission updated on the work of these committees. If results of the committees' work are incorporated into Water Management Act regulations, these would come before the commission. She invited all commissioners to attend the Advisory Committee and Technical Subcommittee meetings, as time permits.

Meeting adjourned

Attachments distributed at meeting and other resources:

- Current Water Conditions in Massachusetts, March 11, 2010
- Website for the Ipswich River Restoration, EPA Targeted Watershed Grant: http://www.mass.gov/dcr/waterSupply/ipswichRiver/index.htm
- Building Blocks presentation available at the website for the Sustainable Water Management Initiative: http://www.mass.gov/?pageID=eoeeasubtopic&L=4&L0=Home&L1=Air%2c+Water+%26+Climate+Change&L2=Preserving+Water+Resources&L3=Sustainable+Water+Management&sid=Eoeea