THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for January 14, 2010

Minutes approved March 11, 2010

Members in Attendance:

Kathleen Baskin	Designee, Executive Office of Energy and Environmental Affairs
Marilyn Contreas	Designee, Department of Housing and Community Development
Jonathan Yeo	Designee, Department of Conservation and Recreation
David Terry	Designee, Department of Environmental Protection
Gerard Kennedy	Designee, Department of Agricultural Resources
Mark Tisa	Designee, Department of Fish and Game
Joseph E. Pelczarski	Designee, Massachusetts Office of Coastal Zone Management
John Lebeaux	Public Member
Bob Zimmerman	Public Member

Others in Attendance:

Michele Drury	DCR	Frank Hartig	DCR
Bruce Hansen	DCR	Roger Frymire	Citizen
Sara Cohen	DCR	Jennifer Pederson	Massachusetts Water Works Assn.
Marilyn McCrory	DCR	Alison Bowden	The Nature Conservancy
Anne Carroll	DCR	Kerry Mackin	Ipswich River Watershed Assn.
Duane LeVangie	DEP	Lexi Dewey	WSCAC

Agenda Item #1: Executive Director's Report

Baskin noted a joint announcement from the Attorney General's office and several state and federal agencies that a $30 million settlement had been reached with 49 parties to clean up the Sutton Brook Disposal Area Superfund Site in Tewksbury. The settlement was coordinated by EEA's Natural Resources Damage (NRD) Assessment program, whose staff had made a presentation at the December 2009 Water Resources Commission meeting. Baskin reviewed how NRD settlement cases work.

Baskin provided an update on EEA's sustainable water resources management initiative. A joint meeting of the advisory committee and technical subcommittee took place January 5, 2010, with 50 to 60 people representing a wide range of interests attending. The meeting introduced the project and the roles of the two groups. The next meeting of the technical subcommittee on January 19 will review the tasks to be accomplished and the order of tasks. It will also include a presentation on the technical underpinnings available to the work of the subcommittee, such as the Massachusetts Water Indicators, Sustainable Yield Estimator, and the ongoing Fish and Habitat study. Baskin noted that MassDEP has engaged a facilitator, who will ensure that everyone is heard and that the committee and subcommittee stay on course to meet a very aggressive schedule. She reviewed the key deadlines: a long-term safe yield for the Ipswich River Basin is to be developed by the end of August and for the other basins by the end of October. The next meeting of the advisory committee is scheduled for February 23, 2010.

Hansen provided an update on the hydrologic conditions for December 2009: Statewide average precipitation was about 131 percent of the long-term average for December, with all regions showing above-average precipitation. Total statewide rainfall for calendar year 2009 was 52.1 inches, or 6.8 inches above the long-term normal. December streamflows and reservoir levels were above normal, and groundwater levels were above normal in some regions and normal in others. There is no tendency for drought conditions to develop in Massachusetts through March 2010.

Terry offered a tribute to long-time MassDEP employee, Arthur Screpetis, who passed away in December 2009. Baskin added an appreciation of Mr. Screpetis as a mentor and as someone who could be relied upon to provide invaluable assistance on important environmental projects.

Agenda Item #2: Vote on the Minutes of November 2009

Baskin invited motions to approve the meeting minutes for November 2009.

VOTE	A motion was made by Lebeaux with a second by Contreas to approve the meeting minutes for November 12, 2009. The vote to approve was unanimous of those present.

Agenda Item #3: Update on 2009 Work Plan Accomplishments and Vote on WRC Work Plan for 2010

Baskin outlined three key priorities on the commission's work plan for 2010, including water needs forecasting reviews and consultations on projects related to water needs forecasts; the Interbasin Transfer Act; and the Sustainable Water Management Initiative, including work on streamflow criteria, a classification system, and support on long-term safe-yield determination. The work plan also includes policy matters for commission discussion, as time allows. Baskin invited comments on, additions to, or deletions from the work plan. Hearing no comments, Baskin invited a motion to adopt the work plan.

VOTE	A motion was made by Yeo with a second by Tisa to adopt the workplan for 2010. The vote to approve was unanimous of those present.

Agenda Item #4: Presentation and Discussion: Overview of Water Needs Forecasting Effort

Baskin said she has asked staff to provide a snapshot of trends in each of the river basins for which water needs forecasts have been developed to date.

Drury reviewed some key changes to the water needs forecasting methodology that had been approved by the commission since the last major methodology update in 2007. She reminded the commission that the forecast numbers represent water needs for only those public water suppliers who required a forecast for a Water Management Act permit, noting that the presentation presents a snapshot of a portion of the basin and does not represent the total water needs of all water users in the basin. She also noted that the totals by basin may include communities whose water sources are located in another basin. Drury noted that forecasts were not done for communities that have no public water system. Baskin clarified that the forecasts represent a

projection of need, but do not indicate how the need will be met. Yeo added that the projections are based on demographic forecasts prepared by the Regional Planning Agencies.

McCrory provided a presentation to update the commission on the water needs forecasting effort since approval of substantial revisions to the forecasting methodology in December 2007. The presentation focused on basin-wide data rather than forecasts for individual water suppliers. She summarized the work completed to date, including data review for 71 public water suppliers (PWSs) in seven river basins, completion of forecasts for 56 PWS systems, and recommendation of temporary allocations for 15 PWS systems. She explained that forecasts are for a water supply system's service area, not the community, and that the service area may include locations outside the basin of interest or may not include areas of a community served by a supplier in another basin. She noted that the data do not reflect water use by public water suppliers for whom authorized withdrawals consist only of WMA registrations.

She reviewed maps and graphs summarizing the data for five river basins for which forecasts had been completed: the Blackstone, Charles, Ipswich, Boston Harbor, and Taunton basins. She emphasized that the totals represent data for a subset of all the water users in a basin. For each basin, she noted the number of completed forecasts and temporary allocations and the total population served. She reviewed graphs showing, for the PWSs with completed forecasts, the total registered volume; total authorized withdrawal volume, including the permits which have expired or are due to expire; average use over the last three- to five-year period; and water needs forecasts for two scenarios representing water needs if (1) the water conservation performance standards are met for unaccounted-for water (10%) and residential consumption (65 gallons per capita per day or RGPCD), and (2) if current trends in water use continue.

For the Ipswich River basin, recent average water use is below the total registered withdrawal volume. Mackin requested confirmation that the water needs forecast for the first five-year period represents a 10% increase in water use over current average use. McCrory acknowledged this, and said the Beverly-Salem and Danvers systems accounted for most of the growth. She added that staff rely on the Regional Planning Agencies for demographic projections and request clarification where the numbers raise questions. Others asked for clarification on which PWSs were included in the numbers displayed. The numbers do not include Reading and do include Wilmington, though Wilmington will obtain a portion of its water needs from the MWRA in the future.

For three (the Ipswich, Boson Harbor, and Taunton) of the five basins, the forecasts indicate that, on average, the water systems analyzed are using less than 65 RGPCD or less than 10% unaccounted-for water or both. For the Taunton Basin, there was some discussion of different population projections from different RPAs. McCrory noted that staff is in the process of convening a working group with the RPAs to provide advice on demographic projections. Drury add that the 2010 federal census will prompt a new round of projections.

Baskin noted that, even with population projections that some might argue are overestimated, the 20-year projections for either water-use scenario are lower, in every basin, than the currently allocated volume, on average. She added that the numbers indicate that water demand is declining throughout the state. Yeo noted that the expiring permits are based on older projections that built in 5% per decade increase in overall gpcd, resulting in a substantial amount of water that was never used. He added that, in general, water suppliers will not use water that they do not need, and that the general trend in water use in Massachusetts and across the country has been downward.

Mackin expressed concern that the slope of the trends in water use is very different from the slope of the water needs forecasts. She also expressed concern that, going forward, the water needs forecasts are based on assumptions that have been disproven in past projection cycles. She suggested basing projections on the actual trends in water use. McCrory commented that part of the downward trend in water use reflects improved efficiencies and reductions in unaccounted-for water. Yeo commented that, in the past, population increases have been absorbed without increasing water use, as systems work to eliminate waste and inefficiencies. He added that there may come a point in the future where population increases will not be able to be offset by increasing efficiencies and will result in increased water use.

McCrory concluded by outlining the 2010 schedule for water needs forecasts and describing related tasks, including convening a working group with the Regional Planning Agencies and developing data management tools that will facilitate compilation and analysis of the data resulting from the water needs forecasting effort.

Discussion continued on the resources required to develop forecasts, how MassDEP uses the forecasts in WMA permitting, and the methodologies used by the different Regional Planning Agencies in their forecasts. Baskin concluded by inviting a future update on the water needs forecasts to be completed in 2010.

Agenda Item #5: Presentation on EPA Targeted Watershed Grant for the Ipswich River Watershed: Final Results

Cohen presented final results from a five-year study of low-impact development and water conservation approaches in the Ipswich River watershed. She acknowledged the U.S. Environmental Protection Agency for funding the program and the grant program partners. She reviewed the purpose of the program, which was to evaluate nine low-impact development and water conservation pilot projects for their potential ability to address the severe low-flow conditions in the Ipswich River watershed.

Cohen provided background on the issues driving water deficits in the Ipswich River watershed, noting that 79% of all withdrawals are exported from the basin for water supply or through wastewater discharges outside the basin. She also noted estimated losses to the watershed from infiltration and inflow, lawn irrigation, and stormwater runoff. She reviewed the structure of the grant program, which included four demonstrations focused on improving stormwater management practices through low-impact development, and five demonstrations focused on reducing water demand. The grant also included quantifying the impact of the demonstrations, modeling theoretical application of the techniques at the watershed scale, and educating stakeholders.

For each demonstration project, Cohen reviewed the research questions and highlighted key results. The LID demonstration projects included a green roof, a subdivision designed based on LID principles, a porous pavement parking lot, and use of LID stormwater management techniques to improve water quality at a lake.

For the green roof, she reviewed results of collection and analysis of data on both water quality and the quantity of stormwater runoff. Results indicated that the green roof delayed runoff and retained more than 50% of the rainfall from most storms, with retention up to 100%. The antecedent weather conditions were the most significant driver of how much rainfall was retained. The effect on pollutant concentrations and loads was more varied.

Discussion addressed questions about cost of the green roof, structural analysis required, design recommendations based on these results, the need for supplemental irrigation, the effect of the green roof on infiltration and changes in water temperature, long-term studies about accumulation of metals in soils, and the sources of some of the pollutants. Cohen clarified that green roofs are generally sited to address water quality concerns and reduce peak stormwater flows in urban areas. Tisa requested a fact sheet addressing the applications where a green roof would be most appropriate. Cohen responded that the grant program will develop printed educational products.

Cohen described the LID features of the subdivision demonstration project, including preservation of open space through clustering of house lots; preservation of native vegetation; reduction of pavement widths; use of rain gardens, swales, and grass pavers; and infiltration of roof runoff. She described the monitoring and modeling design used to evaluate the water quantity benefits of the LID design. She discussed results of the modeling analysis that compared total runoff and peak runoff over the entire parcel during five design storms for four different development scenarios: 1) the forested (predevelopment) condition; 2) the existing cluster subdivision layout with conventional curb and pipe drainage, 3) the clustered subdivision with additional LID features (as built); and 4) a conventional subdivision laid out in one-acre lots, according to existing zoning. She highlighted four key results: runoff from all types of development increased when compared to the forested condition; runoff patterns from both cluster developments were closer to the forested condition than to the conventional development; runoff patterns from the cluster development with enhanced LID stormwater practices were the closest to those of the forested condition; and preservation of open space was the driving factor in reducing runoff.

In response to questions about maintenance agreements, Cohen said that there are many lessons that can be learned from the grant projects that had significant involvement of individual homeowners. In general, she emphasized the importance of having clear communication and obtaining written agreements up front, so that all parties are aware of their responsibilities. Cohen also addressed problems that had been encountered with the grass pavers at the road edge of the LID Subdivision.

Cohen described two projects demonstrating techniques to improve water quality at Silver Lake in Wilmington. Features of the project at a beach parking lot included four types of permeable paving materials, bioretention areas, and vegetated water quality swales. Research questions addressed the impact on groundwater quality of permeable paving materials and effects of the LID features on water quality in the lake.

Results of USGS water quality analysis at the parking lot showed no indication of groundwater impairment as a result of the pervious paving. Board of Health test results showed no beach closures due to fecal bacteria counts in the four years after the LID features were installed, while one or more beach closures for fecal bacteria had been required each summer in the eight years prior to installation of the LID features.

Cohen also described a nearby project that included rain gardens and permeable pavers installed in the rights-of-way throughout two streets that drain to Silver Lake. She also described efforts to educate and involve neighborhood residents in the project. Research questions addressed the effect of the LID features in reducing runoff quantity and pollutant loads and concentrations in the runoff. Results indicated that, in general, LID features reduced runoff volume for small

storms, with some variability in results, while for larger storms, performance of the pre- and post-LID conditions was similar. She noted that 60% of all storms sampled were small storms, while the water quality samples were biased toward the larger storms.

Because of time limitations, Zimmerman requested that Cohen continue her presentation at the February commission meeting to allow more time for a review and discussion of the water conservation projects and modeling results. He added that that program addressed important questions and warranted additional presentation time. Baskin agreed and commended Cohen for her work on the grant program.

Meeting adjourned

Attachments distributed or presented at meeting:

- Current Water Conditions in Massachusetts, January 14, 2010
- Presentation handouts: Overview of Water Needs Forecasting Effort
- Presentation: EPA Targeted Watersheds Grant Program: Improving Flows in the Ipswich River through Low-Impact Development and Water Conservation