THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for November 10, 2011

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

Minutes approved December 8, 2011

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
David Terry	Designee, Department of Environmental Protection
Joseph E. Pelczarski	Designee, Massachusetts Office of Coastal Zone Management
Bob Zimmerman	Public Member

Members Absent

Gerard Kennedy	Designee, Department of Agricultural Resources
Mark Tisa	Designee, Department of Fish and Game
Thomas Cambareri	Public Member
John Lebeaux	Public Member

Others in Attendance:

Rep. Carolyn Dykema	State Representative, Holliston
James Straub	DCR
Jennifer Pederson	MA Water Works Assn.
Bruce Hansen	DCR
Bill Hinkley	EEA
Kimberly Wells	EEA/DCR Intern
Peter Weiskel	USGS
Kelly Mercer	EEA Intern
Lexi Dewey	Water Supply Citizens Advisory Committee
Michele Drury	DCR
Linda Hutchins	DCR
Pam Heidell	MA Water Resources Authority
Julie Wormser	The Boston Harbor Association

Baskin called the meeting to order.

Agenda Item #1: Executive Director's Report

Hansen provided an update on the hydrologic conditions for October 2011. Statewide average precipitation for October was almost seven inches, which is 181 percent of the long-term average for the month. October was the eighth wettest October in 117 years of records in Massachusetts. Hansen noted several large rain events, including one on October 4 that brought more than five inches of rain in six hours to areas of the North Shore and caused severe urban flooding. A rare early Nor'easter on October 28 brought up to thirty inches of snow to interior Massachusetts and caused widespread power outages and severe limb and tree failure, since many trees still bore

leaves. Groundwater and stream flows were above normal. Reservoir levels are above normal for this time of year. All drought indicators point to persistent wet conditions statewide.

Baskin announced that she attended the New England Water Works Association's annual water conference, whose theme was Integrated Water Resources Management Planning.

Agenda Item #2: Vote on the Minutes of October 2011

Baskin invited motions to approve the meeting minutes for October 13, 2011.

VOTE	A motion was made by Terry with a second by Contreas to approve the meeting minutes for October 13, 2011. The vote to approve was unanimous of those present, with one abstention (Zimmerman).

Agenda Item #3: Update: The Water Infrastructure Finance Commission: Interim Report and Recommendations on Financing

Baskin welcomed and introduced Representative Carolyn Dykema from the Eighth Middlesex District. She noted that Rep. Dykema gained experience in environmental issues through her work in addressing water issues in the town of Holliston and has established a strong environmental record.

Rep. Dykema stated her appreciation of efforts by the Water Resources Commission and the administration in advocating for water infrastructure financing. She described her background in working on local water, sewer, and stormwater issues in Holliston. This work gave her an appreciation of both the challenges and opportunities associated with water infrastructure, as well as the environmental, economic, and public health implications. She acknowledged Senator James Eldridge, with whom she worked in establishing the Water Infrastructure Finance Commission; Dave Terry of MassDEP and Bob Zimmerman of the Charles River Watershed Association, who served on the Water Infrastructure Finance Commission; and Kathy Baskin for her work on water infrastructure issues.

She said she sees the work of the Water Infrastructure Finance Commission as an opportunity for all stakeholders to start working together. A public conversation is needed about what it takes to deliver water to the consumer and what investments are necessary to support that infrastructure. A consistent message that emerged from all the stakeholders was the need to educate the public about water infrastructure investment needs. She noted the opportunity for Massachusetts to be a leader in innovative technologies and the next generation of water infrastructure. She also noted parallels with the energy industry. She highlighted the importance of educating the public to the realization that "water is the new oil." She noted the benefits to sustainability and the economic benefits of actively participating in meeting the water challenges that lay ahead.

The legislature directed the Water Infrastructure Finance Commission to scope out the magnitude of the need for infrastructure investments. Rep. Dykema described the sources of information used to estimate the gap between water infrastructure needs and available funding from current water and sewer rates and the state revolving loan fund. This gap is estimated at $10.2 billion for drinking water, $11.2 billion for clean water (wastewater), both of which are likely understated. While it is difficult to estimate stormwater needs given evolving regulation, the WIFC estimated a possible $18 billion for stormwater, for a total exceeding $40 billion over the next twenty years.

The Water Infrastructure Finance Commission explored ways to meet this need. The commission recognized that municipal rates will continue to play a large part in filling the revenue gap. State assistance is recommended to help municipalities in managing their rate structures and their systems so that they are sustainable and provide consistency and predictability for rate payers; help in mitigating the rate shock experienced by some communities is also needed. Other needs will require more state subsidy. Potential revenue sources are discussed in the report, though the commission is not recommending any specific revenue source. It is envisioned that important concepts would be articulated in legislation that would contribute to a long-range vision for water.

Rep. Dykema described the process of obtaining public input through four public hearings across the state. Two themes emerged from concerns expressed by municipalities: lack of resources and concerns about regulation, particularly related to clean water. Concern was also raised about the issue of federal primacy on wastewater and stormwater regulation in Massachusetts and whether it makes sense for the state to assert more control in this area. Municipalities also expressed concern about the absence of federal funding to meet regulatory requirements. Rep. Dykema noted that there is also an enormous need for investments in transportation infrastructure, and that water and transportation infrastructure needs must be coordinated and addressed simultaneously.

Terry commended the work by the Water Infrastructure Finance Commission and expressed hope that its efforts would be sustained. Zimmerman commented that a new paradigm for funding infrastructure is needed. He added that private equity will have to be more closely involved, since federal, state, and local governments will not have the funds needed for infrastructure expansion and repair for the foreseeable decade. He expressed concern, however, that once money is made available, traditional methods of building water, wastewater, and stormwater infrastructure will trump innovation. He said that these 150-year-old traditions are the root cause of most water-related problems, especially in urban areas.

Zimmerman noted that the basis of the conversation about infrastructure needs has been that "we can't afford" to make the investments needed and should wait until some time when we can afford to make them. He cautioned that, since the passage of the Clean Water Act in 1972, money has never been available to address environmental needs without the impetus provided by court orders or regulation. He also urged caution in assuming state primacy on clean water regulation, suggesting that the federal government may be better equipped to withstand political pressures associated with making the kinds of changes needed. He commended the process that the Water Infrastructure Finance Commission engaged in and its conclusions. The challenge is to turn the recommendations into legislation that results in the kinds of transition necessary to restore and sustain water systems and build resilience to climate change.

Dykema responded that one of the value-added benefits of having the state assume primacy in clean water regulation is the ability to coordinate programs that frequently operate as separate "silos." Better coordination would facilitate approaches that achieve the greatest environmental benefit for the dollars invested. As an example, she cited streamflow issues and whether there would be more environmental benefit in addressing these by looking watershed-wide at investments in stormwater.

Zimmerman commented that stronger arguments about the economic benefits of investments in environmental restoration need to be made. He noted that engines of growth in Massachusetts lie

along Boston Harbor and the Charles River, both of which were the focus of substantial investments in cleanup and restoration over the last two decades.
Drury noted that Water Resources Commission staff are currently engaged in a number of initiatives, including updating the Water Conservation Standards and discussing the vision that should guide the Water Resources Commission's work in the twenty-first century. She noted that pricing is a key issue identified in both efforts, and she expressed interest in sharing ideas and coordinating efforts with Rep. Dykema and her staff.

Rep. Dykema responded that one of the recommendations of the Water Infrastructure Finance Commission is to create an entity that would officially continue the dialog on these issues. Pricing is one issue that was highlighted as a clear priority recommendation; additional work will be needed to drill down to the detail needed to execute the commission's recommendations.

Baskin commented that, given the staggering level of investment required – the equivalent of three Big Dig projects funded over 20 years – it is likely that some needed investments will continue to be deferred. Rep. Dykema responded that the Water Infrastructure Finance Commission considered various scenarios and determined that investments of $200 million per year would reduce the water and wastewater funding gap by $5.5 billion. She added that the magnitude of the number reinforces the need for innovation, such as identifying opportunities to turn waste into salable products that could help reduce the gap. She noted that the commission had laid out the range of issues that need to be discussed, but more work is needed to take the various concerns and translate them into policy solutions. She expressed a strong interest in piloting an integrated approach in one watershed, where the environmental needs in the watershed would be identified and funding would be provided to identify solutions that would generate the greatest environmental benefit, using some combination of stormwater, wastewater, and drinking water management.

Zimmerman urged that any funding for pilot projects should look beyond traditional infrastructure solutions and focus on innovative ways to both reduce costs and improve outcomes. He cited "Blue Cities" approaches that capture rainwater, reduce peak flows, increase groundwater recharge, build resilience to drought, and are cheaper to build. He urged investigation of new ways of thinking about infrastructure. Rep. Dykema responded that municipalities are typically risk averse, and the state can play an important role in finding ways to reduce the risks to municipalities in adopting innovative infrastructure – for example, by identifying projects and programs that demonstrate a history of effectiveness.

Pederson thanked Rep. Dykema on behalf of the Massachusetts Water Works Association for her tireless efforts on these issues. She highlighted the Water Infrastructure Finance Commission's recommendation on the importance of educating the public about the value of water. She noted that water and sewer rates have been identified as playing an important role in closing the funding gap. She added that it is difficult for water suppliers alone to make this case to their rate payers, and a statewide campaign in helping the public understand the need for rate increases is essential.

Wormser asked Zimmerman to explain what private equity investments in public infrastructure would look like. Zimmerman described, as examples, cap-and-trade arrangements among private property owners on a watershed basis to accomplish stormwater infiltration or 20-year bonds funded by private equity to finance new approaches. He also advocated for new education and training for contractors in alternative stormwater approaches.

Rep. Dykema clarified that the recommendations specifically state that water resources should not be privatized but should be maintained as public resources. She added that financing is a different issue, and there may be some opportunities for private financing. Wormser commented that it takes strong regulations to create the market for these investments. Rep. Dykema responded that, in her view, the problem is not with regulation per se, but with the way regulations are implemented, and there needs to be more flexibility and more sensitivity to what municipalities are facing with implementation. She added that, in order to meet environmental goals, we must look at the full range of solutions crossing areas that tend to be regulated separately (in this case, water, wastewater, and stormwater). She closed by inviting all interested parties to coordinate their efforts and work together so that progress on these issues can be made.

Baskin thanked Rep. Dykema for providing an informative update and leading a very useful policy discussion and acknowledged the need for continued coordination.

Agenda Item #4: Presentation: Does Big Waves + Higher Tides = an Erosion Index?

Baskin introduced Joe Pelczarski of the Office of Coastal Zone Management.

Pelczarski started by quoting a 1992 study in North Carolina that found evidence that a five-foot deep water wave will result in measurable beach face erosion. Pelczarski examined wave-height data for 1994 to 2011 from the Boston buoy located 16 miles offshore. He also compiled Boston tidal measurements from 1922 to 2011. He postulated that erosion was most likely at the high end of the tidal cycle. In the Boston data, the diurnal tidal range, or the difference between the low and high tides, is 10.5 feet.

Pelczarski then reviewed a series of graphs from 1991 through October 2011showing monthly tidal cycles and wave heights. He also summarized data showing, by year, the number of hours when tides exceeded 10.5 feet, when waves exceeded 4.92 feet, and when both conditions occurred. He highlighted 2010 as having the highest number of hours when both conditions occurred. For the period 1994 to 2010, the 2010 conditions far exceeded any other year. He also reviewed data by month over the 17-year period.

He then showed graphs illustrating the seasonal cycle of wave energy and resulting beach profiles. He explained that in the summer, waves are lower and deposit sand onto the beach, whereas in winter, waves are larger and erode sand off the beach. In unusually large storm events, sand may be permanently lost to deep water. He reviewed graphs showing these seasonal cycles for each year from 1994 to 2011 and highlighted years when beach erosion was more likely to have occurred. A graph summarizing data from all years in the analysis indicated an increasing trend, based on a statistical analysis of the data. He pointed to peaks on the graph that indicate occasions when the concurrence of high tides and high waves would likely indicate that severe beach erosion occurred.

He noted that no field evidence has been collected on beach erosion to support the data. The Office of Coastal Zone Management has initiated a project to collect and map data on shoreline change (http://www.mass.gov/czm/hazards/shoreline_change/shorelinechangeproject.htm). He also described CZM's Storm Reporter project and a new initiative to conduct preliminary shoreline damage assessments after major events; reporters enter coastal storm damage data using a web application. The National Weather Service has expanded this initiative to use its network of weather spotters to make observations during low-level events. Pelczarski concluded by requesting input on his storm erosion index.

Questions and discussion addressed correlating Pelczarski's data with sea level rise, how the index could be used proactively, whether repairing sea walls should be required, and the availability of empirical data. Pelczarski noted that he has not been able to identify anyone who is monitoring beach erosion.

Drury announced that the Office of Coastal Zone Management will provide an update to the Water Resources Commission in the spring on CZM's efforts to map shoreline change. Baskin thanked Pelczarski and commented that his presentation ties into efforts by EEA on climate change, sea level rise, and land use practices.

Agenda Item #5: Update: Zebra Mussels (Dreissena polymorpha) in Massachusetts

Baskin introduced Jim Straub of the Department of Conservation and Recreation's Lakes and Ponds program. Straub provided an update on the status of the zebra mussel infestation in Massachusetts.

Straub noted that Tom Flannery of the Lakes and Ponds program had presented information to the commission shortly after zebra mussels were first detected in Laurel Lake in Massachusetts in 2009. He added that Massachusetts agencies must address problems related to many other nonnative invasive species in Massachusetts, including infestations in both fresh water and marine environments.

Straub described zebra mussels and the physical, ecological, and economic impacts they cause. Because zebra mussels attach to any hard substrate, effects include clogging of pipes and intakes. There are some long-term impacts that researchers do not yet understand. Algal blooms in some water systems are being attributed to the presence of zebra mussels over time, and the feeding activity of zebra mussels is changing the ecosystems of the water bodies where they are present. Straub showed maps showing the spread of zebra mussels from two sites in the Great Lakes in 1986 to widespread infestations throughout the Great Lakes and major river systems and some water bodies in western states. He listed water bodies infested with zebra mussels in nearby states. To date, Laurel Lake is the only lake in Massachusetts where zebra mussels have been found. Within three years, they had spread from Laurel Lake, through the Housatonic River system, to three lakes in Connecticut.

Straub described volunteer-based education, outreach, and monitoring programs to stop the spread of zebra mussels by boat owners. He described the emergency rapid response protocol that was put in place once zebra mussels were found in Laurel Lake. The protocol involved closing access to the lake and informing local users about how zebra mussels spread and how users should clean and sanitize boats, trailers, and equipment that come into contact with the lake. He noted that once zebra mussels are introduced, it is impossible to eradicate them.

Straub showed images illustrating the exponential increase in zebra mussels in Laurel Lake. Hard surfaces in the water are becoming coated with the organisms. Zebra mussels suffocate native fresh water mussels. Because of the special concern about the potential for infestation of the Quabbin Reservoir, a mandatory boat washing and inspection system was instituted. Though it was determined that the water chemistry of the reservoir is not suitable to support zebra mussels, this system also helps to protect the Quabbin Reservoir from other invasive species.

Straub described ongoing efforts and next steps to prevent further infestations. The state conducted an assessment to determine which water bodies would be susceptible, based on water chemistry, to zebra mussel infestation. Water bodies in the Connecticut River Valley at high and medium risk for infestation were identified, and sampling surveys were conducted. To date, no organisms have been found in lakes, but adult zebra mussels have been found up to 7.5 miles downstream in the Housatonic River.

Prevention efforts were concentrated at Laurel Lake and in areas identified as susceptible. A boat wash station was purchased and installed at Laurel Lake, and decontamination procedures at other public access ramps in the Housatonic and Hoosic watersheds were instituted. To prevent further infestations, signage and educational materials were also distributed, and boat ramp monitors were hired to inspect boats both as they entered the water and as they left. In addition, the Lakes and Ponds program worked with towns, lake associations, and private car washing operations to expand boat washing and boat ramp monitoring efforts in the Berkshires region.

In response to questions, Straub explained that fees cannot be charged for boat washing and confirmed that Eurasian Milfoil is also a concern in Massachusetts. He directed those interested to a Google map application for invasive species on the Lakes and Ponds program web site (http://www.mass.gov/lakesandponds) and added that staff are working with other state and federal staff to expand the mapping application to cover all of New England. He named other nonnative and invasive species that are a concern, including water chestnut, purple loosestrife, and phragmites. The best preventive measure is to clean, drain, and dry boats and equipment. Pelczarski pointed out that the Office of Coastal Zone Management and Department of Agricultural Resources also have programs that address invasive species. Baskin added that the Massachusetts Environmental Trust has also funded efforts to control the spread of invasive species.

In response to a question about whether felt-soled waders were a vector for zebra mussels, Straub explained that such waders are associated with the spread of Didymo or rock snot algae (*Didymosphenia geminate*). Fly lines, buckets, coolers, and anything that touches the water can also be vectors for the spread of invasive species. He added that states and the federal government are stepping up control efforts, recognizing the economic benefits of maintaining lakes and streams in a pristine condition.

Agenda Item #6: Discussion: Update of the Water Supply Policy Statement: Discussion of Theme Statement

Baskin announced that, due to time limitations, the scheduled discussion of the update of the Water Supply Statement would be postponed until the December meeting of the Water Resources Commission.

Meeting adjourned.

Documents or Exhibits Used at Meeting:

- Meeting Minutes for October 13, 2011
- Memorandum from Staff dated November 10, 2011: Response to Feedback from the September 8, 2011 Presentation on the 1978 Water Supply Policy Statement

- Correspondence from Water Resources Commission to:
  - Mark Wetzel, Wright Pierce, dated September 30, 2011, regarding applicability of the Interbasin Transfer Act to the proposed development of the Unkety Brook well in Groton
  - U.S. Department of Energy, Building Technologies Program, dated October 20, 2011, regarding Request for Information for Faucets, Showerheads, Water Closets and Urinals
- Interbasin Transfer Act project status report, 27 October 2011
- Current Water Conditions in Massachusetts, November 10, 2011
- Presentation slides: Does Big Waves + High Tides = an Erosion Index?
- Link to the Office of Coastal Zone Management's Massachusetts Shoreline Change Project: http://www.mass.gov/czm/hazards/shoreline_change/shorelinechangeproject.htm
- Presentation slides: Zebra Mussel Update 2011
- Link to the Department of Conservation and Recreation's Lakes and Ponds program: http://www.mass.gov/lakesandponds