Water Management Act and the Sustainable Water Management Initiative

February 11, 2014
WSCAC Meeting
Southborough, MA
Presentation Outline

- SWMI Timeline
- Summary of SWMI Science and Policy
- Pilots- what we learned
- Post-SWMI permit requirements- what’s new
- Grants
- Maps/database and other resources
- Permit renewals- schedule and process
## SWMI Timeline

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Accomplishment</th>
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<tbody>
<tr>
<td>2007 to 2011</td>
<td>USGS Studies</td>
</tr>
<tr>
<td>January 2010 to February 2012</td>
<td>SWMI Process:</td>
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<tr>
<td></td>
<td>15 Advisory Committee Meetings</td>
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<td>18 Technical Committee Meetings</td>
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<td>Numerous Work Group Meetings</td>
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<tr>
<td>November 2012</td>
<td>SWMI Framework released</td>
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<td>May 2012 to February 2013</td>
<td>SWMI Pilots</td>
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<tr>
<td>January to June 2013</td>
<td>SWMI Grants, round 1 completed</td>
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<tr>
<td>Ongoing</td>
<td>Deliberations with stakeholder representatives</td>
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<tr>
<td>December 5, 2013</td>
<td>Update for SWMI Advisory Committee</td>
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<tr>
<td>January 2014</td>
<td>SWMI Grants, Round 2 awarded</td>
</tr>
<tr>
<td>Ongoing since March 2013</td>
<td>Regulation and Guidance development</td>
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</tbody>
</table>
Science and Policy Informing SWMI

- USGS Studies: August withdrawals and impervious cover have significant impact on fluvial fish

- Advisory and Technical Committees helped us develop policy from science

- Categories 1-5 (1=least impact, 5 = most impact)
  - Use fluvial fish as surrogate for healthy aquatic habitat
  - Biological Category (BC), includes impervious cover
  - Groundwater Withdrawal Category (GWC), compares withdrawals to simulated unimpacted August flow
  - Streamflow Criteria mark the boundaries between categories (310 CMR 36.14)
Groundwater Withdrawal Category (GWC) is based on the percent alteration of August median flow from groundwater withdrawals.

The USGS fish and habitat study, Factors Influencing Riverine Fish Assemblages in Massachusetts (SIR 2011-5193), established a relationship between August flow alteration and biological integrity.

GWC is based on subbasins established in the USGS Mass Water Indicators (MWI) Report (SIR 2009-5272) with 2013 data revisions.

July 25, 2013
SWMI Pilots and what did we learn?

Road Tested the SWMI Framework (May – Dec. 2012)
1. Amherst (site specific study) 2. Danvers-Middleton
3. Dedham-Westwood 4. Shrewsbury (mock consult)

Need more guidance on:
• Minimization requirements
• Mitigation
  • Quantifying mitigation
  • Credits for past/on-going measures
  • Timing of mitigation
  • Evaluating cost and feasibility
WMA Safe Yield = 55% of Drought Basin Yield + Reservoir Storage

Safe Yield Drought Protection = Remaining 45% of Drought Basin Yield

+ Streamflow Criteria
Permit Conditions Summary

- **Standard Conditions** for all permitted groundwater and surface water withdrawals
- **New: CFR Consult** for withdrawals in subbasins with Coldwater Fishery Resources (CFRs)
- **New: Minimization** for groundwater withdrawals in “≥25% August Net Groundwater Depleted” Subbasins
- **New: Mitigation** commensurate with impact, for requests above baseline, in consultation with agencies
WMA Standard Permit

Conditions

Conservation Requirements

1. 65 residential gallons per capita day (RGPCD)
2. 10% unaccounted-for-water (UAW)
3. BMPs (leak detection & repair, metering etc.)
4. Seasonal limits on nonessential outdoor water use
   (New: low flow trigger, everyone goes to 1 day)
Nonessential Outdoor Water Use Restrictions

- Restrictions do not apply to essential use
- Alternative plan for Cape and Islands
- Choose:
  - Calendar- May 1-Sept
  - Streamflow- ABF
- 2 days max if above 65 rgpcd
- New low flow trigger- 1 day for everyone
Coldwater Fishery Resource (CFR) Consult

- DFW will screen subbasins for potential impacts to CFRs
- Basin Meeting serves as preliminary consult
- Goal- identify ways to reduce impacts through optimization
Minimization

Minimization is required in subbasins defined as having an August net groundwater depletions of 25% or more using Mass Water Indicators (MWI)* data.

August unaffected flow – Aug groundwater withdrawals + Aug groundwater returns

Minimization Components (to the extent feasible):

- Additional Conservation Measures
- Desktop Optimization
- Water Releases and Returns

* MWI data is based on estimated and reported withdrawals and returns for the years 2000-2004
Minimization- Additional Reasonable Conservation

- Adopt reasonable and cost-effective water conservation measures that go beyond the Standard Conditions
- Guidance provides 18 additional measures to choose from
- Outdoor use:
  - if above 65, 1 day
  - if below 65, 2 days
  - or propose equivalent action
Minimization- Desktop Optimization

Compare and screen subbasins with groundwater sources

1. Is a Coldwater Fishery Resource present?
2. Change in category if pumping shifted?
3. How much water is available (considering withdrawals and returns)?
4. What is the GWC percentage? (withdrawals/unaffected flow)
5. Other sensitive receptors?

Compare groundwater to surface water sources

6. Is there a surface water supply? With a release plan?
Tier Determination for Mitigation

- 3 Permit Tiers define mitigation requirements
- “Impact” quantified as increase over baseline and if increase causes a category change (i.e. backsliding)

Tier 1: no increase above baseline
Tier 2: increase above baseline but no change in BC or GWC
Tier 3: increase above baseline AND change in BC or GWC

- change in BC or GWC is evaluated for August unless withdrawals are greater during other periods
- Cumulative Assessment

Baseline is based on the largest of either:
- 2003 – 2005 water use + 5%
- 2005 water use +5 %
- the community’s registered volume
- Volume must be in compliance
Mitigation Plans

Action hierarchy
- 1st: Demand Management to keep volumes below baseline
- 2nd: Direct/quantifiable mitigation
- 3rd: Indirect/non-quantifiable mitigation

Location hierarchy (where a choice exists)
- 1st: same subbasin as withdrawals (considering water quality)
- 2nd: same major basin as withdrawals
- 3rd: different major basin

Mitigation Plan Timelines
- Mitigation Plan must be submitted at start of permit period
- Timeline may phase implementation of mitigation
- Any volumes withdrawn over Baseline must be mitigated prior to when those volumes are withdrawn
- DEP will make reasonable allowances if withdrawals are already over baseline

Retroactive mitigation credits for activities completed and still in effect
Direct Mitigation

Can be volumetrically calculated

Eligible Activities:
1. Infiltration and Inflow Improvements
2. Stormwater Recharge (directly connected impervious area redevelop to recharge)
3. Surface Water Releases
Indirect Mitigation Activities

Qualitative Credit System

- Remove dam/flow barrier
- Culvert replacements meeting crossing standards
- Stream bank/channel/buffer restoration
- Install & maintain fish ladder
- Acquire property in Zone I or II, or for other resource protection
- Stormwater bylaw with recharge requirements
- Stormwater utility *
- Implement MS4 4*
- Infiltration/Inflow removal program
- Private Well Bylaw
*must result in increase recharge to get credit
SWMI Assistance: Grants

- Money (state capital fund) available for 5 years (2012-2016).
- Designed to assist WMA permit holders with proposed SWMI minimization and mitigation requirements.
- Particular consideration was given to projects in highly impacted basins or subbasins, or areas with coldwater fish resources.
- 2012 Requirements:
  - Applicants must have a valid WMA permit
  - 20% financial match for implementation projects
Grant Summary Results

• MassDEP received 27 proposals for FFY12 requesting $2.62 million dollars.
• 10 projects were funded, worth a total of $858,250.
• MassDEP received 26 proposals for FFY13 requesting $2.3 million dollars.
• 17 projects were recently funded, worth a total of $1.08 million dollars.
SWMI Grant Projects

Projects funded include: Fishway improvements; Optimization and recharge analyses; Developing supply management protocols; Feasibility cost/benefit analysis of minimization, mitigation, and offsets; Dam removal feasibility; Water reuse; Stormwater, wastewater/recharge analysis; Water Audits.
Grant Lessons Learned

- Permittees are anticipating and planning for increased future water needs.
- Mitigation and minimization options are available to most if not all Permittees.
- Permittees will need considerable lead time to plan for and implement mitigation and minimization options.
- Significant water savings are available thru demand management practices.
Mitigation Cost Feasibility

- Designed for applicants who are concerned that their mitigation plan is cost prohibitive.
- Applicant may submit a 20-year budget along with their mitigation plan.
  - estimated operating costs
  - estimated capital improvement costs
- MassDEP will review the mitigation plan and budget with the applicant.
- Cost feasibility assessments will be based on impacts to rates, both year over year and over the 20-year permit period.
## Subbasin Characteristics

<table>
<thead>
<tr>
<th>Sub Basin ID:</th>
<th>Major Basin:</th>
<th>HUC12 Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>22019</td>
<td>South Coastal</td>
<td>Indian Head River-Indian Head Brook to mouth</td>
</tr>
</tbody>
</table>

### Subbasin Cumulative Data (includes this subbasin and all upstream contributing subbasins)

<table>
<thead>
<tr>
<th>Subbasin Information</th>
<th>August Wastewater Discharges (mgd)</th>
<th>August Groundwater Withdrawals (mgd)</th>
<th>Additional GW Withdrawal Volume to Cause a Change in Existing GWC and BC:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (Square Miles):</td>
<td>Ground Water Discharge: 0.000</td>
<td>PWS and Commercial Wells: 1.264</td>
<td>To Change GWC (mgd): 0.421</td>
</tr>
<tr>
<td>Impervious Cover (%):</td>
<td>Septic Systems: 0.602</td>
<td>Private Wells: 0.049</td>
<td>To Change BC (mgd): 0</td>
</tr>
<tr>
<td>Surface Water Withdrawals exist in or upstream of subbasin:</td>
<td>Surface Water (NPDES): 0.000</td>
<td>Total Groundwater Withdrawals: -1.313</td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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### Individual Subbasin Data (only includes this subbasin)

| Coldwater Fisheries Resource Exist: No | Net Groundwater Depletion (NGD): 22.6 |

### Unaffected streamflow, Ground Water withdrawals, Groundwater Withdrawal Category (GWC) and Biologic Category (BC).

<table>
<thead>
<tr>
<th>Estimated August Condition</th>
<th>Proposed Changes to existing GW Withdrawal</th>
<th>Existing vs. Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unaffected Streamflow (mgd)*</td>
<td>p</td>
<td>[Calculate] [Clear]</td>
</tr>
<tr>
<td>GW Withdrawals (mgd)**</td>
<td>-1.313</td>
<td></td>
</tr>
<tr>
<td>(Unaffected Streamflow) – (GW Withdrawals)</td>
<td>1.839</td>
<td></td>
</tr>
<tr>
<td>(GW Withdrawals) / (Unaffected Streamflow)</td>
<td>41.7%</td>
<td></td>
</tr>
<tr>
<td>Groundwater Withdrawal Category (1-5) GWC:</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Biologic Category (1-5) BC:</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Proposed Groundwater Withdrawal Category (1-5)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Proposed Biologic Category (1-5)</td>
<td>5</td>
<td></td>
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## Permit Renewal Process

<table>
<thead>
<tr>
<th>Months before permit expires</th>
<th>Activity</th>
</tr>
</thead>
</table>
| 20 months                    | Start Basin Planning Process  
  •Draft water needs forecasts developed,  
  •consultations upon request |
| 16 months                    | Basin Outreach Meeting |
| 12 months                    | Permit Filing Deadline  
  •Public Comment Period  
  •consultations as necessary |
| 9 months                     | Orders to Complete Issued by DEP |
| 6 months                     | Response to Orders to Complete Due |
| 3 months                     | Draft Permit Issued for Comment |
What’s Next?

• Formal Public Hearings and Comment – February – March
• Outreach on Proposed Regulations – Ongoing
• Final Regulations Promulgated – Summer 2014
• Additional USGS Studies
  • Surface Water
  • Groundwater recharge areas
  • Impervious Cover
• Resume Permitting
River Basin Permitting Dates

1 Year Interim Permits expected to be issued.

Basins previously permitted to be adjusted at next 5-Year Review

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Projected 5-Year Review Issuance</th>
</tr>
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<tbody>
<tr>
<td>Hudson</td>
<td>November 2015</td>
</tr>
<tr>
<td>Blackstone</td>
<td>February 2017</td>
</tr>
<tr>
<td>Charles</td>
<td>February 2017</td>
</tr>
<tr>
<td>North Coastal</td>
<td>February 2016</td>
</tr>
<tr>
<td>Hudson</td>
<td>November 2015</td>
</tr>
<tr>
<td>Blackstone</td>
<td>February 2017</td>
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<td>Charles</td>
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<tr>
<td>North Coastal</td>
<td>February 2016</td>
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<table>
<thead>
<tr>
<th>Water Source</th>
<th>Expiration Date</th>
<th>Outreach Meeting</th>
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<tbody>
<tr>
<td>Cape Cod *</td>
<td>November 2014</td>
<td>January 2015</td>
</tr>
<tr>
<td>Ipswich *</td>
<td>Early 2015</td>
<td>March 2015</td>
</tr>
<tr>
<td>Boston Harbor * /Taunton *</td>
<td>February 2015</td>
<td>April 2015</td>
</tr>
<tr>
<td>Islands *</td>
<td>February 2015</td>
<td>May 2015</td>
</tr>
<tr>
<td>Buzzards Bays</td>
<td>May 2015</td>
<td>February 2015</td>
</tr>
<tr>
<td>Concord</td>
<td>August 2015</td>
<td>May 2015</td>
</tr>
<tr>
<td>South Coastal *</td>
<td>August 2015</td>
<td>October 2014</td>
</tr>
<tr>
<td>Ten Mile</td>
<td>November 2015</td>
<td>August 2014</td>
</tr>
<tr>
<td>Deerfield</td>
<td>February 2016</td>
<td>November 2014</td>
</tr>
<tr>
<td>Housatonic</td>
<td>May 2016</td>
<td>February 2015</td>
</tr>
<tr>
<td>Westfield</td>
<td>November 2016</td>
<td>August 2015</td>
</tr>
<tr>
<td>Millers</td>
<td>February 2017</td>
<td>November 2015</td>
</tr>
<tr>
<td>Chicopee</td>
<td>May 2017</td>
<td>February 2016</td>
</tr>
<tr>
<td>Quinebaug</td>
<td>August 2017</td>
<td>May 2016</td>
</tr>
<tr>
<td>Connecticut</td>
<td>November 2017</td>
<td>August 2016</td>
</tr>
<tr>
<td>Nashua</td>
<td>February 2018</td>
<td>November 2016</td>
</tr>
<tr>
<td>French</td>
<td>May 2018</td>
<td>February 2017</td>
</tr>
<tr>
<td>Shawsheen</td>
<td>August 2018</td>
<td>May 2017</td>
</tr>
<tr>
<td>Merrimack</td>
<td>November 2018</td>
<td>August 2017</td>
</tr>
<tr>
<td>Parker</td>
<td>February 2019</td>
<td>November 2017</td>
</tr>
<tr>
<td>Narragansett</td>
<td>May 2019</td>
<td>February 2018</td>
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</tbody>
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* Basins with Permits on File
Further information

- MassDEP webpage at: http://www.mass.gov/dep/water/resources/swmi.htm
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