Water Management Act and the Sustainable Water Management Initiative

Regulation Revisions

Water Resources Commission Meeting

March 13, 2014

Presentation Outline

- SWMI Timeline
- Summary of SWMI Science and Policy
- Pilots- what we learned
- Post-SWMI permit requirements- what's new
- Resources to help
  - Grants
  - Interactive Maps and Database
- Permit renewals- schedule and process

SWMI Timeline

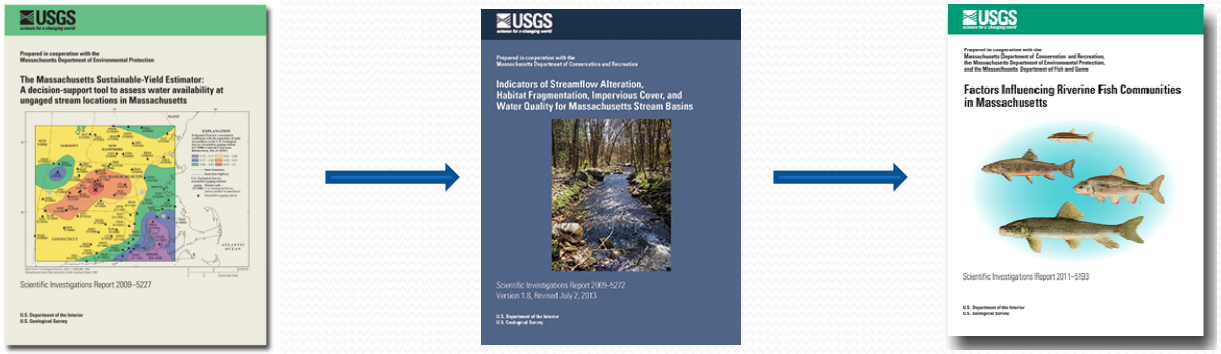
Timeframe	Accomplishment
2007 to 2011	USGS Studies
January 2010 to February 2012	SWMI Process: 15 Advisory Committee Meetings 18 Technical Committee Meetings Numerous Work Group Meetings
November 2012	SWMI Framework released
May 2012 to February 2013	SWMI Pilots
January to June 2013	SWMI Grants, round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

SWMI Components and Achievements

- Safe Yield
- Streamflow Criteria based on Science
- Permitting
  - Balance human and environmental need
  - Establish up front permit rules and conditions
  - Minimize use and mitigate commensurate with impact where applicable
- Protect environment while allowing economic growth and sustainable long-term water use

Science and Policy Informing SWMI

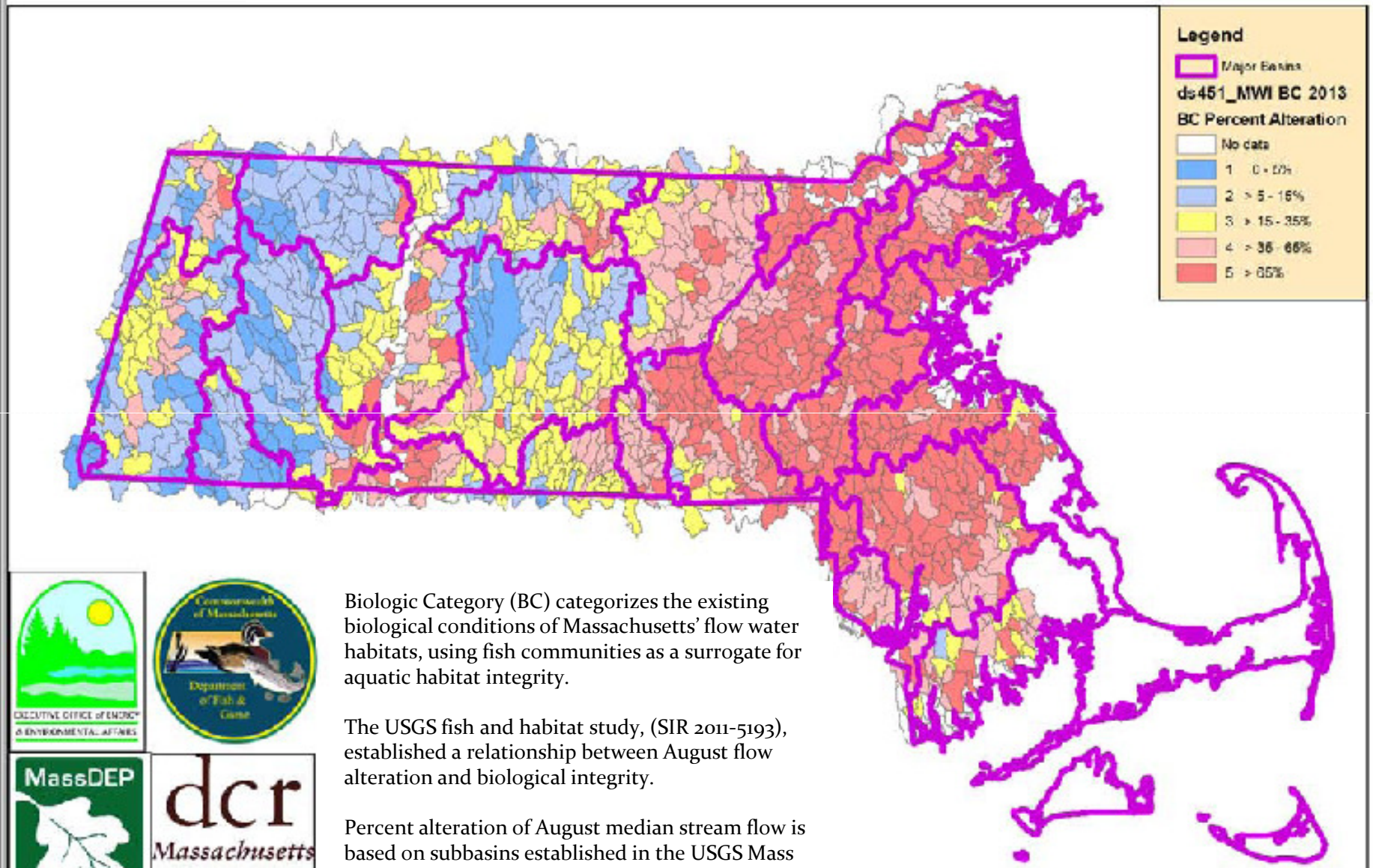
- USGS Studies: August withdrawals and impervious cover have significant impact on fluvial fish



SYE MWI Fish and Habitat

- SWMI Advisory and Technical Committees helped us develop policy from science
- Five Biological and Groundwater Categories (1=least impact, 5 = most impact)
  - Categories use fluvial fish as surrogate for healthy aquatic habitat,
  - Impervious cover and august groundwater withdrawals used to estimate impacts
- Streamflow Criteria mark the boundaries between categories (310 CMR 36.14)

Biological Category (BC)
for the Sustainable Water Management Initiative (SWMI)



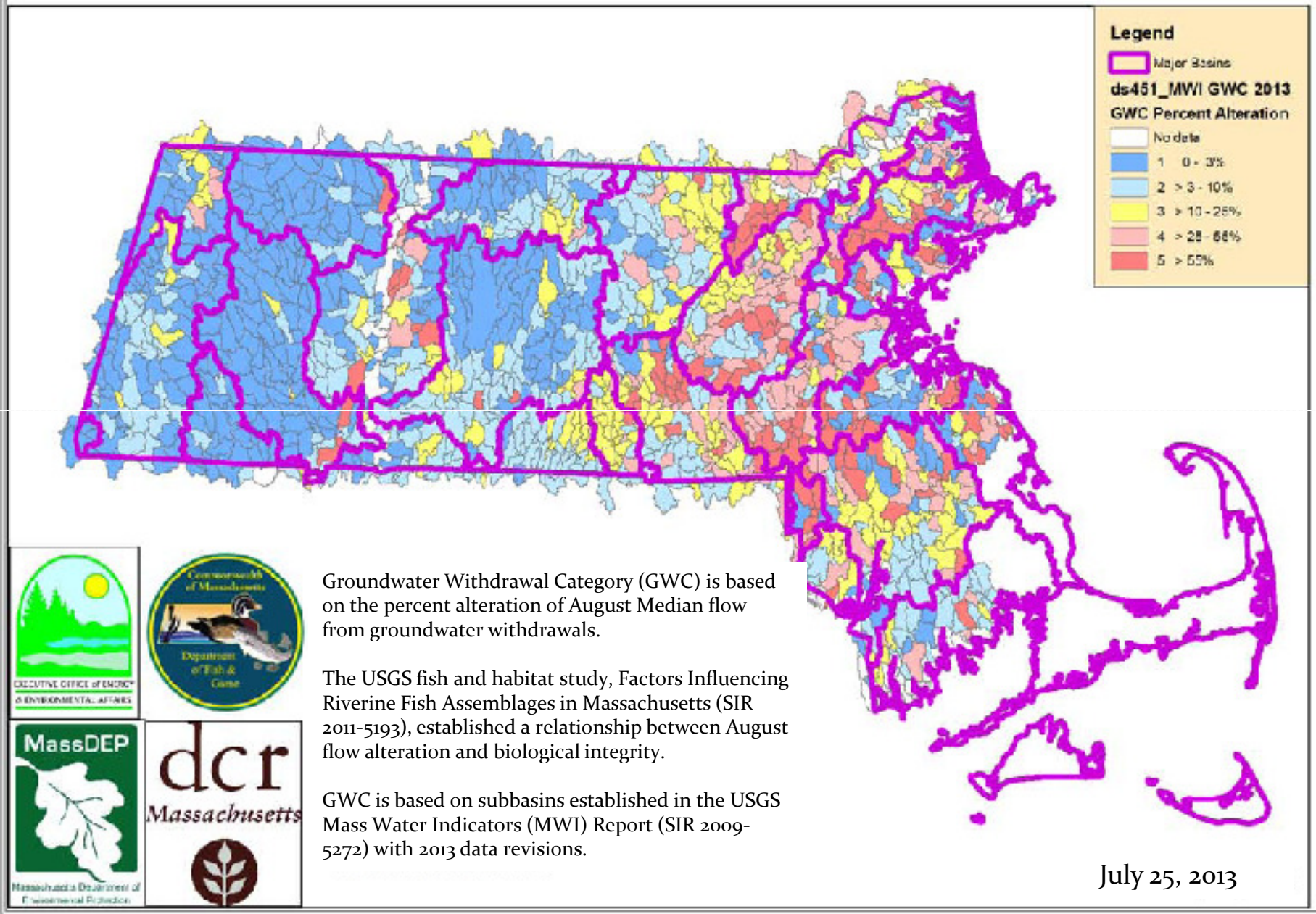
Biologic Category (BC) categorizes the existing biological conditions of Massachusetts' flow water habitats, using fish communities as a surrogate for aquatic habitat integrity.

The USGS fish and habitat study, (SIR 2011-5193), established a relationship between August flow alteration and biological integrity.

Percent alteration of August median stream flow is based on subbasins established in the USGS Mass Water Indicators (MWI) Report (SIR 2009-5272) with 2013 data revisions.

July 25, 2013

Groundwater Withdrawal Category (GWC)
for the Sustainable Water Management Initiative (SWMI)



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)

Pilots showed more guidance needed:

- Minimization requirements
- Mitigation
  - Quantifying mitigation
  - Credits for past/on-going measures
  - Timing of mitigation
  - Evaluating cost and feasibility

Safe Yield and **Environmental** Protection

Major Basin Scale

Potentially Allocatable Water

WMA Safe Yield =

55% of Drought Basin Yield + Reservoir Storage

Safe Yield Drought Protection =

Remaining 45% of Drought Basin Yield

+

Subbasin Scale

Seasonal Flow

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
- Choose:
  - Calendar- May 1-Sept 30
  - Streamflow- ABF
- 2 days max if above 65 rgpcd
- New low flow trigger- 1 day for everyone
- Alternative plan for Cape and Islands (groundwater driven)

Coldwater Fishery Resource (CFR) Consult

- Permittee will identify and screen subbasins for potential impacts to CFRs
- Basin Meeting will serve as the preliminary consult
- Identify ways to reduce impacts through optimization

Minimization

Minimization is required in subbasins that have 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 (such as more frequent billing, seasonal rate structure, etc..)
- 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?

Minimization- Optimization Example

Optimization Parameters	subbasin A	subbasin B	subbasin C	subbasin D
1) CFR present?	yes	yes	no	yes
2) Change in BC/GWC?	no	no	no	no
3) MWI affected flow (cfsm)	0.02	.35	.35	0.01
4) GWC %	-90%	-29%	-26%	-80%

- Preferred results highlighted in blue
- Screening shows subbasin C most preferred for shifting/increasing pumping

Mitigation

- Standard: "Commensurate with Impact" quantified as increase over baseline and if increase causes a category change (i.e. backsliding)

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

- 3 Permit Tiers define mitigation requirements
  - 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

Permit Requirements (new in green)	Applicability of Requirements	
Surface water sources	Tier 1	Tier 2
a. Commensurate Mitigation (surface water release preferred if possible)	Not required	Yes, required for all
b. Summer Management Plan with environmental considerations (such as evaluating releases, fisheries management plan, or consideration of an alternative approach for watering restrictions) in these plans.	Required if don't want standard outdoor limits	

Groundwater Sources Mitigation	Tier 1	Tier 2	Tier 3
a. Commensurate Mitigation	Not required	Yes, required for all	Yes, required for all (up to 2x indirect)
b. No feasible alternative source	Not required	Not required	Yes, required for all

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
- Private Well Bylaw
- Stormwater utility, bylaw with recharge or implement MS4*

*must result in increase recharge to get credit

- Acquire property in Zone I or II, or for other resource protection
- Infiltration/Inflow removal program
- Install & maintain fish ladder

Mitigation Plan Development

Action hierarchy

- 1st: Demand Management to stay 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

- Must be submitted at start of permit period, can be phased
- Retroactive credits considered if activity/benefit still in effect
- Volumes over Baseline must be mitigated prior to withdrawal (with allowances if withdrawals are already over baseline)

Mitigation Cost Feasibility

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

Resources: Grants

- Money (state capital fund) available for 5 years (2012-2016).
- Designed to assist WMA permit holders with proposed SWMI minimization and mitigation requirements.

Round 1, FFY12:

- 27 proposals requesting $2.62 million dollars
- Awarded $858,250 for 10 projects

Round 2, FFY13:

- 26 proposals requesting $2.3 million dollars
- Awarded $1.08 million for 17 projects

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

Stormwater Recharge

Dam Removal Feasibility

DEP Permitting Tool

Find by Subbasin ID: 22019 | Find by PWS System Name: | Click to use pull downs and to View All Subbasins | All Water Use Points in Subbasin Report | Calculation Tool Report

Find by PWSID: | Find PWS by Town Name:

Click on "X" in upper right of this form to close this window and return to main page.

Double Click on Sub Basin ID to view USGS Water Volumes Use Form

Subbasin Characteristics

Sub Basin ID:	Major Basin:	HUC12 Name:
22019	South Coastal	Indian Head River-Indian Head Brook to mouth

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

Subbasin Information		August Wastewater Discharges (mgd)		August Groundwater Withdrawals (mgd)		Additional GW Withdrawal Volume to Cause a Change in Existing GWC and BC:	
Area (Square Miles):	14.95	Ground Water Discharge:	0.000	PWS and Commercial Wells:	1.264	To Change GWC (mgd):	0.421
Impervious Cover (%):	12.3	Septic Systems:	0.602	Private Wells: +	0.049	To Change BC (mgd):	0
Surface water withdrawals exist in or upstream of subbasin:	YES	Surface Water (NPDES):	0.000	Total Groundwater Withdrawals: =	1.313		

Individual Subbasin Data (only includes this subbasin)

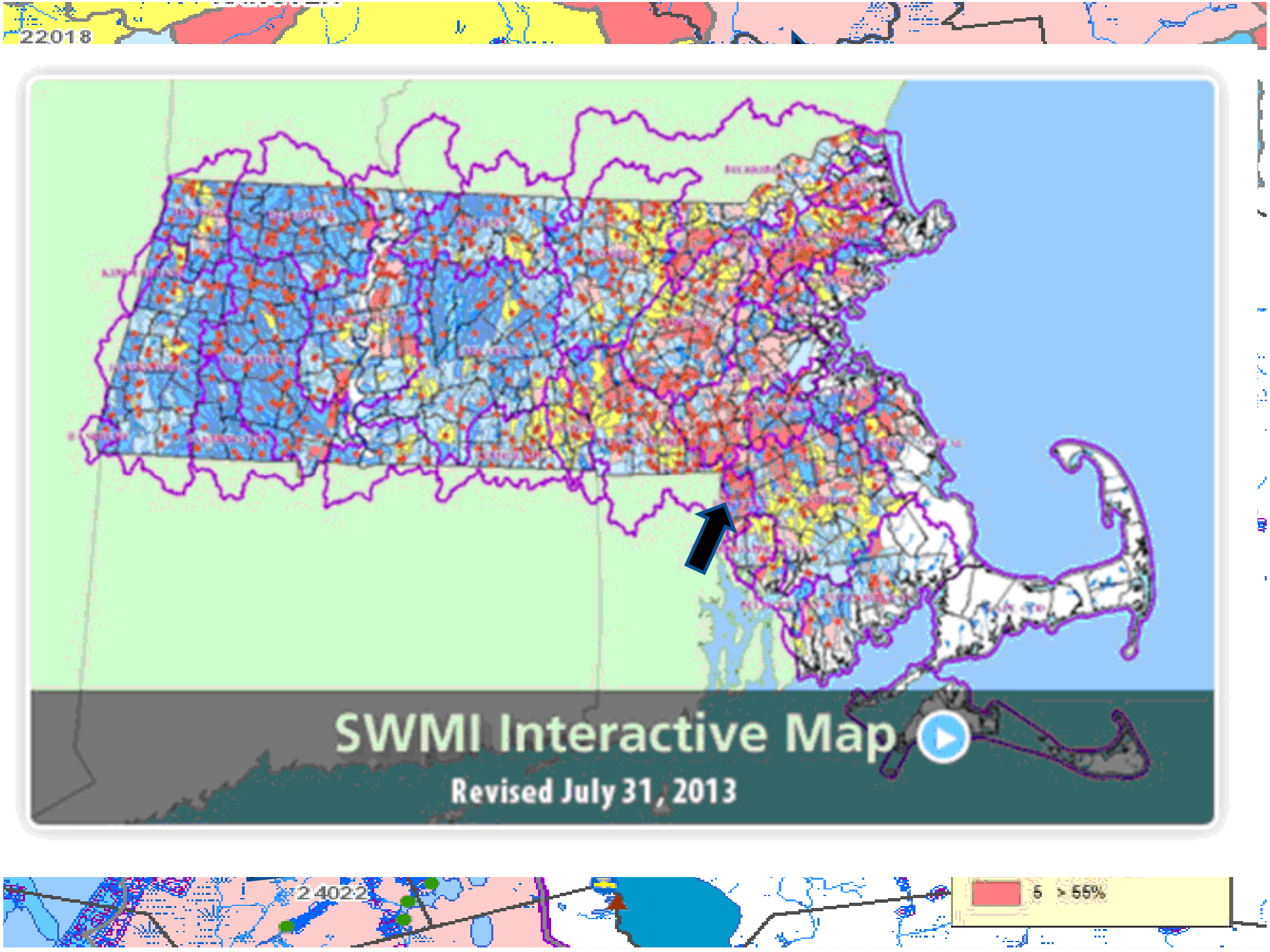
Coldwater Fisheries Resource Exist: No

Net Groundwater Depletion (NGD)

Net Groundwater Depleted (%): 22.6

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

Estimated August Condition			Proposed Changes to existing GW Withdrawal			Existing vs. Proposed	
			Change (+/-) to existing GW Withdrawal (mgd)	0		Calculate / Clear	
Unaffected Streamflow (mgd)*		3.151	Unaffected Streamflow(mgd)	3.151			
GW Withdrawals (mgd)**	-	1.313	Proposed Total GW Withdrawal (mgd)	- 1.313			
(Unaffected Streamflow) - (GW Withdrawals)	=	1.839	(Unaffected Streamflow) - (Prop. GW Withdrawal)	= 1.839			
(GW Withdrawals) / (Unaffected Streamflow)	=	41.7%	(Proposed GW Withdrawal) / (Unaffected Streamflow)	= 41.7%		0.0%	Percent Difference
Groundwater Withdrawal Category (1-5)	GWC:	4	Proposed Groundwater Withdrawal Category (1-5)	4		NO	Change in GWC?
Biologic Category (1-5)	BC:	5	Proposed Biologic Category (1-5)	5		NO	Change in BC?


22018
SWMI Interactive Map
Revised July 31, 2013
2 4022
5 > 55%

Permit Renewal Process

Months before permit expires	Activity
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 – April & May 2014
- Outreach on Proposed Regulations – Ongoing
- Final Regulations Promulgated – expected 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.

Water Source	Expiration Date	Outreach Meeting
Cape Cod *	November 2014	January 2015
Ipswich *	Early 2015	March 2015
Boston Harbor * /Taunton *	February 2015	April 2015
Islands *	February 2015	May 2015
Buzzards Bays	May 2015	February 2015
Concord	August 2015	May 2015
South Coastal *	**August 2015**	**October 2014**
Ten Mile	November 2015	August 2014
Deerfield	February 2016	November 2014
Housatonic	May 2016	February 2015
Westfield	November 2016	August 2015
Millers	February 2017	November 2015
Chicopee	May 2017	February 2016
Quinebaug	August 2017	May 2016
Connecticut	November 2017	August 2016
Nashua	February 2018	November 2016
French	May 2018	February 2017
Shawsheen	August 2018	May 2017
Merrimack	November 2018	August 2017
Parker	February 2019	November 2017
Narragansett	May 2019	February 2018

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

Water Source	Projected 5- Year Review Issuance
Hudson	November 2015
Blackstone	February 2017
Charles	February 2017
North Coastal	February 2016

* Basins with Permits on File

Further information

- Massachusetts Sustainable Water Management Initiative (SWMI), Framework Summary, dated November 28, 2012 at :
  http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf

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

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