

Westfield Basin Permit Meeting

September 15, 2015
Holyoke Heritage State Park

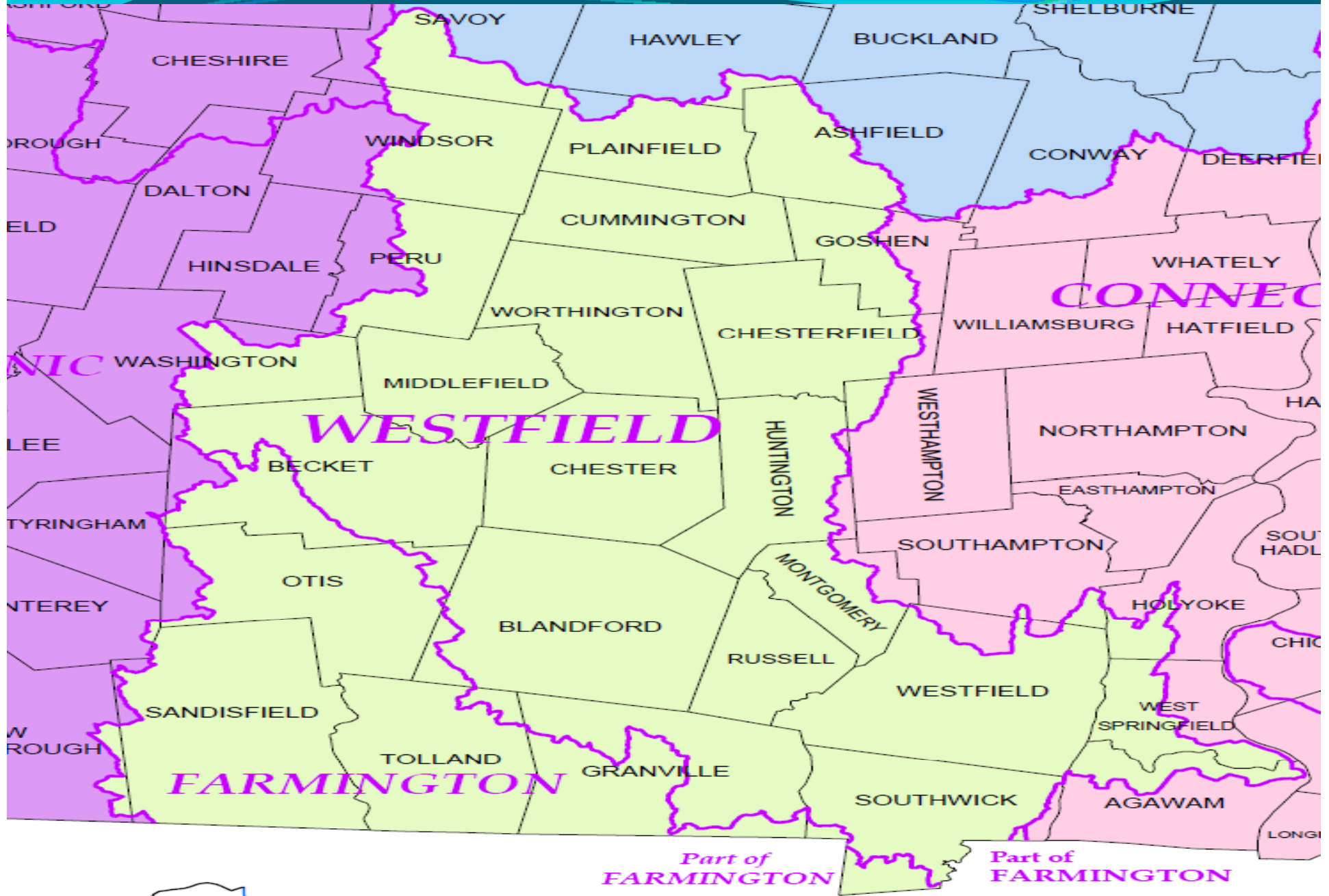
MA Executive Office of Energy and Environmental Affairs
Department of Conservation and Recreation
Department of Environmental Protection
Department of Fish and Game

Westfield Meeting

Agenda

- Introductions
- WMA Permit Renewal Process
- Westfield Basin Specifics
- Questions & Answers
- Informal Agency Consultations

Westfield Basin



Meeting Purpose- Part One

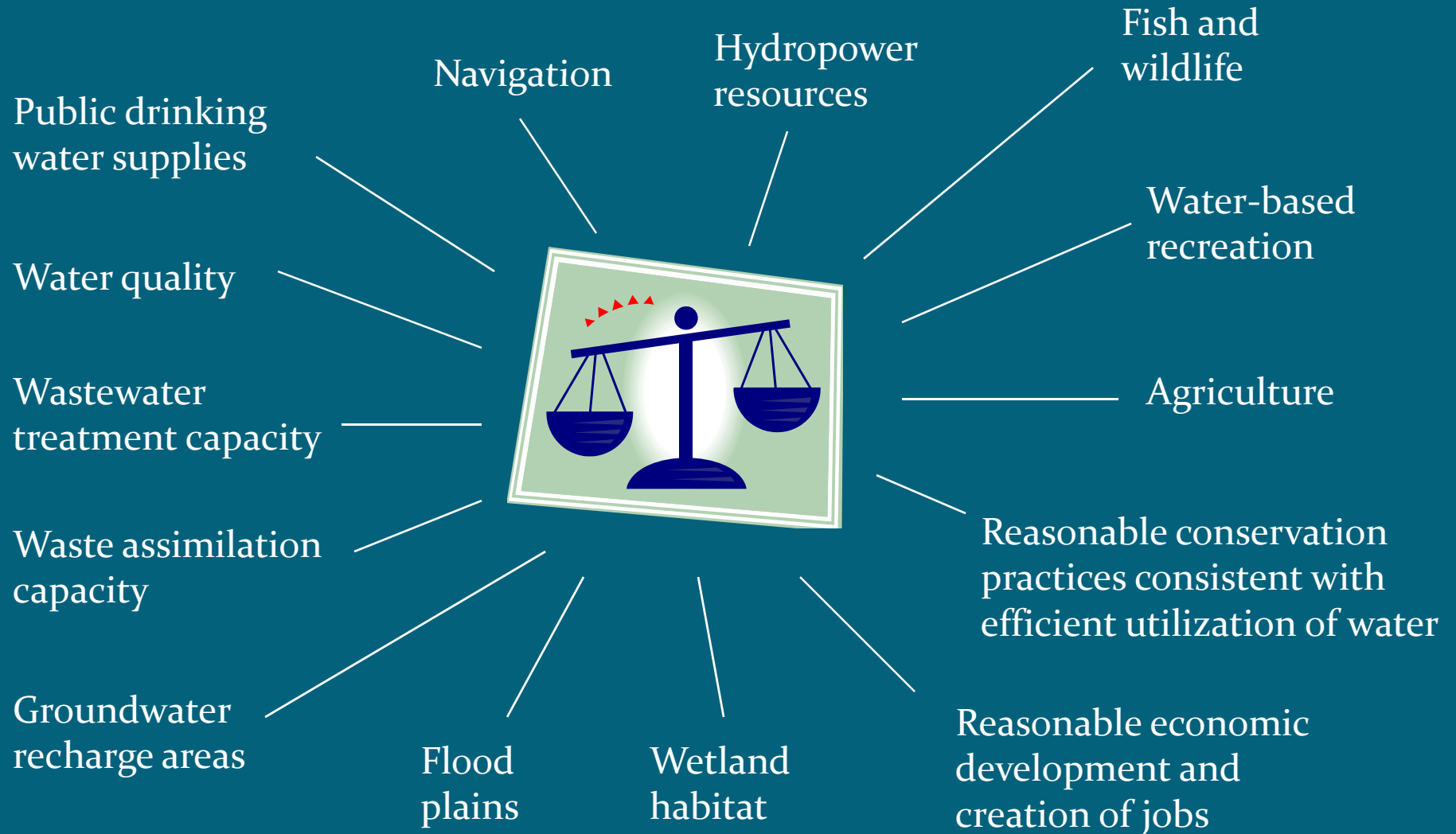
- Explain the WMA permit renewal process, including:
 - WMA Purpose
 - Permit Review Schedule
 - Water Needs Forecasts
 - Safe Yield
 - Permit Conditions
 - New Permit Requirements

Meeting Purpose- Part Two

- Review Westfield data and requirements, including:
 - Water Use
 - Baselines
 - Water Use Restrictions
 - Coldwater Fisheries Resources (CFRs) and Requirements

Water Management Act Purpose

Chapter 21G, Section 7 **Reasonable protection of ...**



Westfield Permit Renewal Schedule

Activity	Notes
Outreach meeting	September 15, 2015
Water Needs Forecast	
Consultation meetings	On going, as necessary
Renewal Application Filing Period	Sept. 30 – Nov. 30th
MassDEP issues Order to Compete (OTC)	
Applicant prepares response to OTC	
OTC response due back	
MassDEP reviews	Mtgs. as necessary
Draft permit and public comment period	
Issue final permits*	

* Permits may be appealed for up to 21 days after permit issuance. Permits under appeal are not considered final permits.

Safe Yield

55% of Annual Drought Basin Yield + **Reservoir Storage**

- New methodology* determines maximum withdrawal volumes on annual basis and major basin scale.

*For more detailed description, see the Sustainable Water Management Initiative Framework Summary (November 28, 2012)

Basin	Safe Yield	Total Annual Authorized Withdrawals*	Total Annualized Registered Volume *	2013 Reported Use
Westfield	98.9 mgd	58.07 mgd	54 mgd	40.7 mgd

* Withdrawal volume calculated based on 365 days

Water Needs Forecasts (WNF)

- Applications for WMA Permits require a forecast of water needs for the permit term
- DCR develops forecast
- WRC Method:
 - Population and Employment forecasts
 - 65/10 and Current Trends scenarios
 - + 5% Buffer
 - At least 3 years of reliable data
 - Temporary allocation where necessary
- URL: www.mass.gov/eea/wnf-method

Steps in Developing a Water Needs Forecast

- DCR compiles and analyzes data
- Public Notices: *Environmental Monitor*; status report to WRC
- DCR develops draft forecast; discussions with water supplier
- Basin-wide public meeting (this meeting)
- PWS includes forecast in WMA permit application

Data from Water Supplier

1. Water-use data based on actual metering for 3 to 5 years (from ASRs):
 - Residential
 - Industrial, Commercial, Municipal (Nonresidential)
 - Treatment plant losses (if any)
 - UAW
2. Population served by water system (including out of town and seasonal)
3. Anticipated significant changes in water use (large projects not captured in projections)

Data Obtained by DCR

Data	Sources
Current Town-wide Population	U.S. Census, Planning Office
Population Projections	Regional Planning Agency
Current Employment	Regional Planning Agency
Employment Projections	Regional Planning Agency

Permit Renewal Volumes

You can renew only as much as you currently have

- Existing Allocation vs Requested Volume
 - Existing Allocation = Your registration + permit = 2.0 mgd
 - DCR Projection = 2.30 mgd
- Up to 2.0 mgd can be done through the Permit Renewal Application
- Additional 0.3 mgd requires a new Permit Application (BRPWMO₃)
- Permit Renewal and the new Permit can be done simultaneously
or
- New Permit can be done in the future (but before water is needed)

WMA Permit Conditions

1. Efficiency Requirements

- 65 residential gallons per capita day (RGPCD)
- 10% unaccounted-for-water (UAW)
- BMPs (leak detection & repair, metering, pricing, public education etc.)

2. Seasonal limits on nonessential outdoor water use

Westfield

Nonessential Outdoor Water Use Restrictions

Non-Essential: Uses not required for health or safety reasons, by regulation, for production of food or fiber, for maintenance of livestock, or to meet the core function of a business

RGPCD for prior year	CALENDAR		STREAMFLOW		
	May 1 to Sept 30	7 day Low- Flow Trigger	Flow above ABF	Flow below ABF	7 day Low- Flow Trigger
< 65 →	7 days *	1 day *	7 days	7 days*	1 day*
>65 →	2 days *	1 day*	7 days	2 days*	1 day*

* No watering 9 am to 5 pm on any day

ABF= Aquatic Base Flow

7 Day Low Flow calculated from period of record flows from a local USGS stream gage

Surface water PWSs with a Summer Management Plan with environmental considerations approved by MassDEP may vary from above requirements

Golf Standard Conditions

All permitted golf courses will be required to:

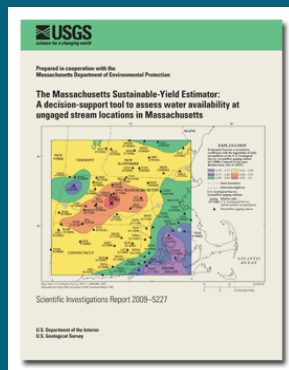
- have a conservation program that includes
 - metering,
 - irrigation system maintenance,
 - turf management, and
 - education;
- limit nonessential irrigation during drought;
- optimize withdrawals to protect cold water fisheries; and
- minimize impacts if the golf course is in a groundwater depleted subbasin.

New or expanding golf courses may also be required to:

- mitigate irrigation impacts; and
- show that there is no alternative source that is less environmentally harmful.

Science and Policy Informing WMA Permit Requirements

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



SYE



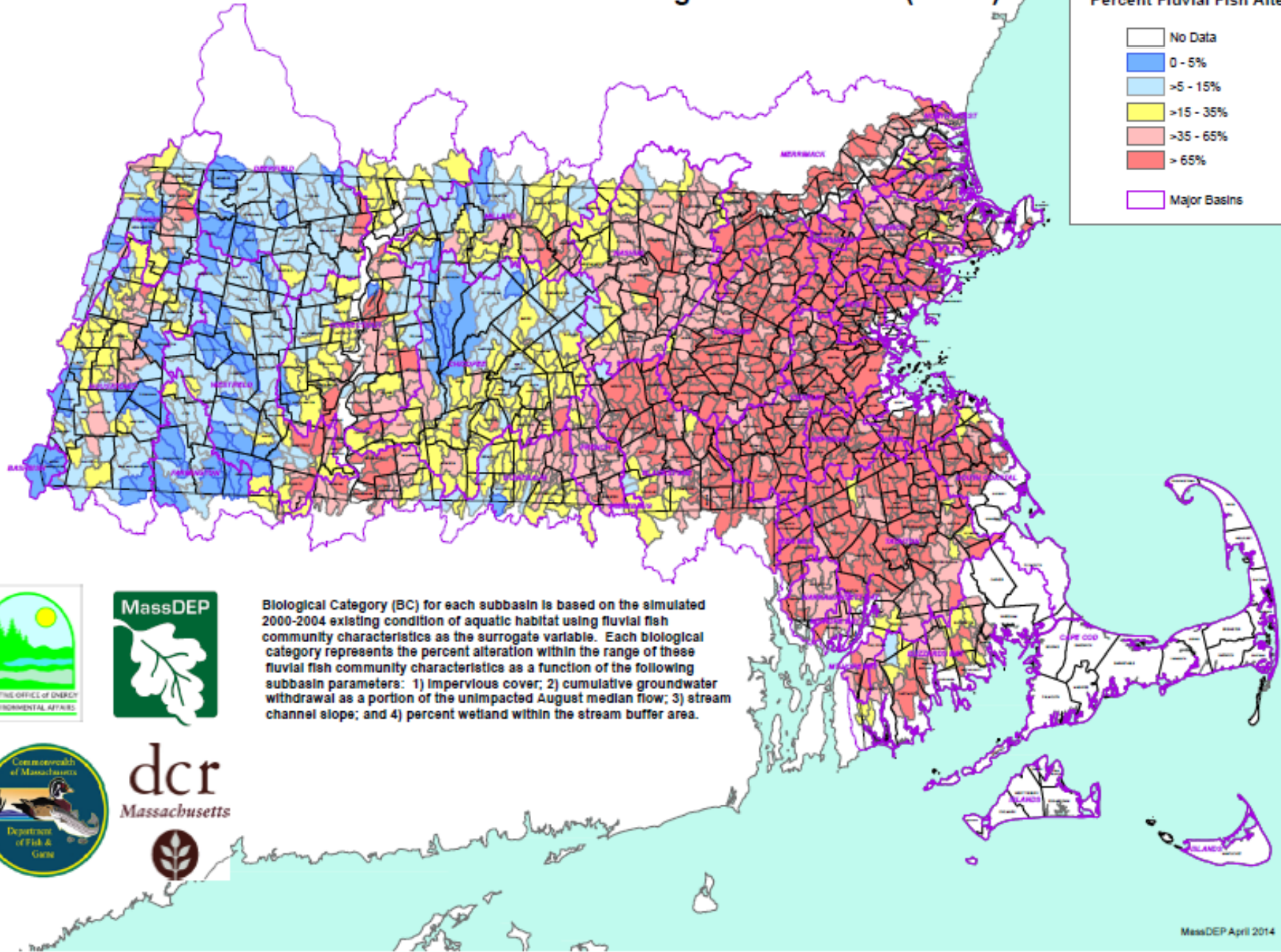
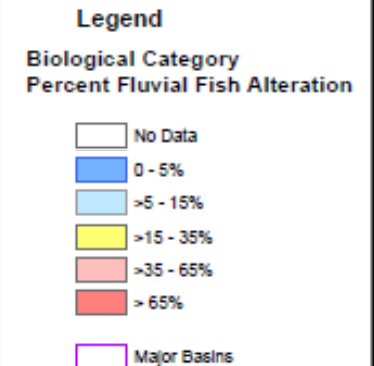
MWI



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 represent impacts
- Streamflow Criteria mark the boundaries between categories (310 CMR 36.14)

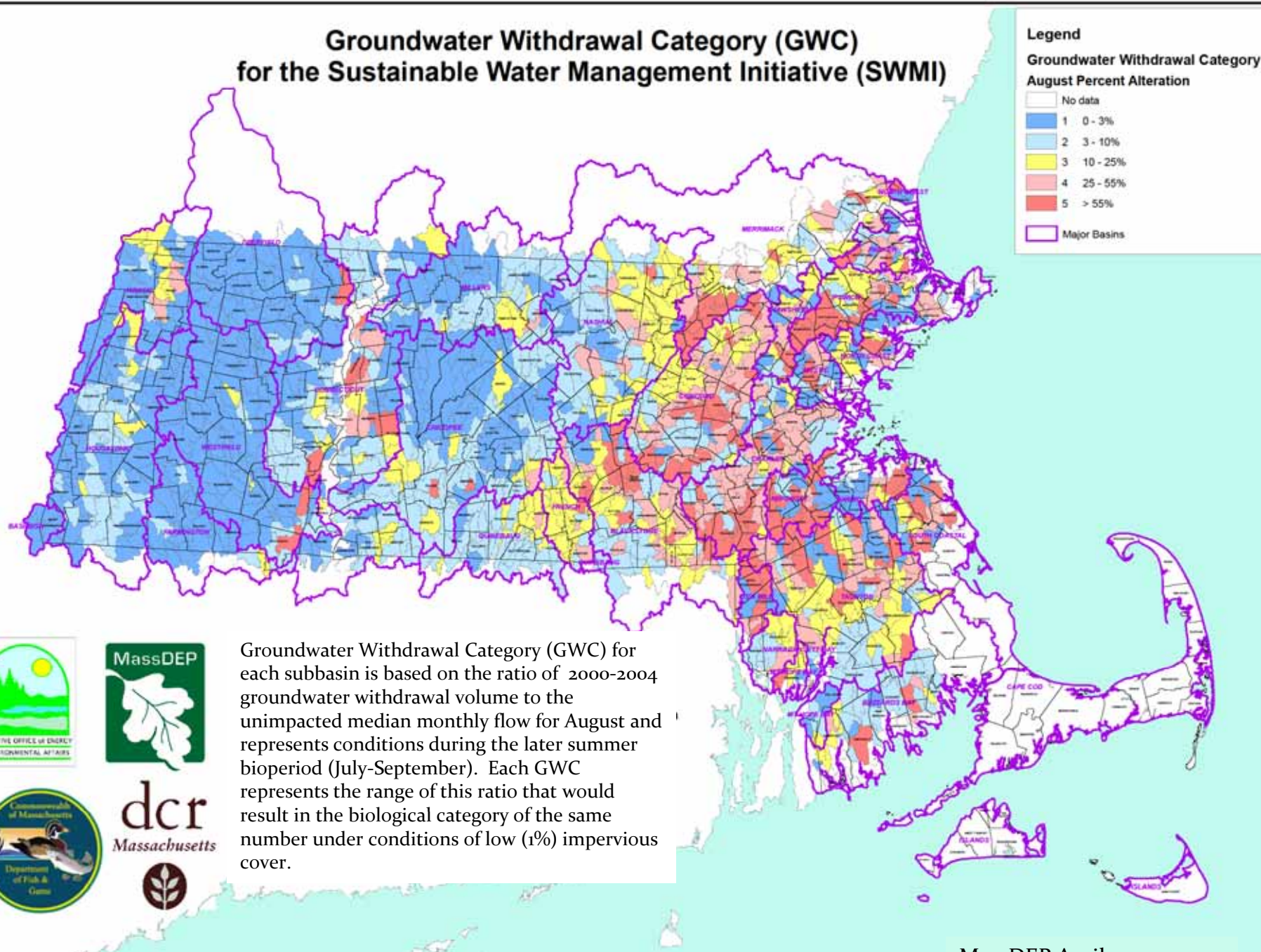
Biological Category (BC) for the Sustainable Water Management Initiative (SWMI)



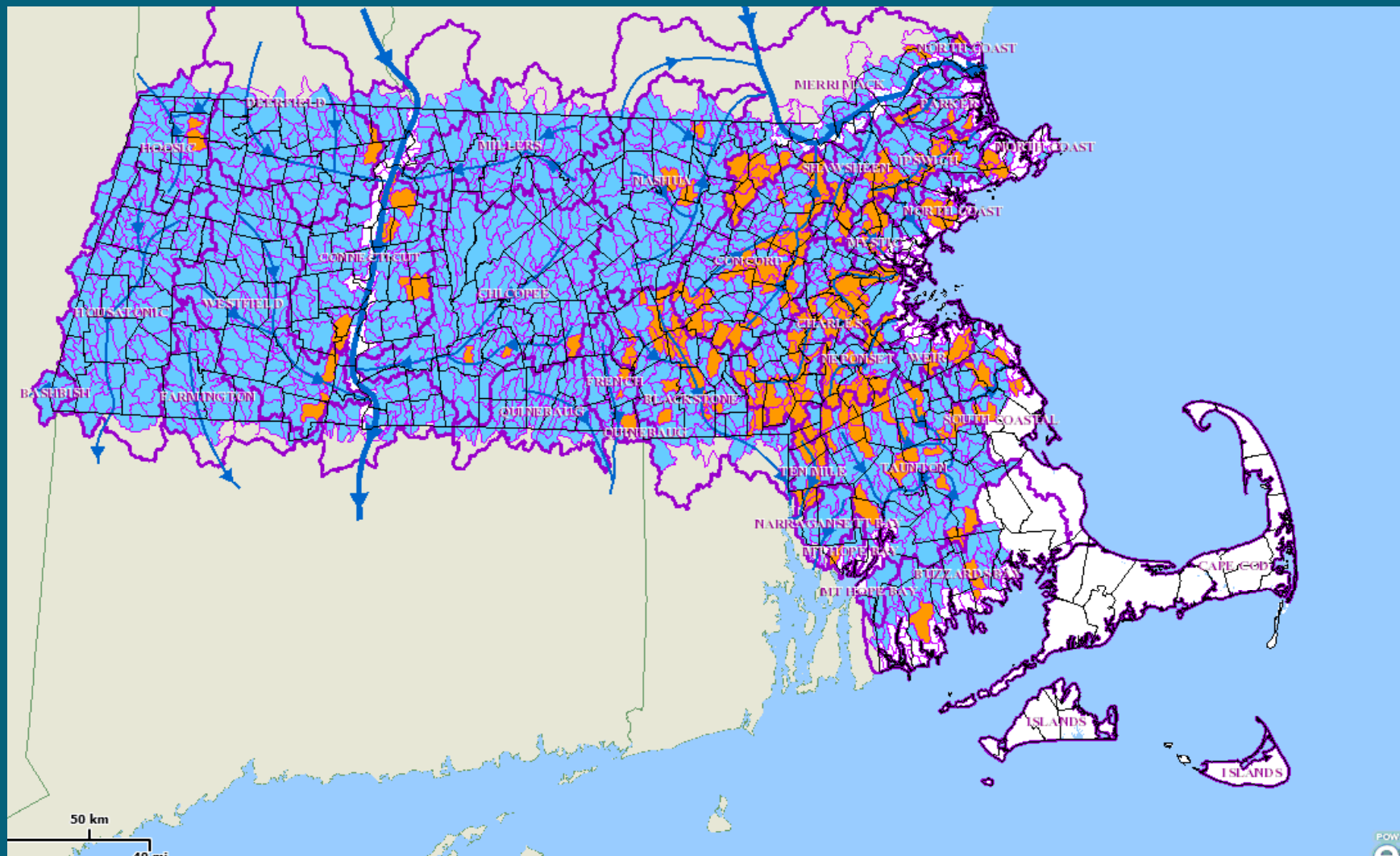
Biological Category (BC) for each subbasin is based on the simulated 2000-2004 existing condition of aquatic habitat using fluvial fish community characteristics as the surrogate variable. Each biological category represents the percent alteration within the range of these fluvial fish community characteristics as a function of the following subbasin parameters: 1) impervious cover; 2) cumulative groundwater withdrawal as a portion of the unimpacted August median flow; 3) stream channel slope; and 4) percent wetland within the stream buffer area.



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



August Net Depletion



New Permit* Requirements

- CFR Consult for withdrawals in subbasins with Coldwater Fishery Resources (CFRs)
- Minimization for groundwater withdrawals in “ $\geq 25\%$ August Net Groundwater Depleted” Subbasins
- Mitigation commensurate with impact, for requests above baseline, in consultation with agencies
- Show no feasible alternative for requests that change a category

*Those with only registrations are not subject to these requirements

Coldwater Fisheries Resource (CFR) Consult

- Basin meeting serves as the preliminary consult
- Goal: Reduce impacts to CFRs through optimization
- Optimization guidance will be provided



Minimization

Required* in subbasins that are August net groundwater depleted (NGD) by 25% or more according to MA Water Indicator Study data.

(NGD= Aug unaffected flow – Aug GW withdrawals + Aug GW returns)

Minimization Requirements (to the greatest extent feasible):

- Desktop Optimization
- Water Releases and Returns
- Additional Conservation Measures (Including more stringent outside water use restrictions)

*Permittees may avoid Minimization through:

1. Data refinement- showing August NGD is less than 25%, or
2. By conducting a Site-Specific Fish Community Assessment

Mitigation

Mitigation Standard:

- “commensurate with impact”, defined as:
 - volume of increase over baseline
 - does the increase cause a category change?
- considers cost and efficacy

Baseline is the largest of the following:

- 2003 – 2005 water use + 5%
- 2005 water use +5 %
- the community’s registered volume
- Must be in compliance with volume authorized in 2005

Permit Tiers

Tier 1 = No increase above baseline



Tier 2 = Increase but no category change



Tier 3 = Increase and category change



Mitigation Requirements

no mitigation

commensurate mitigation

commensurate mitigation

(2:1 if indirect mitigation)

show no feasible alternative

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

- Install & maintain fishway
- Culvert replacements meeting crossing standards
- Stream restoration
- Private well bylaw
- Stormwater utility, bylaw with recharge or implement MS4*
- Acquire property in Zone I or II, or for other resource protection
- Infiltration/Inflow removal program
- Remove dam

*must result in increased recharge to get credit



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 upstream from the subbasin of withdrawals (considering water quality)
- 3rd: same major basin as withdrawals
- 4th: different major basin

Take cost and
feasibility
into account

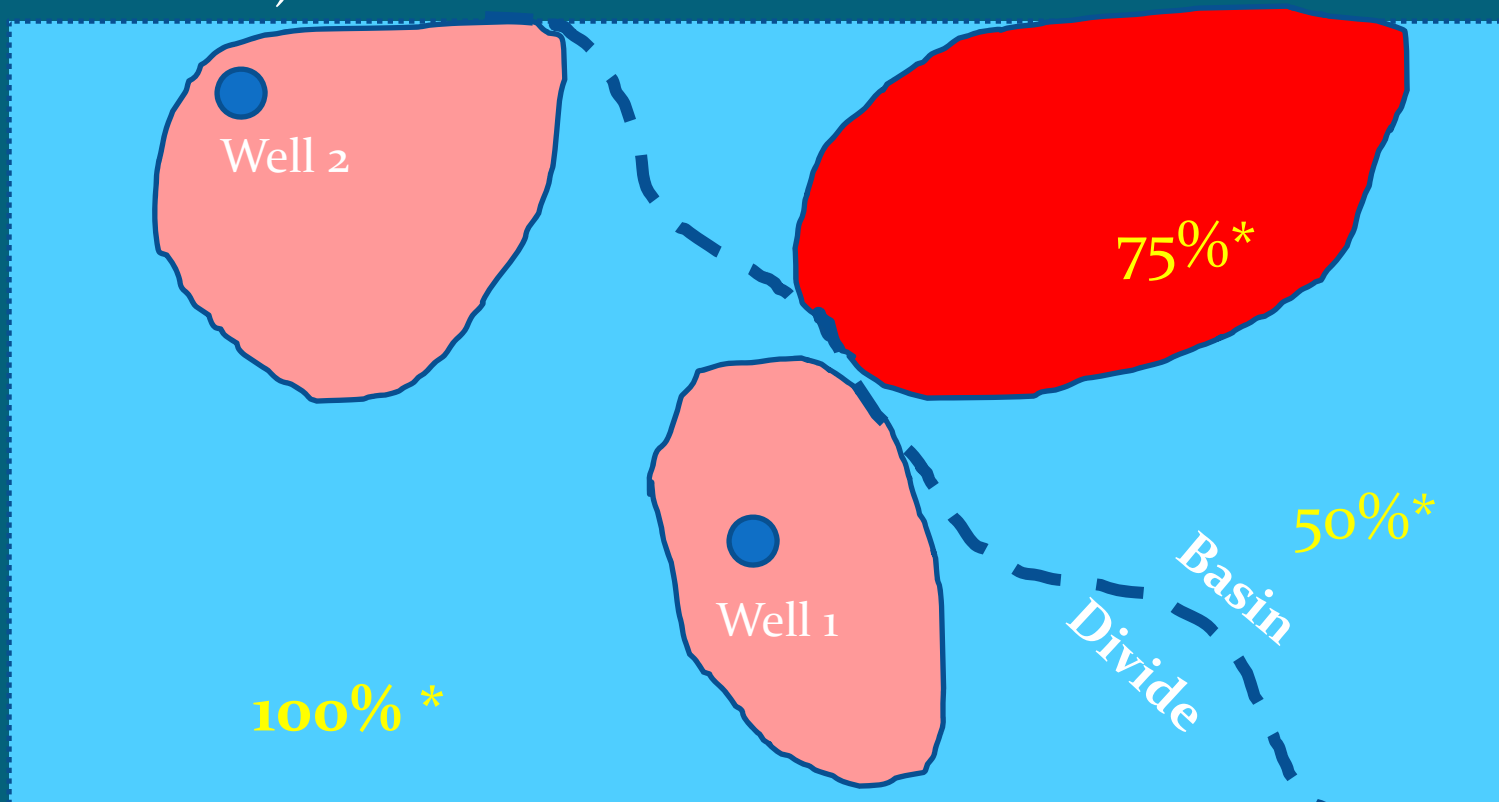
Mitigation Plan Timing

- Mitigation Plan is a live document
- Must be submitted at start of permit, can be phased-in based on use
- Retroactive credits (since 2005) 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 Adjustments

Withdrawal location(s) and wastewater returns may result in adjustments in mitigation volumes and credits

- Wastewater Adjustment (* also adjusted by consumptive use factor)
- Location Adjustment Factor



Westfield Basin Specifics

- Who withdraws & how much?
- What are my water use restriction triggers?
- Who needs to minimize?
- Who has Cold Water Fishery Resources?
- What is my baseline?
- Do I need to mitigate? Projected Tier?
- What mitigation options exist?

Community-Specific One-Page Summary Sheet

Includes 6 summary tables:

- 1) Reported Use 2009-13
- 2) Performance Standards
- 3) WNF Scenarios
- 4) Permit Data
- 5) Subbasin Data
- 6) Streamflow Triggers

example

Permit Requirements*	
CFR Consult?	Yes/no
Minimization required?	Yes/no
Estimated renewal request in mgd	1.47
Baseline (BL) in mgd	1.54
Projected increase above BL in mgd	-0.07
Estimated Permit Tier	1
Mitigation Required?	no

*includes comments to explain data sources and decisions

Total Westfield Water Use

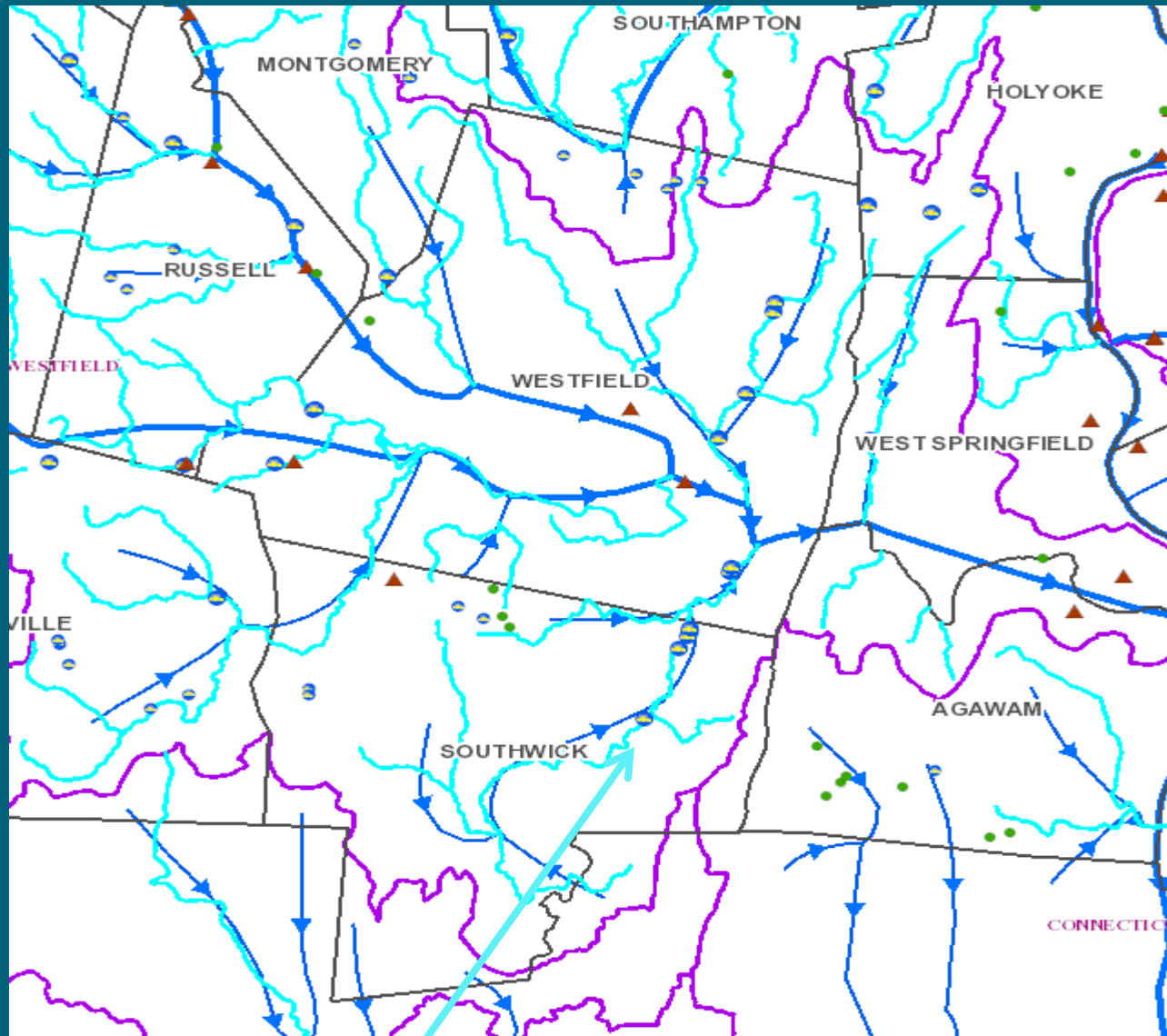
Use Type	Registered Users	Permitted Users	Registered Volumes (mgd)*	Permitted Volumes (mgd)*
PWS	7	3	51.97	2.8
INDUST	2	1	2.03	0.721
GOLF	0	1	0	0.06
COMM	0	1	0	0.49
Total	9	6	54.0	4.071

* Withdrawal volume calculated based on 365 days

Permitted Westfield Users

Name	Registration Volume (mgd)	Current Permit Volume (mgd)	Total Authorized Volume (mgd)
John S Lane & Son Inc	0	0.65	0.65
Russell Water Department	0.29	0	0.29
Southwick Water Department	0.45	0.28	0.73
Texon USA	0	0.721	0.721
The Olde Farm Golf Club LLC	0	0.146	0.146
West Springfield Water Department	3.89	2.56	6.45

Westfield Fishery Resources



CFRs are light blue



CFRs are considered a particularly sensitive receptor warranting protection.

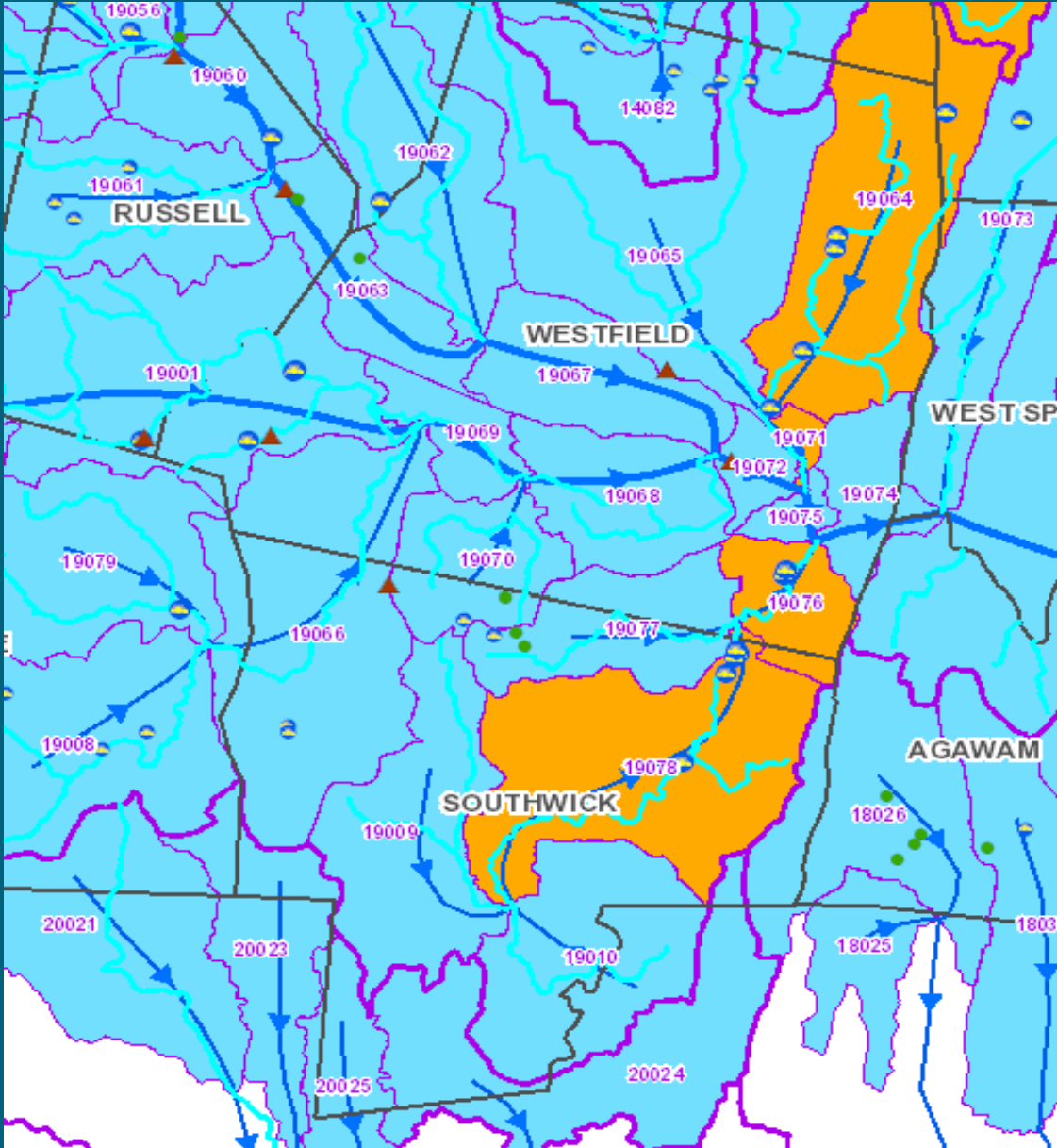
CFR Consultation required

Southwick Water Dept.

West Springfield Water Dept.

The Olde Farm Golf Club

Westfield Minimization Requirements



Permittees
West Springfield
Southwick

Westfield Baseline Volumes

Westfield Basin PWS	Baseline Volume (mgd)	Reported Pumping 2012 (mgd)	Reported Pumping 2013 (mgd)	Reported Pumping 2014 (mgd)
Russell Water Department	0.29	0.09	0.1	0.12
Southwick Water Department	0.69	0.65	0.49	0.46
West Springfield Water Department	4.45	3.8	3.54	3.6
John S Lane & Son Inc	0.45	0.26	0.28	0.25
Texon USA	0.42	0.32	0.01	Not Reported
The Olde Farm Golf Club LLC	0.05	0.01	Not Reported	Not Reported

Westfield Nonessential Water Use Triggers

Trigger	May- June Trigger Value (cfs)	July – Sept. Trigger Value (cfs)	7 Day Low Flow Trigger Value (cfs)	Permittees assigned
Westfield River near Westfield, MA	502	174	117.4	John S Lane & Son; Russell Water Department; Southwick Water Department; Texon; The Olde Farm Golf Club; West Springfield

Online SWMI Interactive Maps

- GIS map provides an interactive graphic display that includes:
 - GWC & BC
 - August Net groundwater depletion
 - Water use points
 - Cold Water Fishery Resources
 - Aquifers and more

- Map is at

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/sustainable-water-management-initiative-swmi.html>

MassDEP Permitting Tool

- Displays data and equations to determine BC, GWC, August NGD for 1400 subbasins.
- User may increase or decrease water use and see resulting change in above values.
- Two main views:
 - PWS information includes: recent usage, baseline volumes, projected usage, sources, and other users
 - Subbasin information includes: cumulative area, % of impervious cover, streamflow values, etc.

MassDEP Permitting Tool

Find by Subbasin ID: Find by PWS System Name:
Find by PWSID: Find PWS by Town Name:

Click to use pull
downs and to View
All Subbasins

All Water Use
Points in Subbasin
Report

Calculation Tool
Report

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 water use volumes

Subbasin Characteristics

Sub Basin ID: **19078** Major Basin: **Westfield** HUC12 Name: **Great Brook**

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): 19.10	Ground Water Discharge: 0.000	PWS and Commercial Wells: 4.711	To Change GWC (mgd): 0.000
Impervious Cover (%): 7.7	Septic Systems: + 0.327	Private Wells: + 0.132	To Change BC (mgd): 0
Surface water withdrawals exist in or upstream of subbasin: NO	Total Subsurface Discharge: - 0.327	Total Groundwater Withdrawals: - 4.843	
	Surface Water (NPDES): 0.000		

Individual Subbasin Data (only includes this subbasin)

Net Groundwater Depletion (NGD)

Coldwater Fisheries Resource Exist: Yes

Net Groundwater Depletion (%): 114.0

Positive value indicates depleted.
Negative value indicates surcharged.

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	
Unaffected Streamflow (mgd)*		Change (+/-) to existing GW Withdrawal (mgd)		0	
3.962		Unaffected Streamflow (mgd)		3.962	
GW Withdrawals (mgd)**		Proposed Total GW Withdrawal (mgd)		- 4.843	
- 4.843		(Unaffected Streamflow) - (Prop. GW Withdrawal)		= -0.880	
(Unaffected Streamflow) - (GW Withdrawals)		(Proposed GW Withdrawal) / (Unaffected Streamflow)		= 122.2%	
= -0.880		Proposed Groundwater Withdrawal Category (1-5)		5	
(GW Withdrawals) / (Unaffected Streamflow)		Proposed Biologic Category (1-5)		5	
= 122.2%				0.0% Percent Difference	
Groundwater Withdrawal Category (1-5) GWC: 5				NO Change in GWC?	
Biologic Category (1-5) BC: 5				NO Change in BC?	

USGS report SIR 2009-5272 ("Mass. Indicators") describes subbasin delineation, streamflow simulation, and water withdrawal and discharge volume calculations.

* August unaffected streamflow = median August streamflow simulated using 1960-2004 USGS records of measured daily streamflow.

Streamflow simulated for pour point of subbasin and includes streamflow from all upstream subbasins.

** GW Withdrawals = 2000 to 2004 average August pumping from PWS and commercial wells; private well volumes estimated from U.S. Census data.

mgd = million gallons per day

Groundwater Withdrawal Category (GWC) is the ratio of GW Pumping to Unaffected Streamflow (in percent) in the following ranges:

GWC1 (0 to <3%); GWC2 (3 to <10%); GWC3 (10 to <25%); GWC4 (25 to <55%); GWC5 (55% or greater)

Biologic Category (BC) is the estimated biological condition based on streamflow, impervious cover and natural basin characteristics.

The Biological Categories represent the estimated percent loss in the relative abundance of fluvial fish in the following ranges:

BC1 (0 to <5%); BC2 (5 to <15%); BC3 (15 to <35%); BC4 (35 to <65%); BC5 (65% or greater)

Net Groundwater Depletion (NGD)(%) is the percent change in August unaffected stream flow due to groundwater withdrawals (increases depletion) and groundwater

Summary Info for Westfield Permits

Westfield Permits	Current Allocation (MGD)	DCR Forecast (MGD)	Potential Ask (MGD)
Russell Water Department	0.29	Not applicable	0.29
Southwick Water Department	0.73	Interim Allocation	0.73
West Springfield Water Department	6.71	3.96	6.71
John S Lane & Son Inc	0.65	Not applicable	0.65
Texon USA	0.721	Not applicable	0.42
The Olde Farm Golf Club LLC	0.146	Not applicable	0.146

Summary Info for Westfield Permits

Westfield Permits	CFR Consult	Minimization required	Projected Permit Tier	Alternative analysis
Russell Water Department	No* (only registered source near CFR)	No	1	No
Southwick Water Department	Yes	Yes	2	No
West Springfield Water Department	Yes	Yes	1	No
John S. Lane & Sons Inc.	No	No	1	No
Texon USA	No	No	2	No
Olde Farm Golf Course	Yes	No	2 or 3	?

* CFR Present but consultation with DFG will not be required

Westfield Permit Reviews

Westfield Permit Holder	DEP Review	DCR Review
Russell Water Department	Kim Longridge	-
Southwick Water Department	Jim Bumgardner	Erin Graham
West Springfield Water Department	Kim Longridge	Marilyn McCrory
John S Lane & Son Inc	Jim Bumgardner	-
Texon USA	Jim Bumgardner	-
The Olde Farm Golf Club LLC	Kim Longridge	-

DEP Reviewers

Name	Email	Phone #
Kimberly Longridge	kimberly.longridge@state.ma.us	413-755-2215
James Bumgardner	james.bumgardner@state.ma.us	413-755-2270

DCR Reviewers

Name	Email	Phone #
Erin Graham	Erin.graham@state.ma.us	617-626-1426
Marilyn McCrory	Marilyn.mccrory@state.ma.us	617-626-1423

WMA Regulations and Permit Assistance

- Regulation (**Promulgated November 7, 2014**) and Policy Development (**Ongoing**)
- Permit application forms and worksheets
- Financial assistance (Annual Grant Program)
 - Eligible planning projects:
 - Optimization
 - Outdoor water use restrictions
 - Implementation of reasonable water conservation
 - NEWWA and MWWA Toolbox of BMPs
 - Eligible implementation projects:
 - Demand management (water audits, soil moisture sensors etc..)
 - Mitigation projects designed to improve flow impacts
ex. dam removal, culvert replacement, etc.

Further information

- MassDEP Technical Resources webpage at:
<http://www.mass.gov/eea/waste-mgmt-recycling/water-resources/preserving-water-resources/sustainable-water-management/>
- MassDEP SWMI webpage at:
<http://www.mass.gov/dep/water/resources/swmi.htm>
- Massachusetts Sustainable Water Management Initiative (SWMI), Framework Summary, November 28, 2012 at :
<http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf>

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