

EPA Regional Perspective

- Phosphorus problem is big and significant
 - Most impairments nationally and regionally
 - Can ruin uses, including recreation, create health problems from algal blooms, harm aquatic life
- EPA is helping States and municipalities address nutrient pollution
 - Nonpoint Source Program
 - Creating Tools, aiming for low cost, efficient solutions
 - Spreading success stories and information
- Reducing nutrients has multiple benefits

UNH Stormwater Center BMP project

- Working with UNHSC to design BMPs to optimize removal of nitrogen and phosphorus in stormwater
- Partnership with town which contributed materials and labor
- Relatively low cost

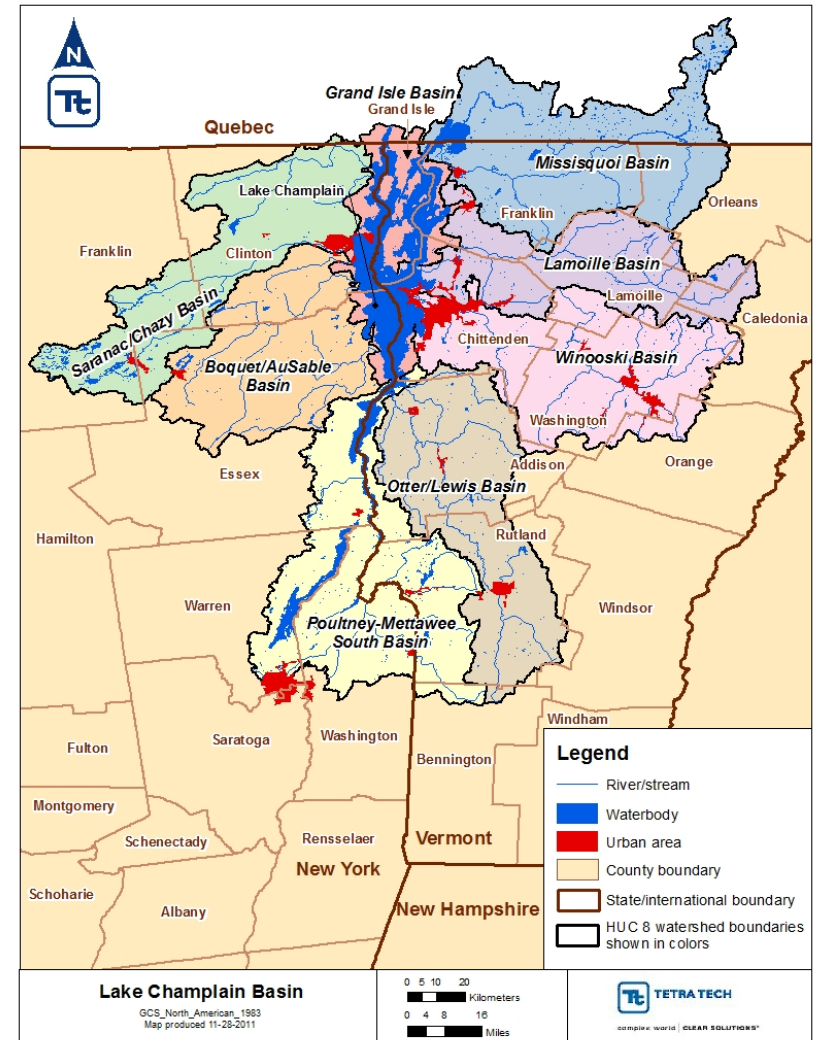


Lake Champlain Phosphorus TMDLs

- **2002** Lake Champlain Phosphorus TMDL approved (VT&NY)
- **2008** Conservation Law Foundation (CLF) Litigation and eventual Settlement Agreement
- **2011** EPA disapproval of VT portion and initiation of TMDL revision
 - margin of safety—*insufficient*
 - reasonable assurance that load reductions would occur—*insufficient*
- Estimate potential phosphorus reductions from implementation of management practices (to support more robust reasonable assurance)
- Support development of implementation plans, milestones, and backstops
- Set up system to track progress

P Reduction Scenario Tool

- Framework for exploring implementation scenarios across sources (and models), & will support:
- Allocation process and reasonable assurance evaluation
- Initial implementation plans with targeting to critical source areas, e.g., highly erosive soils, backroads, impervious surface over A & B soils
- Scenario cost comparisons
- Quantification of reductions assoc. with milestones & backstops (part of reasonable assurance package)

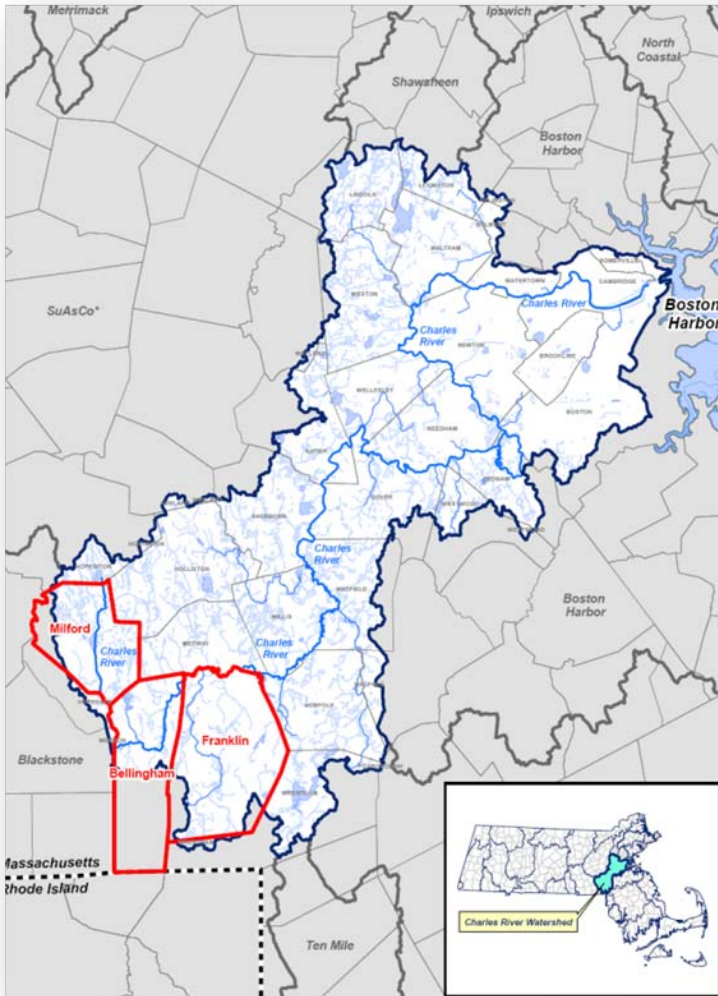


Tracking and Accounting System

- EPA will be developing together with end users
- To be linked to the Scenario Tool
- Will track progress by work completed in each HUC-12, and aggregated by tributary watershed
- Will track both BMPs and capacity building
- In addition to P decreases, will seek to track P increases through land use change, certain new construction categories, etc.
- Will likely be web-based to facilitate ease of data input from multiple users



Moving From a TMDL to Permit Limits and a Cost Analysis for Implementing Stormwater Phosphorus Reductions



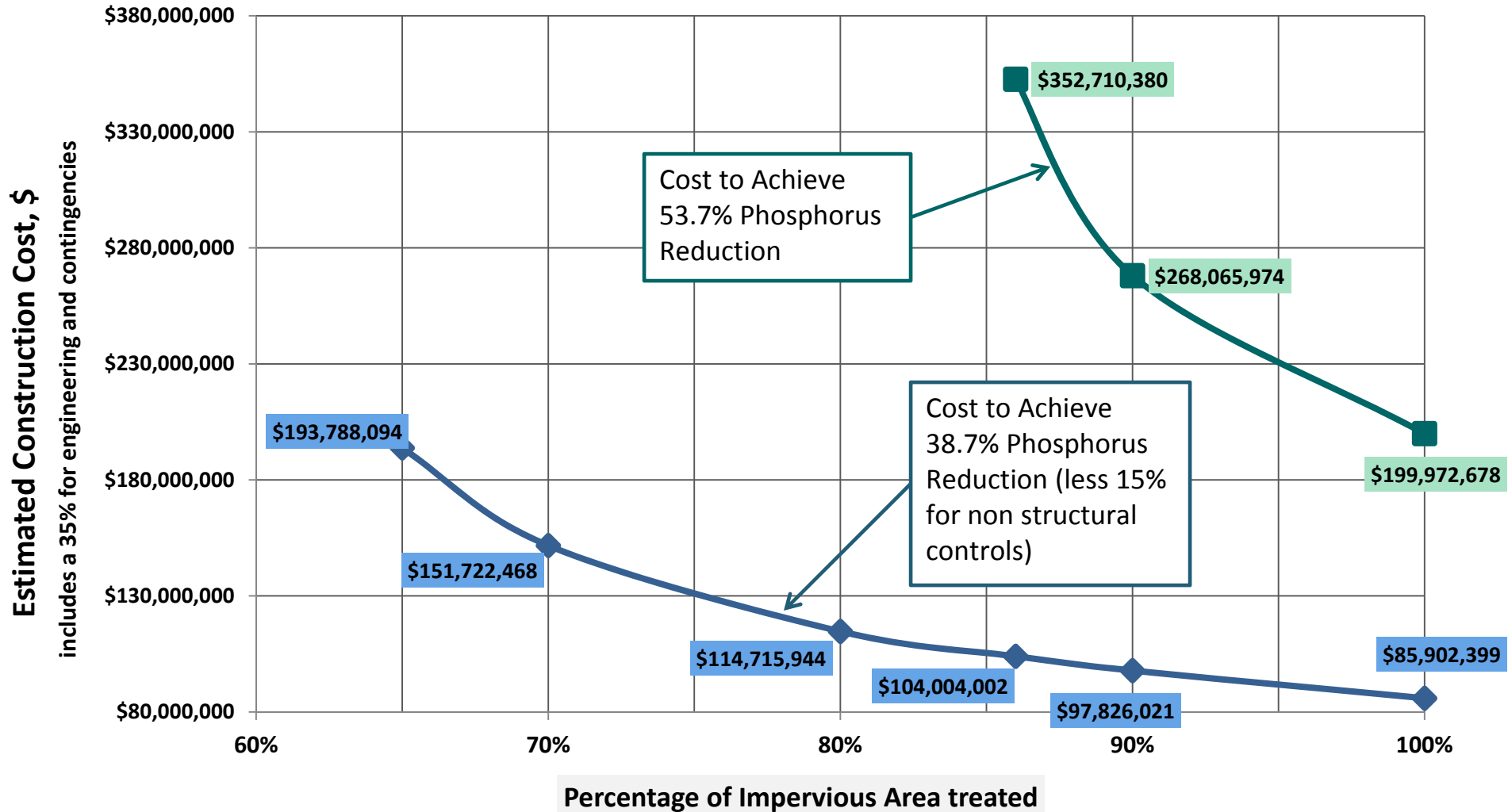
Case Study:

3 Towns in the Charles River Watershed

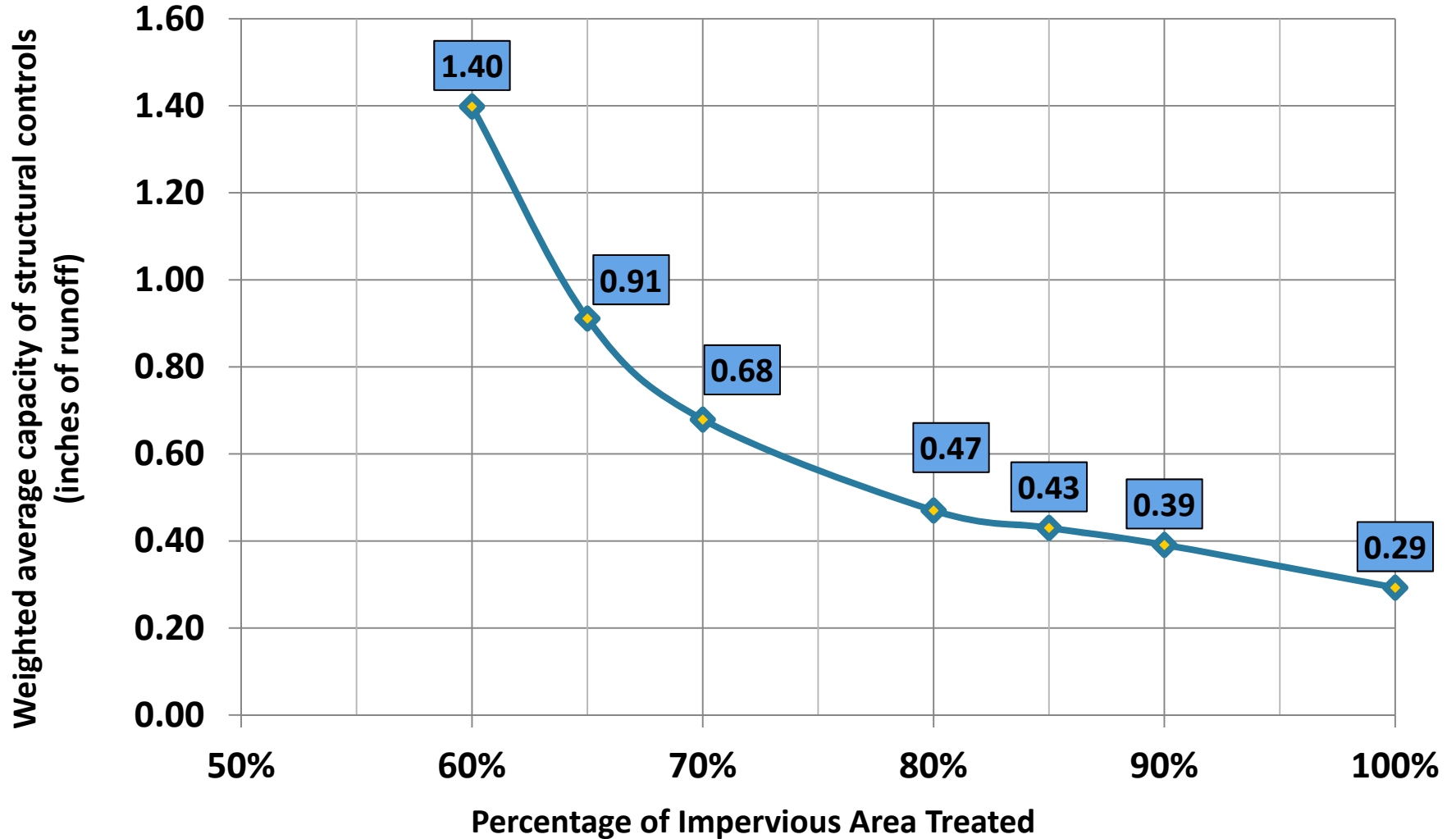
- ❑ Phosphorus TMDL Requires overall 48% reduction of Phosphorus from stormwater loads
- ❑ Phosphorus Loading reduction requirements for 3 Upper Charles Communities:
 - Bellingham: 52%
 - Franklin: 52%
 - Milford: 57%

Estimated Construction Costs to Achieve Phosphorus Load Reductions Based on Impervious Area Treated

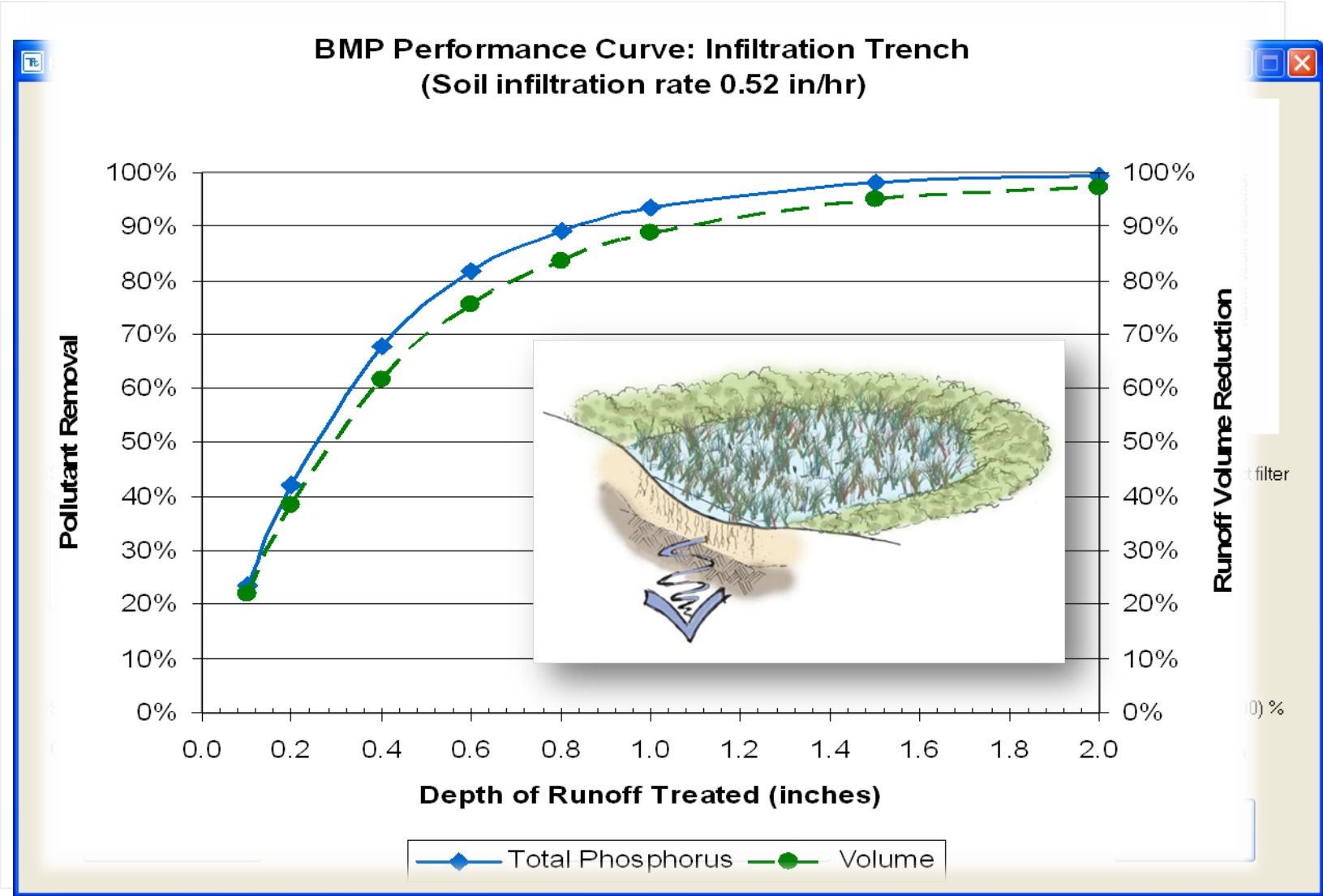
Millford, Bellingham and Franklin MA



Average Capacity Of Structural Controls Needed To Achieve Phosphorus Load Reduction Based On The Treatment Of Varying Amounts Of Impervious Area



Why Do Smaller Sized BMPs Make Sense In New England?



Demonstrate Nutrient Reductions Through Tracking

Wbk3_Structural_2011-09-19.xls [Compatibility Mode] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Acrobat

Normal Page Layout Page Break Preview Custom Views Full Screen

Workbook Views Show/Hide

Gridlines Headings

Zoom 100% Zoom to Selection

New Window Arrange All Freeze Panes

Split Hide

View Side by Side Synchronous Scrolling Reset Window Position

Save Switch Workspace Windows

Macros

B1 DRAFT

BMP Effectiveness		Water Quality Depth			Reference 1			
BMP type		0.25"	0.5"	1.0"	Effectiveness	Source	WQD	
Infiltration BMPs (no underdrain)	Infiltration basin / raingarden / bioretention areas	60%	80%	95%	61%	TetraTech	0.25"	B
	Infiltrating water quality swale	60%	80%	95%	75%	Mid-Atlantic Water Program	1.0"	
	Infiltration trench / subsurface retention	50%	75%	90%	48%	TetraTech	0.25"	B
	Porous pavement	50%	75%	90%	80%	Mid-Atlantic Water Program	1.0"	A/E
Biofiltration BMPs (with underdrain)	Raingarden / biofiltration	40%	60%	75%	38%	TetraTech	0.25"	
	Dry water quality swale	40%	60%	75%	83%	CWP Database 2000	N/A	Media
Other filtration BMPs (with underdrain)	Tree box filters	35%	45%	60%	9% to 70%	Filterra 2010	N/A	S
	Sand filter	35%	45%	60%	60%	Mid-Atlantic Water Program	1.0"	
	Organic filter	35%	45%	60%	60%	Mid-Atlantic Water Program	1.0"	
	Manufactured media filter	35%	45%	60%	60%	Mid-Atlantic Water Program	1.0"	
	Porous pavement	35%	45%	60%	62%	TetraTech		
Constructed stormwater wetlands	Gravel wetland	30%	45%	60%	30%	TetraTech	0.25"	
	Shallow marsh	25%	40%	55%	45%	Mid-Atlantic Water Program	N/A	
	Basin / wetland	25%	40%	55%	45%	Mid-Atlantic Water Program	N/A	
	Extended detention wetland	25%	40%	55%	45%	Mid-Atlantic Water Program	N/A	
	Pocket wetland	25%	40%	55%	45%	Mid-Atlantic Water Program	N/A	
	Wet water quality swale	20%	25%	30%	28%	CWP Database 2001	N/A	Media

Summary Infiltration Biofiltration Other Filtration SW Wetlands Detention RW Harvesting BMP Effectiveness Conversions and Coefficients

Ready 110%