Public Meeting – May 12, 2010
Draft Storm Water General Permit for Residually Designated Discharges

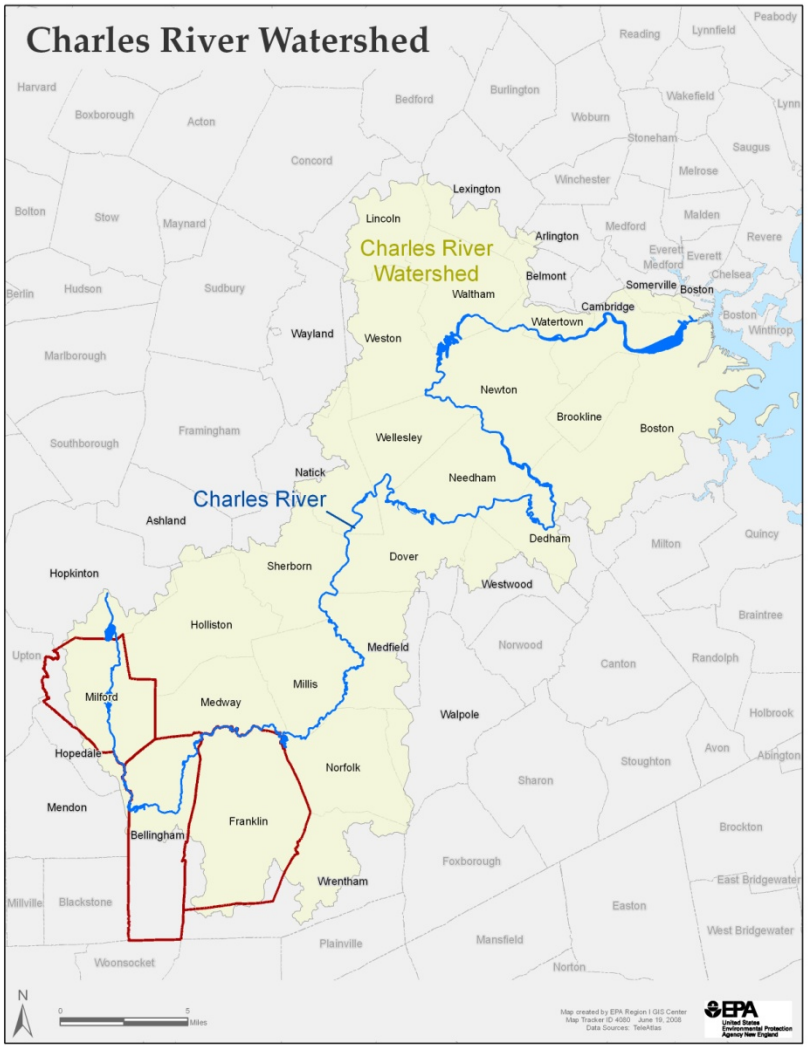
PLEASE SIGN IN

Milford Pond : Brian Brodeur, 2009

USEPA Public Meeting – May 12, 2010
Draft Storm Water General Permit for Residually Designated Discharges

- Introductions
- Background and water quality problem in the Charles River
  - Storm water pollution and impervious surfaces
  - Solution for correcting water quality problem
- Overall Regulatory framework for permit
- Draft permit requirements
- Assistance

Charles River Watershed



- Charles River Watershed
  - ~310 square miles
  - 35 communities
  - Flows from Hopkinton to Boston harbor

Charles River Water Quality

Charles River

Milford, Bellingham & Franklin

CharlesRiverWatershed

Municipal Boundaries

N

0 5 Miles

Map produced by the EPA Region 1 GIS Center
Data Sources: TeleAtlas, MassGIS
Map Tracker ID 2870
December 10, 2007

Echo Lake Dam

S. Natick Dam

Milford Pond

Lower Charles River

W. Medway Dam

Cochrane Dam

Mainstem - Charles River

Populatic Pond

Mainstem Charles River

Charles River Headwaters
Echo Lake, Hopkinton, MA

Milford

Staff photo by John Wilcox

Charles River at Milford Pond, Milford, MA

Attached Algae in Charles River, Franklin and Medway, MA

Charles River - West Medway Dam

Charles River -Populatic Pond

Floating Scum in Charles River at Cochrane Dam, Dover, MA

Blue Green Bloom – Lower Charles River, Boston, MA

Warning Posted Lower Charles River, Boston, MA August 2006 (provided by CRWA)

Summary – Adverse Water Quality Impacts on Recreation and Aquatic Life

EXCESSIVE

→

PHOSPHORUS

- Reduced clarity
- Noxious scums
- Toxic blooms
- Surface waters choked with plant matter
- Low dissolved oxygen for aquatic life (e.g., fish)
- Slippery (dangerous) cobbles and boulders

Sources of Phosphorus in Developed Watersheds

- Atmospheric Deposition
  - Power plant, industrial and vehicle emissions
    - Dry fall
    - Wet fall (via precipitation)
- Organic debris (e.g., leaf litter, grass clippings, etc)
- Vehicle emissions
- Fertilizers
- Soil particles

Phosphorus Sources

Source: Nevue Ngan Assoc.

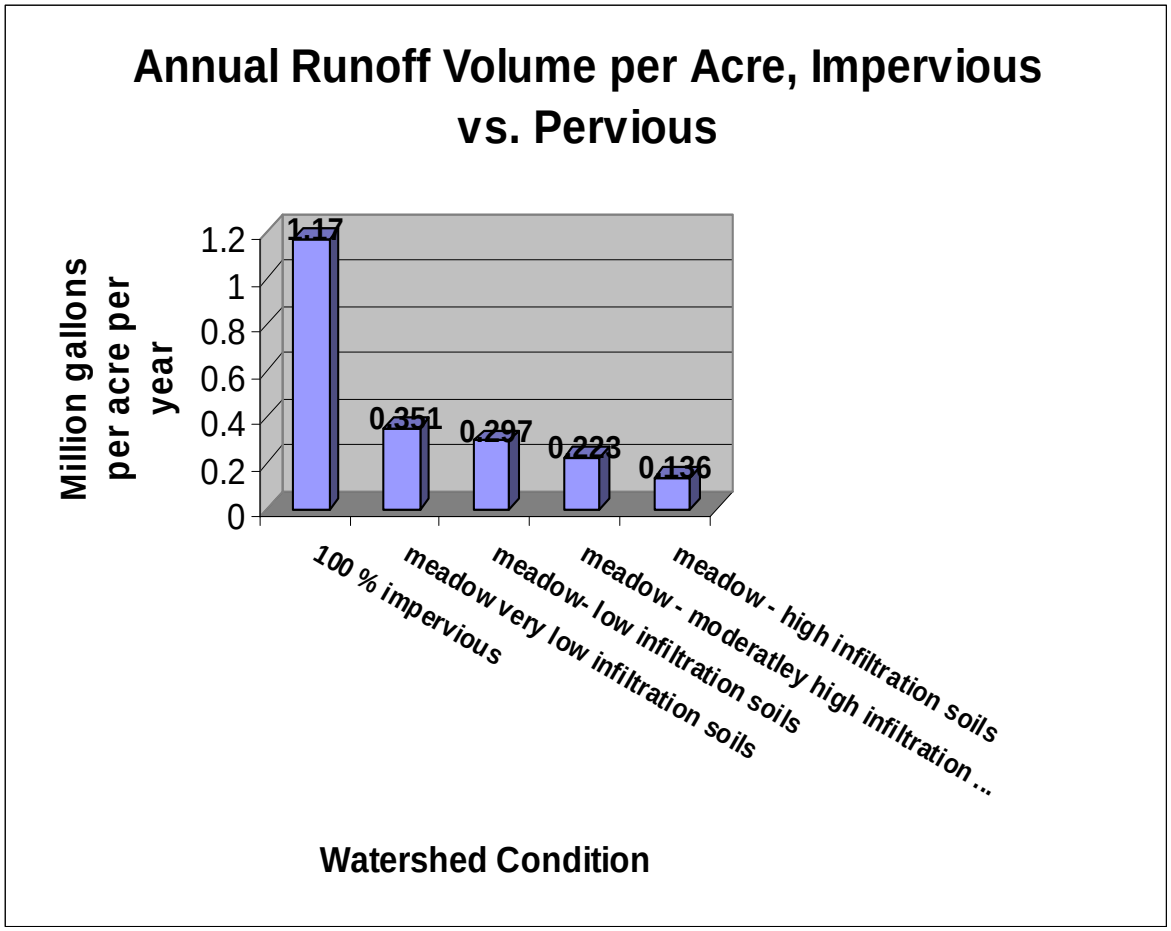
Phosphorus Sources

Source: Nevue Ngan Assoc.

Sources of Phosphorus to Impervious Surfaces

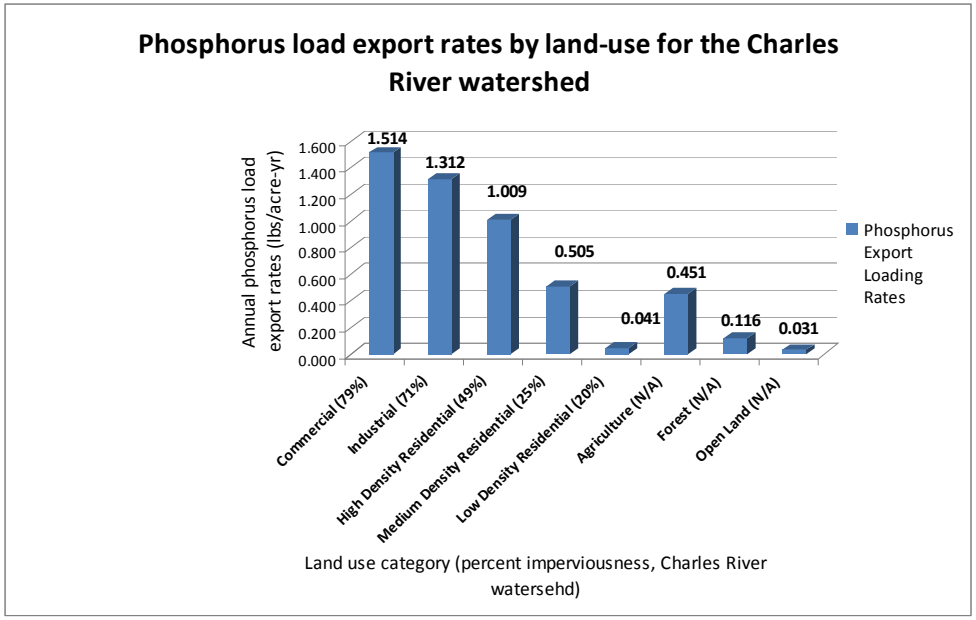
- Atmospheric depositions (dry and wet fall)
- Vehicle emissions
- Wind blown transport of organic debris, dust and dirt particles
- “Wash On” of soil, dust dirt, and plant matter from surrounding pervious vegetated areas
- Sand and salt applications for de-icing

Increase in Runoff Volume due to Impervious Cover



- Impervious surfaces increase annual runoff volume by 3 to 8 times when compared to un-compacted vegetated pervious surfaces

Annual Phosphorus Load Export Rates by Land-use Category

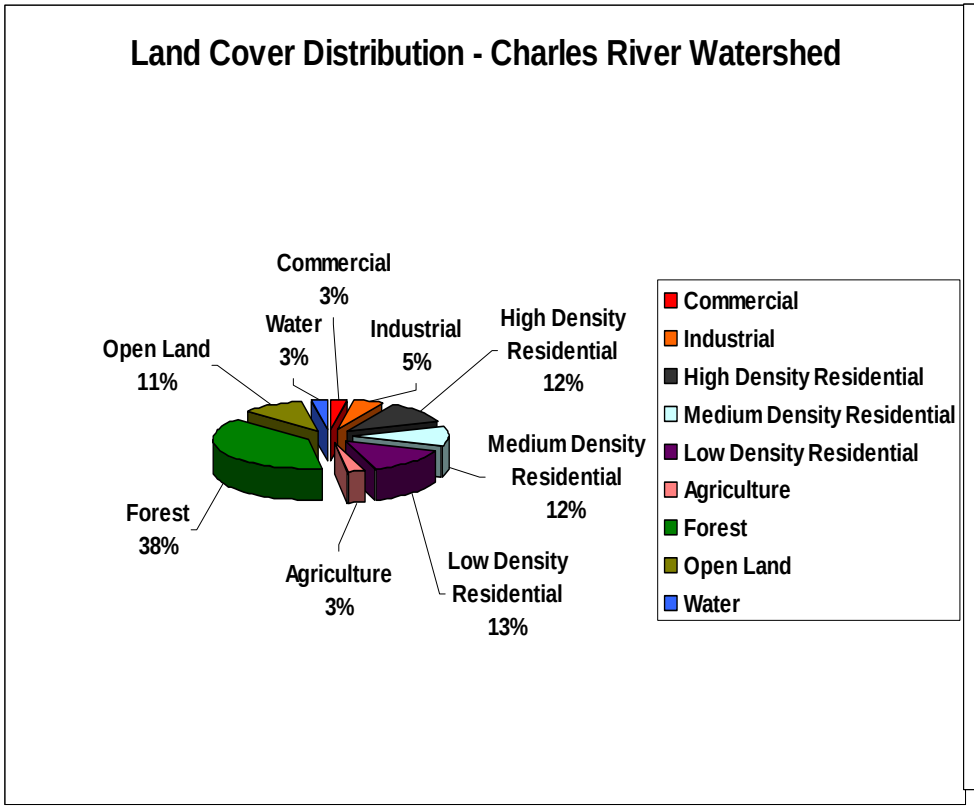


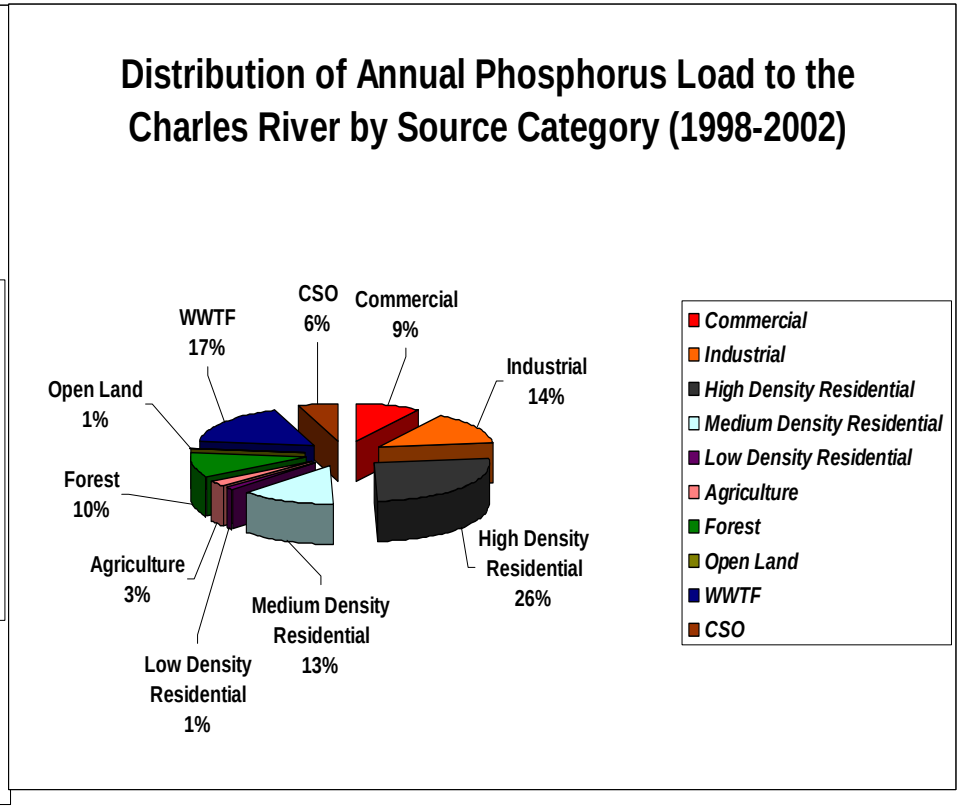
- More imperviousness=more phosphorus in stormwater

Environmental Solution to Excessive Plant Growth in the Charles River

- Major Study established a phosphorus Total Maximum Daily Load (TMDL) for the Lower Charles
- TMDL established how much phosphorus ("load") the Lower Charles can receive without problems
- divided the load among contributing sources

Distribution of Land-Use Cover and Associated Annual Phosphorus Load Charles River Watershed





Charles River Watershed TMDL Phosphorus Reductions by Source Category

Land Cover/Source Category	Area (square miles)	1998-2002 phosphorus Loading (kg/yr)	TMDL phosphorus Loading (kg/yr)	Percent Load Reduction
Commercial	8.36	3,676	1,286	65%
Industrial	15.01	5,718	1,972	65%
High Density Residential	35.62	10,437	3,600	65%
Medium Density Residential	36.00	5,278	1,820	65%
Low Density Residential	42.73	503	276	45%
Agriculture	7.96	1,042	672	35%
Forest	119.09	4,018	4,018	0%
Open Land	32.52	289	187	35%
WWTF	-	6,825	4,663	32%
CSO	-	2,263	901	96%
Total	**297.20**	**40,050**	**18,565**	**53.6%**

Summary - Lower Charles River Phosphorus TMDL Land Cover Phosphorus Loading and Reduction Assessment

TMDL Outlines ~ 54% reduction in Phosphorus Loading from the Entire Watershed which requires:

65% reduction in P for land use areas with high percentages of impervious cover including:

- **Commercial,**
- **Industrial**
- **High and medium density residential**

Clean Water Act

- Passed: 1972
- Purpose: restore Nation's waters
- Goal: fishable swimmable water
- Approach to goal: regulate discharges of pollutants to waters of the U.S. through permits
- Permit must assure compliance with minimum standards (State Water Quality Standards)

CWA Requires:

- State sets water quality standards

  State periodically identifies waters that do not meet minimum standards
- For those waters not meeting standards, state develops a “TMDL”
- TMDL establishes necessary pollutant reductions to meet standards
- All subsequent permits must meet those reductions

State sets Minimum Standards

- For Charles, relevant standards are:

  Dissolved Oxygen

  pH

  Solids

  Color and Turbidity

  Aesthetics

  Nutrients

Minimum Standards not Met

- Aquatic habitat is being damaged
- Recreational use of River is limited
- Toxic algae health threat

State Findings on Standards

- State listed Charles in 2002, 2004, 2006, 2008 as violating minimum standards
- Stormwater was a major source of pollutants causing impairments

Lower Charles Phosphorus TMDL

- State's TMDL for lower Charles approved by EPA on October 17, 2007
- TMDL called for reduction in phosphorus from numerous sources
- Combined Sewer Overflows
- Wastewater treatment plants
- Municipal storm water systems
- For commercial, industrial and high density residential, 65% reduction required

Stormwater Permits under CWA

- Congress amends Clean Water Act in 1987 to address Stormwater
- Permits required for

  1. discharges from municipalities,

  2. discharges from industrial activities,

  3. discharges from construction sites

  4. discharges from sources with “localized adverse impact” through residual designation”

Why Regulate Stormwater

- CWA addressed worst sources first
- Industrial process wastewater and municipal sewage regulated first
- Water quality still impaired in many places
- Urban stormwater determined to be a major factor in water pollution

Storm water is a big problem

- Approx. 60% of waters in Mass. are impaired by pollutants carried in storm water

Residual Designation Authority to address localized problems

- EPA may designate as needing permits:

  - Discharges causing or contributing to water quality standards

  - Discharges that need to be controlled to meet reductions called for by a TMDL

  Charles River designation based on both

Charles Residual Designation Decision

- Preliminary Designation Determination issued on November 12, 2008
- Final Designation will be made at the conclusion of the comment period on the permit (i.e. after June 30, 2010)
- Comments on both the permit and the designation are invited and will be considered by EPA in final RD and permit

Charles Residual Designation

- Designated discharges must obtain permits to be legal.
- EPA has recently published a draft permit
- Permit is on website and EPA welcomes comments on it
- Public Meeting and Hearing scheduled for June 22, 2010

What has been designated as needing storm water permit

- Stormwater discharges
- From properties with impervious surfaces equal to or greater than 2 acres
- Contiguous properties under common ownership or properties with common structures aggregated
- Certain land uses excepted: single family residential; government properties otherwise regulated by permits; specified land uses such as recreational camps, mobile home parks, etc.

What has been designated, cont.

- Designation covers Milford, Bellingham and Franklin
- Covers only discharges to the Charles River watershed
- Rest of watershed to be designated later

Proposed Changes to Preliminary Designation

- Aggregation principles simplified
- Owner must seek authorization and may identify operators who need to be brought into permit process
- Exemption for discharges from government properties narrowed

Why two acres?

- EPA analyzed different thresholds, corresponding number of properties and corresponding pollution reductions
- Two acres is starting point
- EPA may need to designate smaller lots
- Efficiencies of scale

Why Milford, Bellingham, Franklin?

- First section of river showing problem
- Phosphorus is recycled in river system
- Effectiveness of approach can be monitored and measured
- More designations anticipated

Municipal Stormwater Permits

- North Coastal permit published, public comment period has closed, EPA will issue by year's end
- The North Coastal municipal permit will cover all cities and towns in Charles watershed
- Requires Municipalities to enhance the work they were required to do under 2003 permit
- Requires municipalities to develop a phosphorus control plan in four years
- Requires municipalities to implement plan within ten years

Relationship between RD and municipal stormwater permits

- Municipalities required to reduce phosphorus discharges by approx 50%
- Municipalities can achieve reductions from any sources, not just muni property
- Reductions in phosphorus achieved at private sites will be credited to towns with phosphorus programs

Relationship between Municipal and RD permits cont.

- Timelines are synchronized to allow collective approach
- Year 2: RD permittees must develop site assessments and supply them to municipality; nonbinding choice to join muni plan
- Year 3: RD permittees must commit to muni plan and submit plans to municipality
- Municipality must produce its phosphorus control plan by the end of the fourth year of its permit term by which time it will have RD plans in hand

Municipal Phosphorus Programs

- Draft permit encourages municipalities to form phosphorus control programs
- Designing a municipal-wide stormwater strategy superior to lot-by-lot approach
- Some properties will be able to reduce phosphorus discharges more efficiently/more cheaply
- Draft permit provides flexibility in forming municipal programs

Next Steps for EPA

- EPA will accept written comments
- Comments may be read into the record at the June 22 public hearing
- Comment period closes on June 30
- EPA will issue final permit, final residual designation and response to significant comments, probably by end of year

Next Step for Designated Discharge Owners/operators

- Owners of designated discharges required to submit a “notice of intent” to EPA to seek coverage under the permit once final
- With respect to portions of the site over which the owner does not have sufficient control to comply with permit, owner should identify party who does have control
- That party will be made a co-permittee

Identifying the appropriate owners

- EPA's list of designated discharges may be over-inclusive
- Where a party believes it has been inappropriately included, it should notify EPA
- Where EPA has been under-inclusive, EPA would appreciate your help

Once NOI submitted, what next?

- EPA will review the NOI
- EPA will authorize the discharge, not authorize or request additional information
- Receipt of authorization to discharge from EPA starts the clock for stormwater management activities under permit

Overview of Technical Requirements
Draft General Permit for Residually Designated Discharges

- Storm water Management Plan (SMP) including Baseline Performance Standards

- Phosphorus Reduction Requirements

Baseline Performance Standards

- Minimum requirements for all designated discharge sites
- Implementation begins 30 days after permit coverage is authorized
- Intended to eliminate unnecessary discharges and exposure of pollutants to runoff
- Insure proper operation and maintenance of storm water system and best management practices (BMPs)
- Eliminate illicit sources and discharges

Baseline Performance Standards (continued)

- Storm Water Management Team (responsible for implementing the SMP)
- Sweeping Program (at least twice per year)
- Management of:
  - snow and deicing chemicals
  - solid waste and hazardous materials
  - landscaped areas.
- Stabilization of disturbed pervious areas
- Pollution Prevention & Source Control
- Storm System Map
- Illicit Discharge Detection & Elimination (IDDE) Program

Overview Of Phosphorus Reduction Requirements

- Achieve the equivalent of a 65% reduction in phosphorus load from the developed portion of the DD Site through implementation of any one or combination of the following:
  - Enhanced non-structural BMPs at the DD Site;
  - Structural BMPs (e.g., storm water infiltration basins or trenches) at the DD Site
  - Participation in a Certified Municipal Phosphorus Program (CMPP)

Summary of Individual Phosphorus Reduction Requirements

- Preliminary Phosphorus Reduction Plan submitted to municipality years
- Final Phosphorus Reduction Plan submitted to municipality years
- Implementation of Final Phosphorus Reduction Plan years
  - Best Management Practices (BMPs) at the DD Site; and/or
  - Participation in a Certified Municipal Phosphorus Program (CMPP)

Summary of Preliminary Phosphorus Reduction Plan

- Site Suitability Analysis to determine how best to achieve phosphorus reductions through enhanced non-structural and structural BMPs at the DD Site
- Statement of intent of how permittee intends to comply with phosphorus load reduction requirements (65% reduction)
    - Implementation of BMPs at DD Site
    - Participation in Certified Municipal Phosphorus Program (CMPP)
    - Or combination of implementing BMPs at DD Site and participation in CMPP
- Submit to municipality

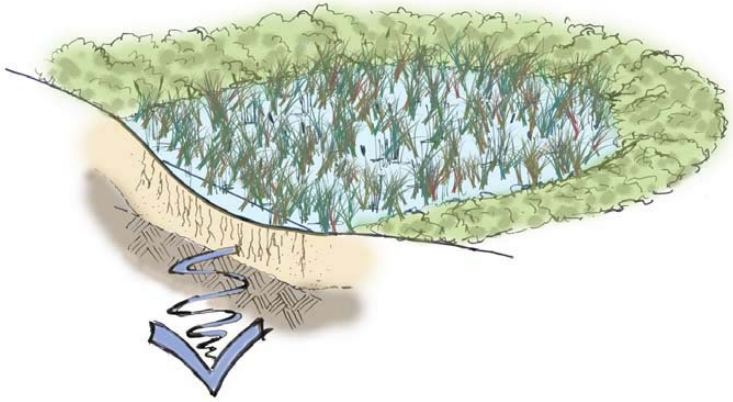
Enhanced Non-Structural BMPs Eligible for Phosphorus Reduction Credits (BMPs)

- Enhanced non-structural BMPs
  - Enhanced sweeping program
  - Semi-annual catch basin cleaning
  - No application of fertilizers containing phosphorus
  - Weekly leaf litter and organic debris collection program

Attachment 2 to App. D to Permit provides methodology for calculating default phosphorus reduction credits for enhanced non-structural BMPs

Structural BMPs for Phosphorus Reduction Credit

- Infiltration practices are required when feasible
  - Surface infiltration (e.g., basins, swales, rain gardens)
  - Subsurface infiltration (e.g., trench and chambers)

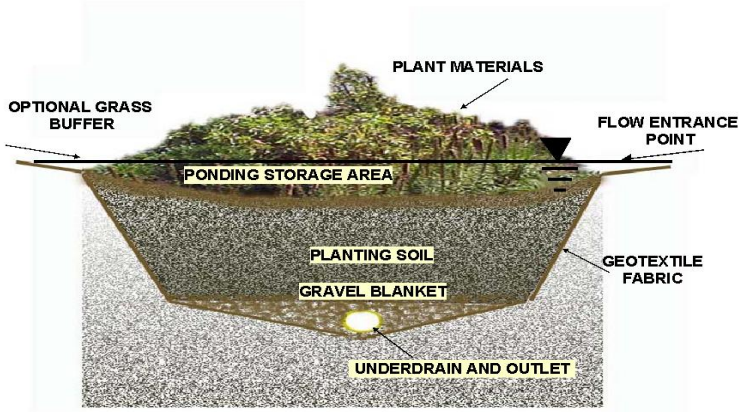


Structural BMPs for Phosphorus Reduction Credit (continued)

- When Infiltration practices are not feasible other practices are acceptable. Some examples include
  - Biofiltration systems
  - Filter systems
  - Gravel wetlands
  - Commercial or proprietary treatment systems
  - Permeable pavements,
  - Etc.

Attachment 3 to App. D to the Permit provides a methodology to calculate phosphorus removal credits for several structural BMPs based on physical storage capacity

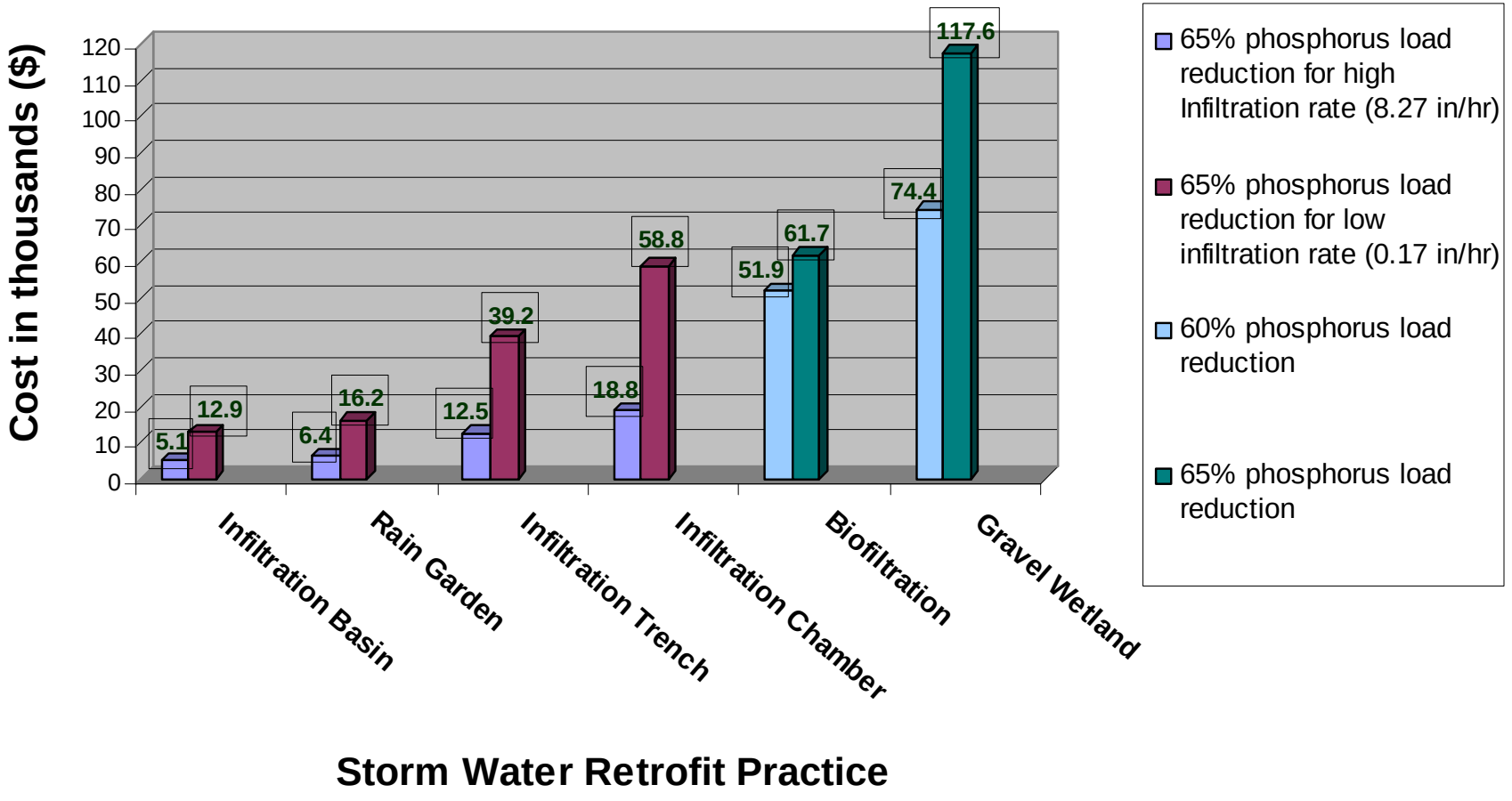
Example Structural BMPs



Phosphorus Reduction Requirements (continued)

- Final Phosphorus Reduction Plan - 3 years
  - Declares plan to achieve required phosphorus load reduction by implementing BMPs at the DD Site and/or participation in a CMPP
  - Submits plan to municipality
- Implementation of Final Phosphorus Reduction plan – 5 years
  - If applicable, prepares construction plans and specifications and obtains needed permits by the end of year 4
  - If applicable, certifies participation in a CMPP at a level consistent with the amount of phosphorus load reduction needed through the CMPP

BMP Retrofit Cost per Impervious Acre for Reducing Annual Phosphorus Load



Certified Municipal Phosphorus Program

- Can solve the problem most cost effectively (substantially lower total cost for community)
- Will track phosphorus reduction credits for BMPs on both private and public land
- Fewer BMPs will be needed (lower costs for maintenance)
- Greater opportunity for selecting optimal locations and BMP practices (e.g., infiltration)
- Longer compliance time frame

End

- Permit Documents are located at:

  http://www.epa.gov/ne/npdes/charlesriver/index.html

- Contact Information:

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