Protecting Drinking Water Sources While Implementing Your MS4 Permit

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Protect Your Community's Drinking Water Supply
Stormwater impacts drinking water
State and Fed requirements protect supplies from discharges

MS4 Permit Provisions that Protect Surface Waters Used for Drinking Water

A SWMP Priority - discharges to drinking water source areas

Discharges should provide pretreatment and spill control

Direct discharges to Class A waters should be avoided

Rules that Protect Groundwater Used for Drinking Water

- MA setback requirements for BMP infiltration projects
- MA underground injection control requirements
- Local ordinances/bylaws

Infiltration Design Considerations

- Locate BMPs outside drinking water surface intake zone and wellhead protection areas
- Design BMPs to remove contaminants of concern and consider site constraints
- Pretreatment may be necessary to reduce pollutants
- Select stormwater BMPs that can treat existing and future stormwater pollutants

Categories of Stormwater BMPs

Infiltration Practices

- Infiltration Trench & Drip Edge
- Infiltration Basin
- Dry Well

Filtering Practices

- Surface Sand Filter
- Underground Sand Filter
- Bioretention System
- Tree Box Filter
- Permeable Pavement

Stormwater Ponds

- Dry Extended Detention Pond With Micropool
- Wet Pond
- Wet Extended Detention Pond
- Multiple Pond System
- Pocket Pond

Stormwater Wetlands

- Shallow Wetland
- Extended Detention Wetland
- Gravel Wetland
- Pond/Wetland System

MassDEP Setback Requirements for Infiltration BMPs

Protection Areas	Infiltration BMPs
Wellhead Protection Area Zone I (within 400 ft radius for wells >100,000 gpd) Surface Water Supply Zone A (400 ft around Class A source & 200 ft within tributaries to source)	Prohibited unless essential to the operation of public drinking water facility.
Wellhead Protection Area Zone II (entire area within aquifer capture zone based on predicted drawdown after 180 day drought at approved pumping rate) Interim Wellhead Protection Area (area within 0.5 mile of a well without a MassDEP approved delineated Zone II)	Allowed with additional pretreatment to remove 44% of TSS (80% removal at end of treatment train). Runoff from non-metal roofs is excluded from the pretreatment requirement.
Surface Water Supply Zone B (area within ½ mile of Class A surface water source and 200 ft from tributaries to source)	Allowed with additional pretreatment to remove at least 44% of TSS.

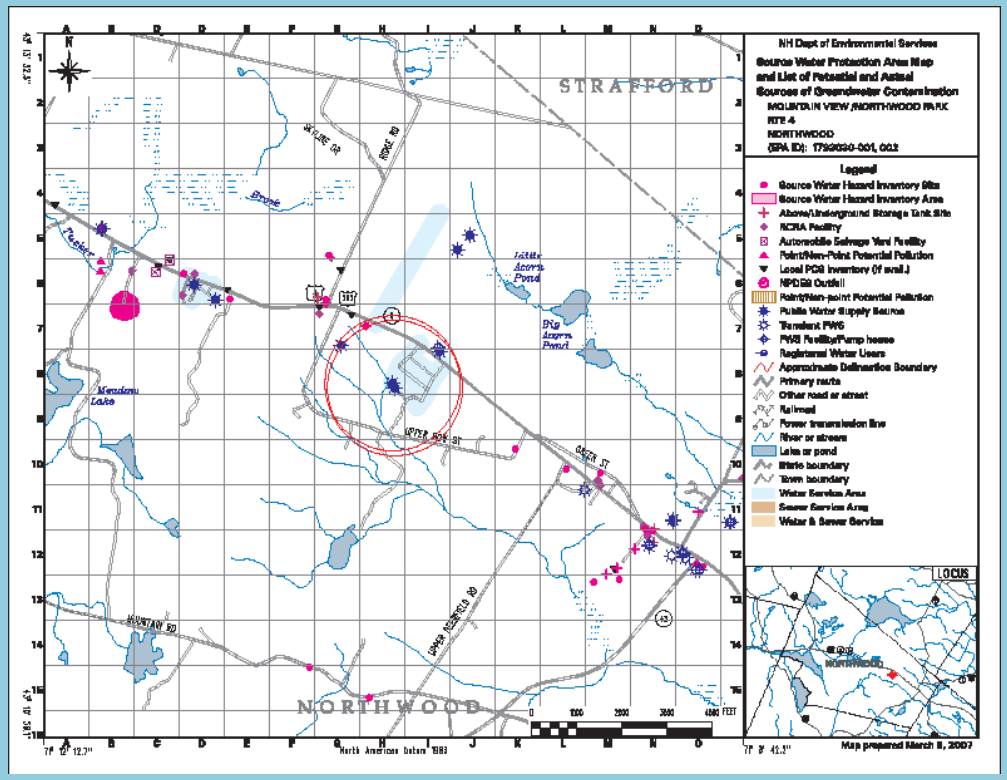
How Can MS4s Better Protect Drinking Water Supplies?

1. Identify drinking water sources potentially impacted by discharges and infiltration

2. Prioritize discharges and infiltration needing treatment

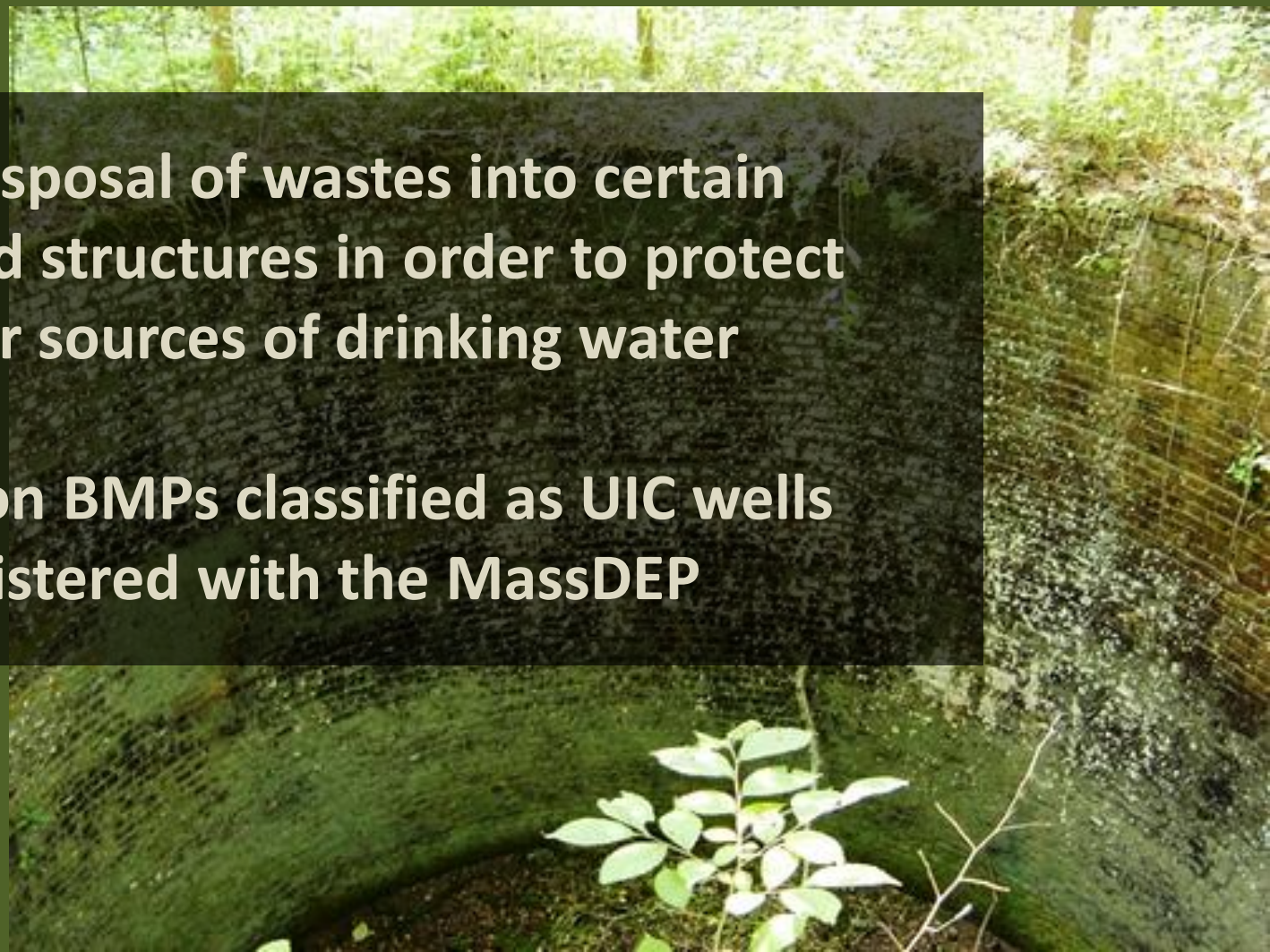
3. Consider DW protection when developing your:

   - Illicit Discharge, Detection & Elimination Program



- Public education program
- List of MS4-owned property for BMP retrofits

UIC Requirements



Regulates disposal of wastes into certain underground structures in order to protect groundwater sources of drinking water

All infiltration BMPs classified as UIC wells must be registered with the MassDEP

UIC Requirements

Class V

A stormwater infiltration BMP is a Class V UIC well if it includes

A well, dug hole, seepage pit, infiltration basin, etc. that is deeper than wide OR a piping system that collects & discharges fluids to the subsurface

Class V

Best Management Practices

Generally No rain gardens, vegetated buffers/swales, permeable pavement

Maybe So infiltration trenches

Generally So commercially manufactured detention vault/chambers, drywells, seepage pits, improved sinkholes

Regulating the use of Stormwater Infiltration Practices to Protect Public Drinking Water Supplies in New Hampshire

Small MS4 Permit Technical Support Document, April 2011

Why is Stormwater Infiltration a Potential Concern?

Site design techniques and structural best management practices (BMPs) that promote infiltration rather than surface runoff are often the preferred approach to stormwater management. This is because, in addition to increasing recharge to groundwater and maintaining baseflow to streams and rivers, infiltration reduces the excess volume and flow of runoff and provides treatment of pollutants in stormwater. Infiltration can be accomplished through the use of subsurface infiltration BMPs and low impact development (LID) techniques (e.g., infiltration chambers, dry wells, and tree wells). Because stormwater can contain a wide variety of contaminants, it is important to evaluate the appropriate use of BMPs on a case-by-case basis by considering land use, proximity to groundwater resources, and the potential for BMPs to introduce contaminants into groundwater. Depending on local site conditions, direct infiltration may not be appropriate, or designs may need to be modified, in areas where groundwater is a source of drinking water or in other designated sensitive areas, such as aquifers overlain with porous soils.

In New Hampshire, some stormwater infiltration BMPs may be subject to additional requirements of the Underground Injection Control (UIC) Program and the Alteration of Terrain (AoT) Bureau.

How Are Stormwater BMPs Regulated under the New Hampshire UIC Program?

The New Hampshire UIC regulations (Env-Wq 404) prohibit any injection activity that "*allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that pollutant may cause a violation of any primary drinking water regulation under 40 CFR Part 142, or may otherwise adversely affect the health of persons.*"

Some infiltration BMPs will require regulatory approval if they fall under the definition of a **Class V underground injection well**:

1. A bored, drilled, driven shaft, or a dug hole whose depth is greater than the largest surface dimension; or
2. An improved sinkhole (e.g., karst depressions and fractures) to enhance infiltration; or,
3. A soil absorption system (e.g., subsurface fluid distribution and discharge pipes). *Note: This does not include underdrains designed to collect and discharge runoff to the storm drain network or a surface outfall.*

Which BMPs May Classify as Class V Wells?

A) Dry wells and leaching catch basins will always qualify as Class V wells because they are deeper than they are wide/long.

B) Permeable pavements designed to exfiltrate are not classified as Class V wells because their length or width is greater than their depth unless they have a piped distribution system below grade to provide further infiltration.

C) Infiltration basins and trenches generally are not considered Class V wells unless they have distribution systems to provide further infiltration at or below the base of the trench/basin, contain dry wells, or are deeper than they are longer/wider.

D) Underground storage chambers designed primarily to infiltrate stormwater into the ground are classified as Class V wells. Underground chambers used solely for detention that then discharge to a wetland resource area, storm drain, or surface water reuse system are generally not Class V wells.

E) Bioretention, bioswales, or other filtering practices with underdrains discharging to a surface outlet structure are generally not classified as Class V wells.

More >>

MassDEP Drinking Water Program
www.mass.gov/dep/water/drinking/systems.htm

MassDEP Stormwater Program Handbook
www.mass.gov/dep/water/laws/policeis.htm

EPA UIC "When Are Stormwater Discharges Regulated As Class V Wells?"
www.epa.gov/ogwdw000/uic/class5/pdf/fs_uic-class5_classvstudy_fs_storm.pdf

EPA Office of Water Memo "Clarification on which stormwater infiltration practices/technologies have the potential to be regulated as Class V wells by the UIC Program" June 13, 2008

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Thank you

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