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Phase II Stormwater Management Plan

Millis, MA

JULY 2003

Prepared for:

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Table of Contents

Section	Page No.
1.0 Introduction	1-1
2.0 Town Characteristics.....	2-1
2.1 Community Information	2-1
2.2 Land Use and Zoning	2-1
2.3 Millis Master Plan	2-2
2.4 Demographics	2-2
2.5 Urbanized Area	2-3
2.6 Water Bodies.....	2-4
2.7 303d Impaired Waters and TMDLs	2-4
2.8 Rare or Endangered Species, Critical Habitat and Essential Fish Habitat	2-4
2.9 Historic Properties	2-6
2.10 Water Supplies.....	2-6
2.11 Personnel.....	2-6
3.0 Subwatershed Prioritization	3-1
3.1 Water Quality Information.....	3-1
3.2 Subwatershed Delineation and Prioritization.....	3-2
4.0 Public Education and Outreach	4-1
4.1 Phase II Requirement	4-1
4.2 Existing Public Education Activities	4-1
4.3 Proposed Public Education Activities.....	4-1
5.0 Public Participation and Involvement	5-1
5.1 Phase II Requirement	5-1
5.2 Existing Public Participation and Involvement Activities	5-1
5.3 Proposed Public Participation and Involvement Activities.....	5-2
6.0 Illicit Discharge Detection and Elimination	6-1
6.1 Phase II Requirement	6-1
6.2 Existing Illicit Discharge Detection & Elimination Measures in Place...	6-2
6.3 Needed Illicit Discharge Detection and Elimination Measures	6-4
7.0 Construction Site Stormwater Runoff Control	7-1
7.1 Phase II Requirement	7-1
7.2 Existing Measures in Place	7-1
7.3 Additional Measures Needed	7-2



Table of Contents

Section	Page No.
8.0 Post-Construction Stormwater Runoff Control.....	8-1
8.1 Phase II Requirement	8-1
8.2 Existing Measures in Place	8-1
8.3 Additional Measures Needed	8-2
9.0 Pollution Prevention/Good Housekeeping for Municipal Operations	9-1
9.1 Phase II Requirement	9-1
9.2 Inspection and Maintenance Plan	9-2
9.3 BMPs for Municipal Operations.....	9-3
9.4 Handling and Disposing of Stormwater Residuals	9-8
9.5 BMPs for Stormwater Projects	9-9
9.6 Employee Training.....	9-9
10.0 Best Management Practices Plan, Notice of Intent & Stormwater Permit.....	10-1

References

List of Appendices

Appendix A – Millis Stormwater Public Education Plan, Focus
Area Reference Materials

Appendix B – Town-Wide Drainage Maps, 5 Plan Sheets

Appendix C – Sample Observation Logs for Illicit Discharge Detection Efforts

Appendix D – Notice of Intent Form BRP WM 08A & NPDES General Permit



Table of Contents

List of Tables

Table No.	Title	Page No.
2-1	Town of Millis Demographics	2-3
3-1	Subwatershed Prioritization Scheme	3-4
3-2	Subwatershed Priority Summary	3-5
10-1	Best Management Practices Plan – Implementation of Phase II Activities	10-3 through 10
10-2	Cost Estimates for BMP Implementation	10-11

List of Figures

Figure No.	Title	Page No.
1-1	Town Locus	1-4
2-1	Land Use	2-8
2-2	Zoning Districts	2-9
2-3	Urbanized Area	2-10
2-4	Resource Waters	2-11
2-5	Critical Resources	2-12
3-1	Subwatershed Prioritization Map	3-6
9-1	Snow Disposal Location	9-11



1.0 Introduction

Millis is one of 189 Massachusetts towns affected by the new Phase II rule (40 CFR 122), published as final on December 8, 1999. A town locus map is provided as Figure 1-1 at the end of this section. The Phase II rule requires regulated operators of municipal separate storm sewer systems (MS4s) to develop a Stormwater Management Program (SWMP) and Best Management Practices (BMPs) to reduce the impacts of stormwater discharges.

Stormwater Management Programs for each community are likely to vary considerably because of the variability in current stormwater handling procedures amongst towns. Also, the Phase II rule leaves much of the detail of implementation up to the community to decide what fits best for them. The final result is that each program needs to be carefully tailored to the community's needs while meeting the intent and spirit of Phase II stormwater regulations. The Millis Phase II Stormwater Program meets the requirements of EPA's Phase II stormwater rule. The nine components for the Millis Phase II Stormwater Management Program include:

1. Town Characteristics

In order to develop a Phase II plan that best fits the Town of Millis, it is important to obtain a better understanding of the town's characteristics. These characteristics include information about the community (e.g., size, population, operating budget), land uses in Town, demographics, urbanized areas, water bodies and hydrologic features, water supplies, and Town personnel involved in the Phase II process. These characteristics are discussed in more detail in Section 2.0.

2. Subwatershed Prioritization

Subwatersheds within the Town of Millis were delineated using GIS based on hydrologic features. Water body uses (i.e., water supply, resource waters) and water quality data were used to prioritize the subwatersheds for future implementation efforts. The priority strategy is described in Section 3.0.

3. Public Education & Outreach

The first of six Phase II control measures requires regulated operators of MS4s to implement a public education program to distribute educational materials or otherwise communicate to the community about the impacts of stormwater discharges on local waterbodies and steps the community can take to reduce stormwater pollution. Section 4.0 discusses the existing and recommended stormwater public education and outreach activities for Millis.



4. Public Participation/Involvement

Phase II requires regulated towns to obtain public participation throughout the stormwater management program, beginning before submittal of the NOI and engaging all economic and ethnic groups. Section 5.0 discusses the existing avenues of public participation/involvement activities in Millis and those that are recommended to meet the Phase II requirements.

5. Illicit Discharge Detection & Elimination

Under Phase II, Millis must develop and implement an illicit discharge detection and elimination program to find and eliminate inappropriate discharges to the stormwater system. This requires the Town to map existing stormwater outfalls and receiving waters, to evaluate the outfalls for illicit discharges, and to address identified illicit discharges. The Town must also develop a regulation to prohibit illicit discharges to the stormwater system and educate the public about illicit discharges. Section 6.0 discusses the Phase II requirements associated with this control measure, as well as the Town's existing compliance status and what needs to be done to comply with Phase II.

6. Construction Site Stormwater Runoff Control

Phase II towns are required to implement and enforce a program to reduce pollutants in stormwater runoff to the MS4 from construction activities that disturb one or more acres. This requires the development of a local regulation related to the implementation of proper erosion and sediment controls, and controls for other wastes, on regulated construction sites. Towns are also responsible for inspecting and enforcing the controls required by the regulation. The existing and needed construction site stormwater runoff controls in Millis are discussed in Section 7.0.

7. Post-Construction Stormwater Management in New Development/Redevelopment

Similar to the "Construction Site Stormwater Runoff Control" measure of Phase II, towns are required to develop and enforce a regulation that requires the implementation of post-construction runoff controls at sites where construction activities disturb one or more acres. The controls to be implemented must be designed to treat stormwater runoff from sites after they are developed.

Another large component of this requirement is that municipalities are now required to ensure the long-term operation and maintenance of stormwater runoff controls on all municipal properties, as well as new construction on private properties subject to the new local regulation. In many cases, this will require a tracking process and additional staff time



to implement. The existing and needed post-construction stormwater management controls in Millis are discussed in Section 8.0.

8. Pollution Prevention/Good Housekeeping

Municipal operations have the potential to contribute pollutants to stormwater runoff if staff are not properly educated and trained in pollution prevention and good housekeeping practices. Under Phase II, towns must take a thorough look at their existing municipal operations and train staff to incorporate pollution prevention/ good housekeeping practices into operations. This involves a review of operations at specific facilities (i.e., highway garages, parks), as well as operations that may occur throughout town (i.e., catch basin cleaning and street sweeping).

In addition to the requirements under control measure 6 of Phase II (outlined above), industrial municipal facilities falling under certain SIC Codes, in most towns this includes the highway garage and recycling center, must file a separate NOI and prepare a Stormwater Pollution Prevention Plan (SWPPP) specific to that facility. Existing and needed measures to comply with both Phase II requirements discussed above are discussed in Section 9.0.

9. Implementation of Best Management Practices

The needed actions or Best Management Practices (BMPs) outlined in Sections 4.0 through 9.0 to decrease impacts to stormwater and improve water quality are summarized in a concise BMP Plan in Section 10.0. This BMP Plan provides a measurable goal and schedule, and outlines the responsible official for implementing each BMP.



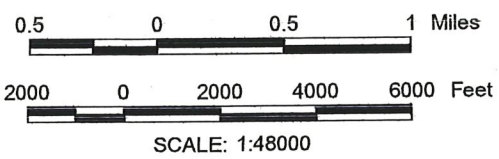
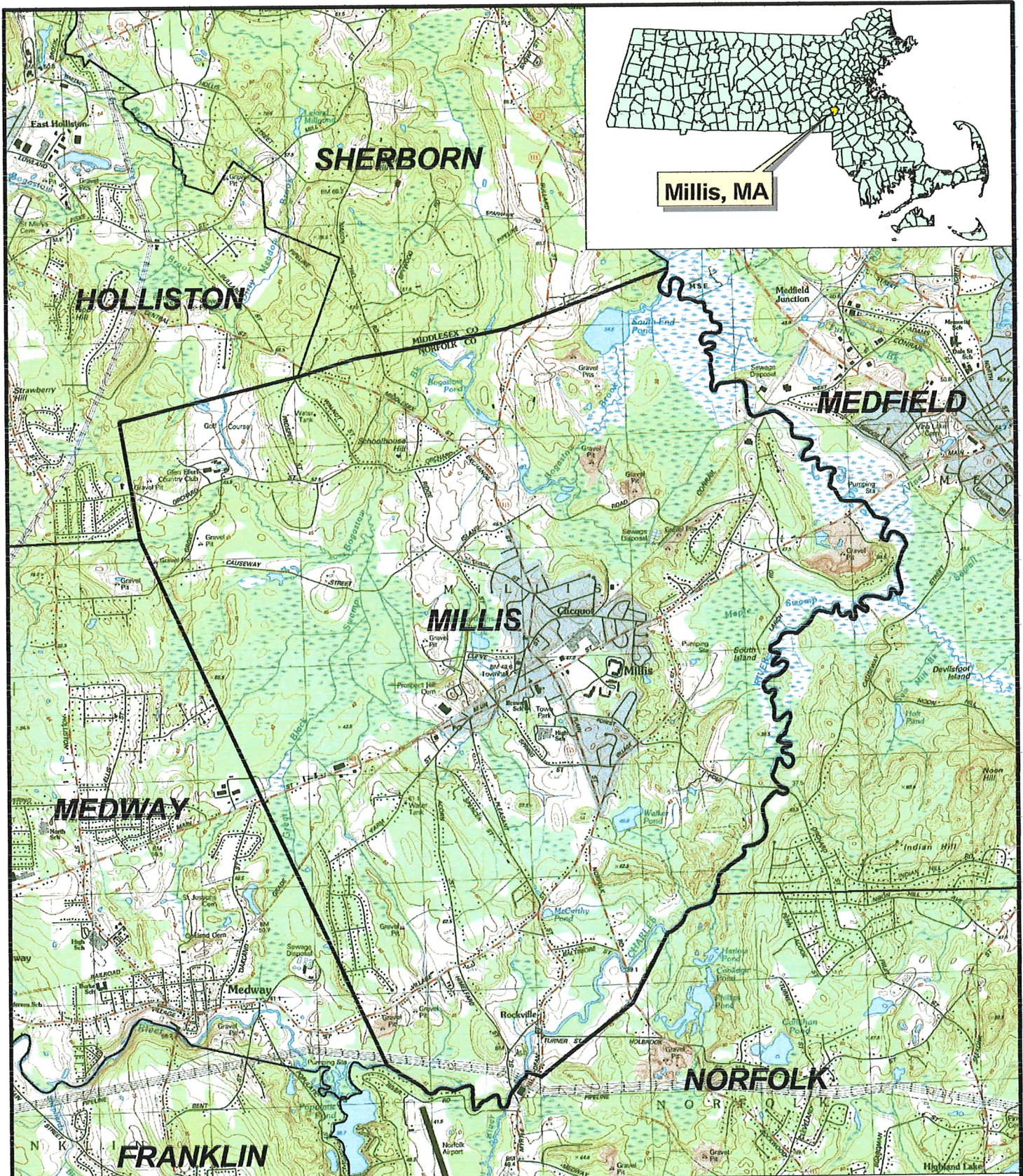
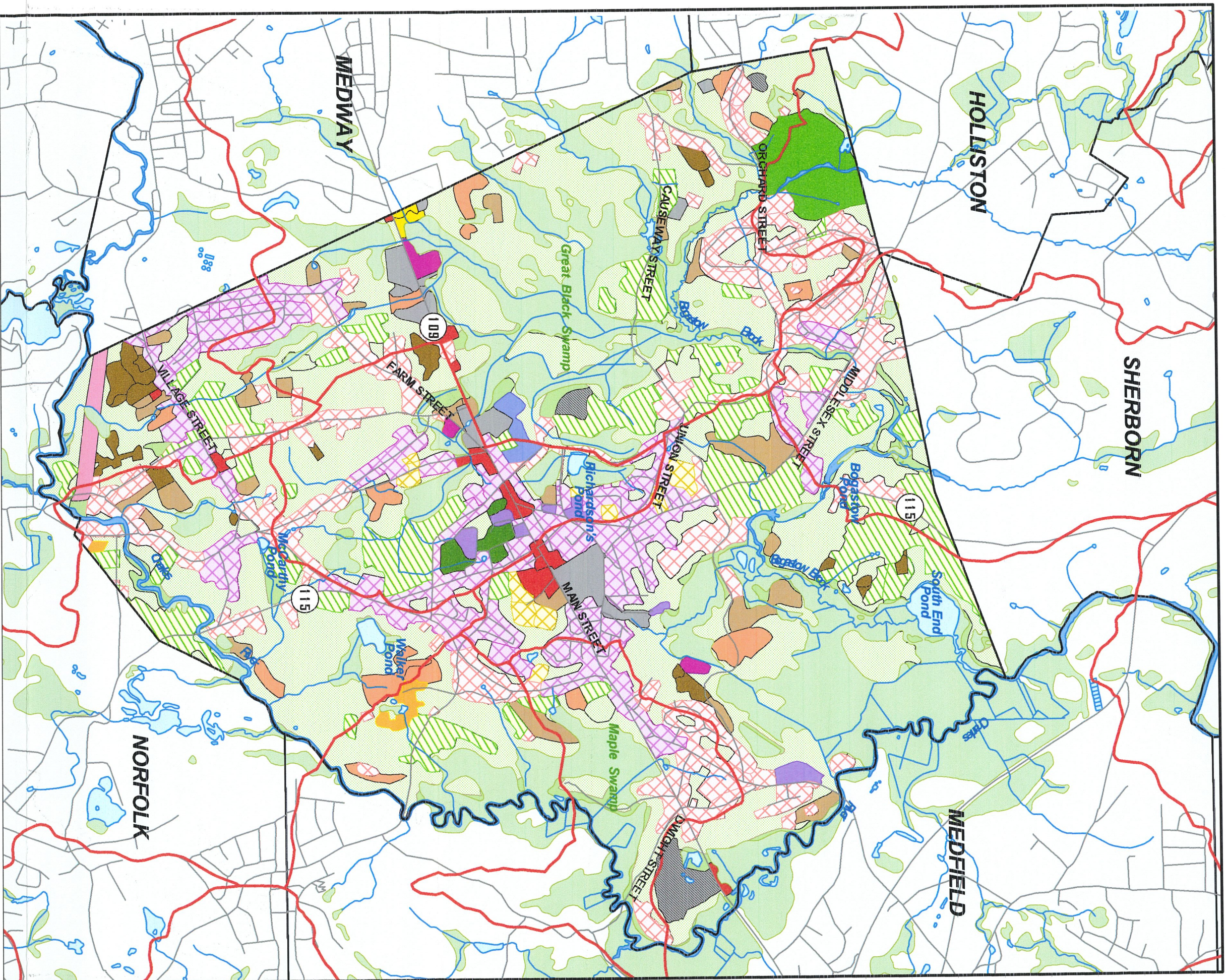


Figure 1-1
Town Locus
Millis, MA

Data Source: MassGIS, USGS



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LEGEND

Land Use

- Cropland
- Pasture
- Forest
- Wetland
- Mining
- Open Land
- Participation Recreation
- Residential Multi-family
- Residential (1/4 to 1/2 acre lots)
- Residential (Larger than 1/2 acre lots)

- Commercial
- Industrial
- Urban Open
- Waste Disposal
- Water
- Powerlines
- Golf Courses
- Urban Public
- Transportation Facilities
- Cemeteries
- Orchards

- Hydrography**
- Wetland
 - River
 - Lake, Pond
 - Brook, Stream

- Road
- Subwatershed Boundary
- Town Boundary



Millis, MA



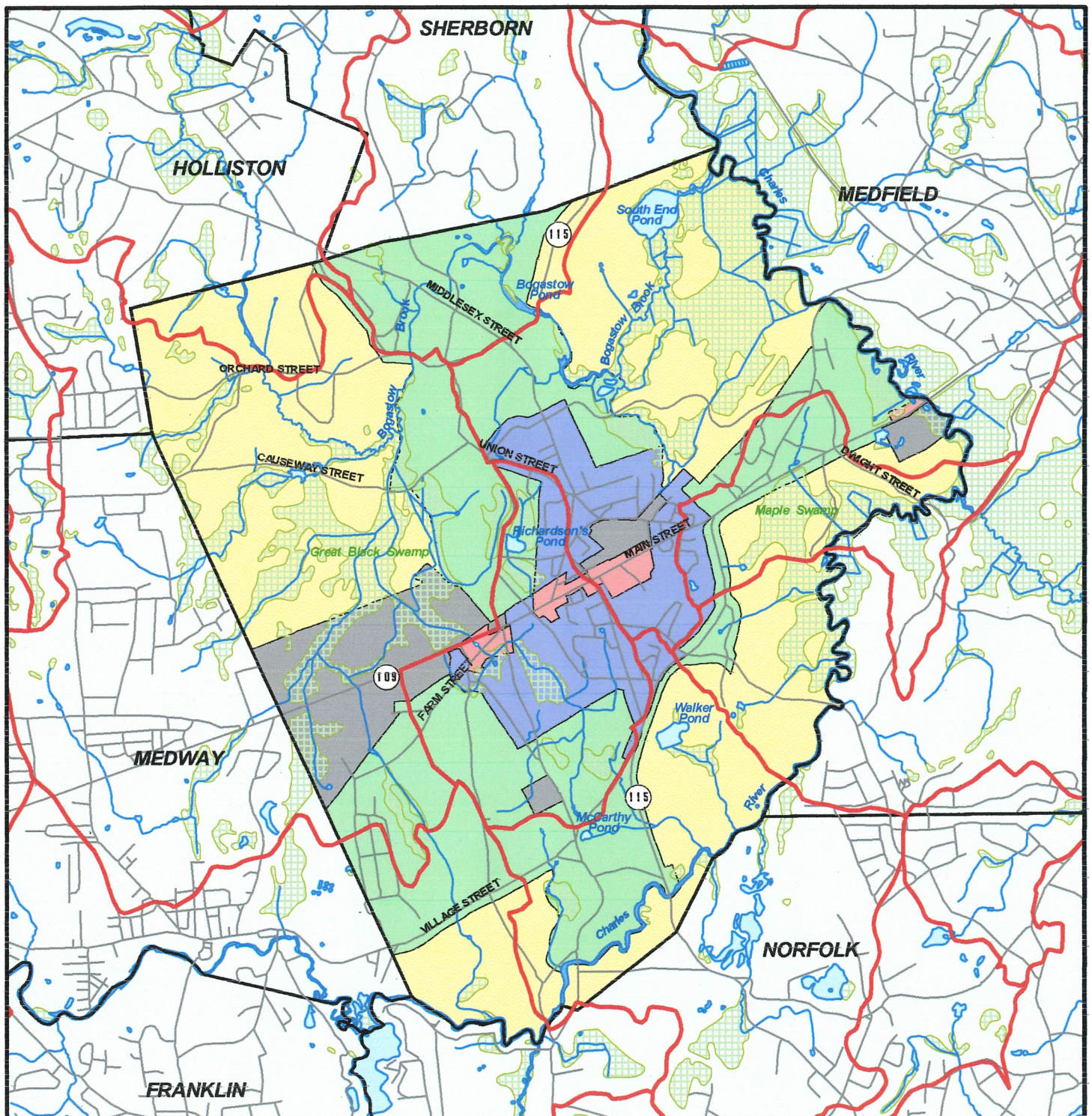
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Land Use

Figure 2-1



Data Source: MassGIS



LEGEND

Zoning Districts

- Residential Town (R-T)
- Residential Suburban (R-S)
- Residential Village (R-V)
- Commercial Village (C-V)
- Industrial Park (I-P)

Hydrography

- Wetland
- River
- Lake, Pond
- Brook, Stream
- Road
- Subwatershed Boundary
- Town Boundary

2000 0 2000 4000 6000 Feet

SCALE: 1:48000

Data Source: MassGIS, Town of Millis, CEI

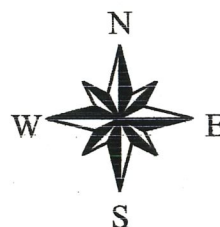


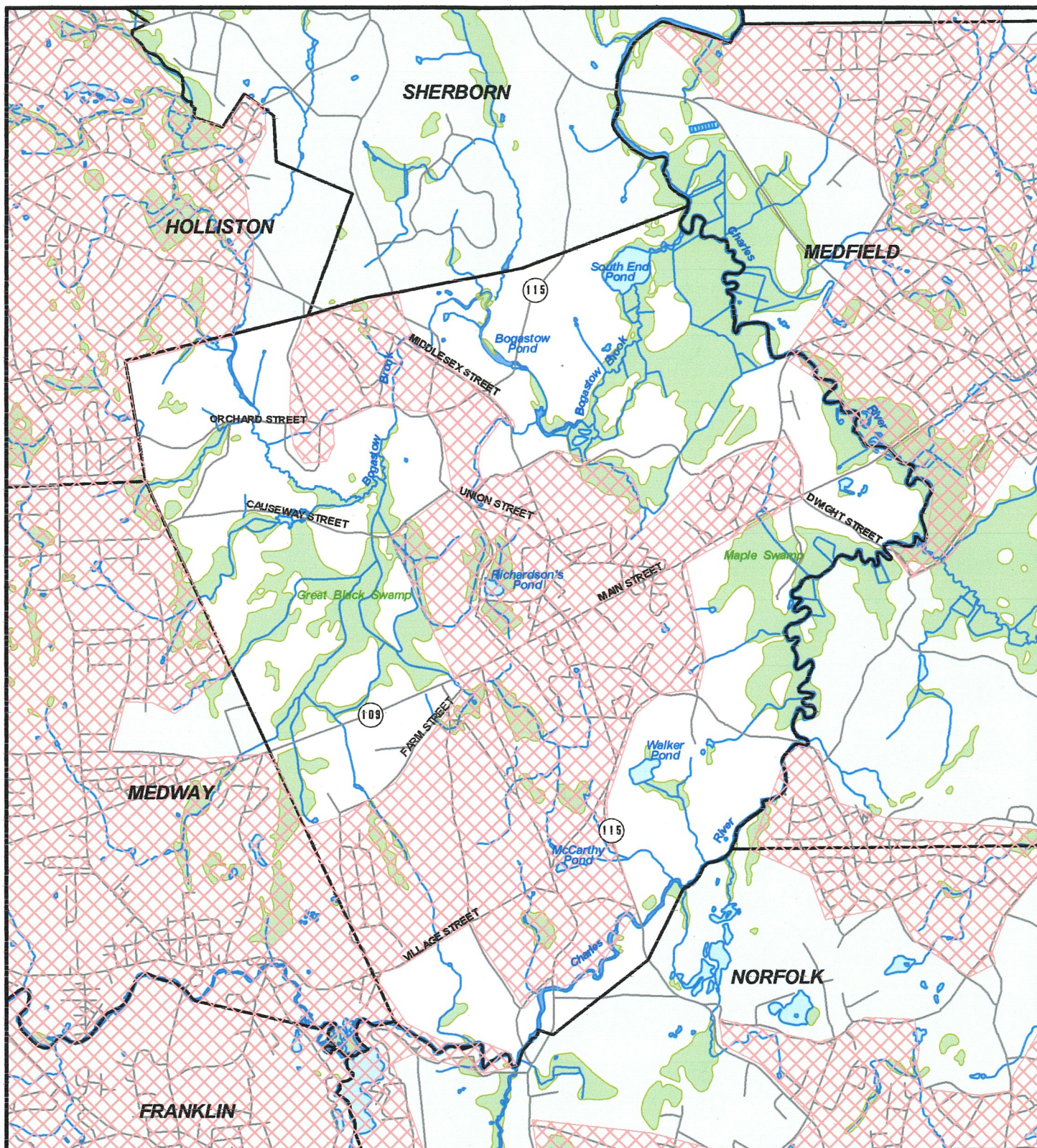
Figure 2-2

Zoning Districts








Millis, MA



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LEGEND

- | | |
|--|---|
|  Urbanized Area | Hydrography |
|  Town Boundary |  Wetland |
|  Roads |  River |
| |  Lake, Pond |
| |  Brook, Stream |

2000 0 2000 4000 6000 Feet

SCALE: 1:48000

Data Source: MassGIS, US Census Bureau



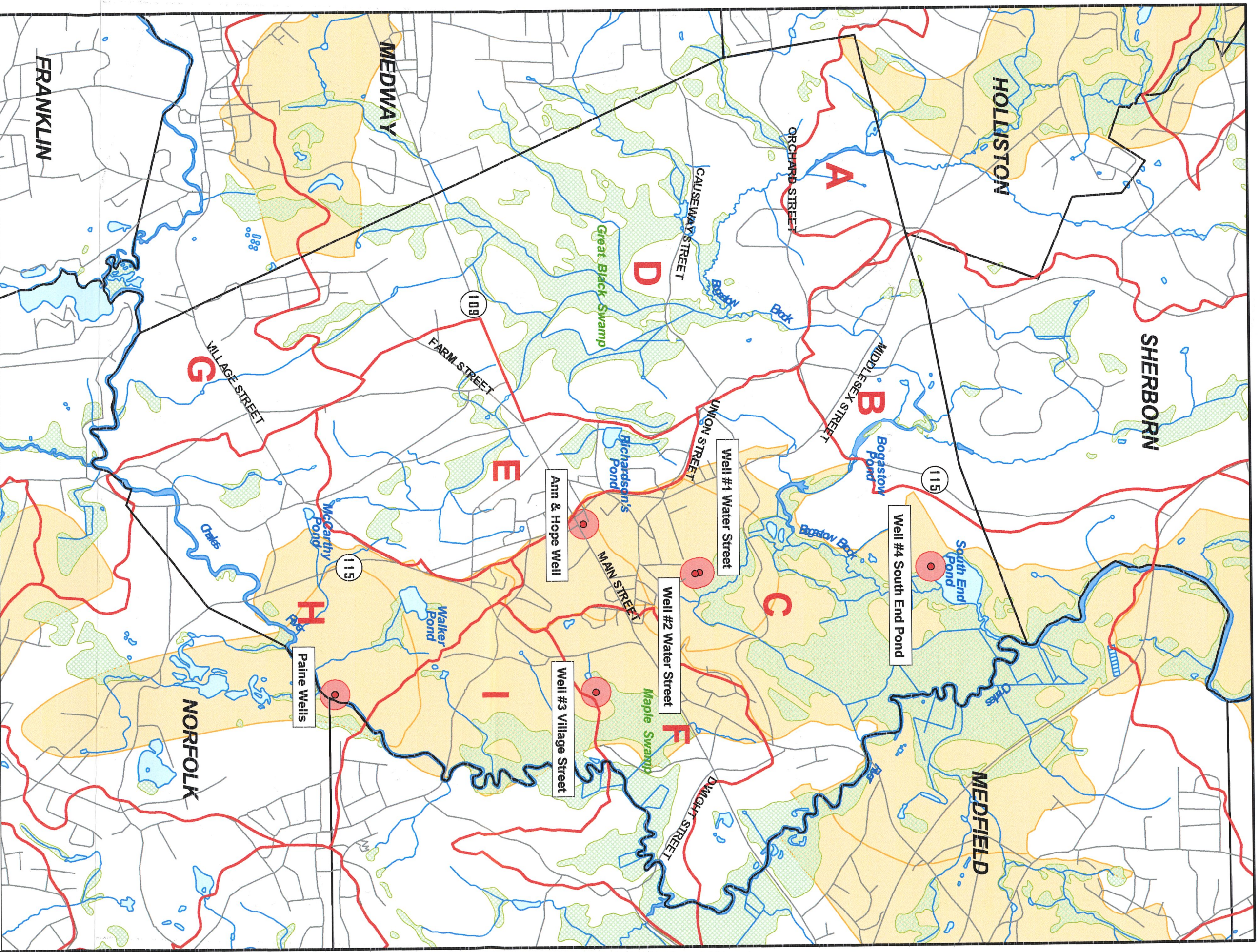
Figure 2-3

Urbanized Area

Millis, MA



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● Public Water Supply Wells
 Zone I
 Zone II

□ Town Boundary
 Road

Hydrography
 Wetland
 River
 Lake, Pond
 Brook, Stream

3000 0 3000 6000 Feet

SCALE: 1:30000

Data Source: MassGIS, Metropolitan Area Planning Council

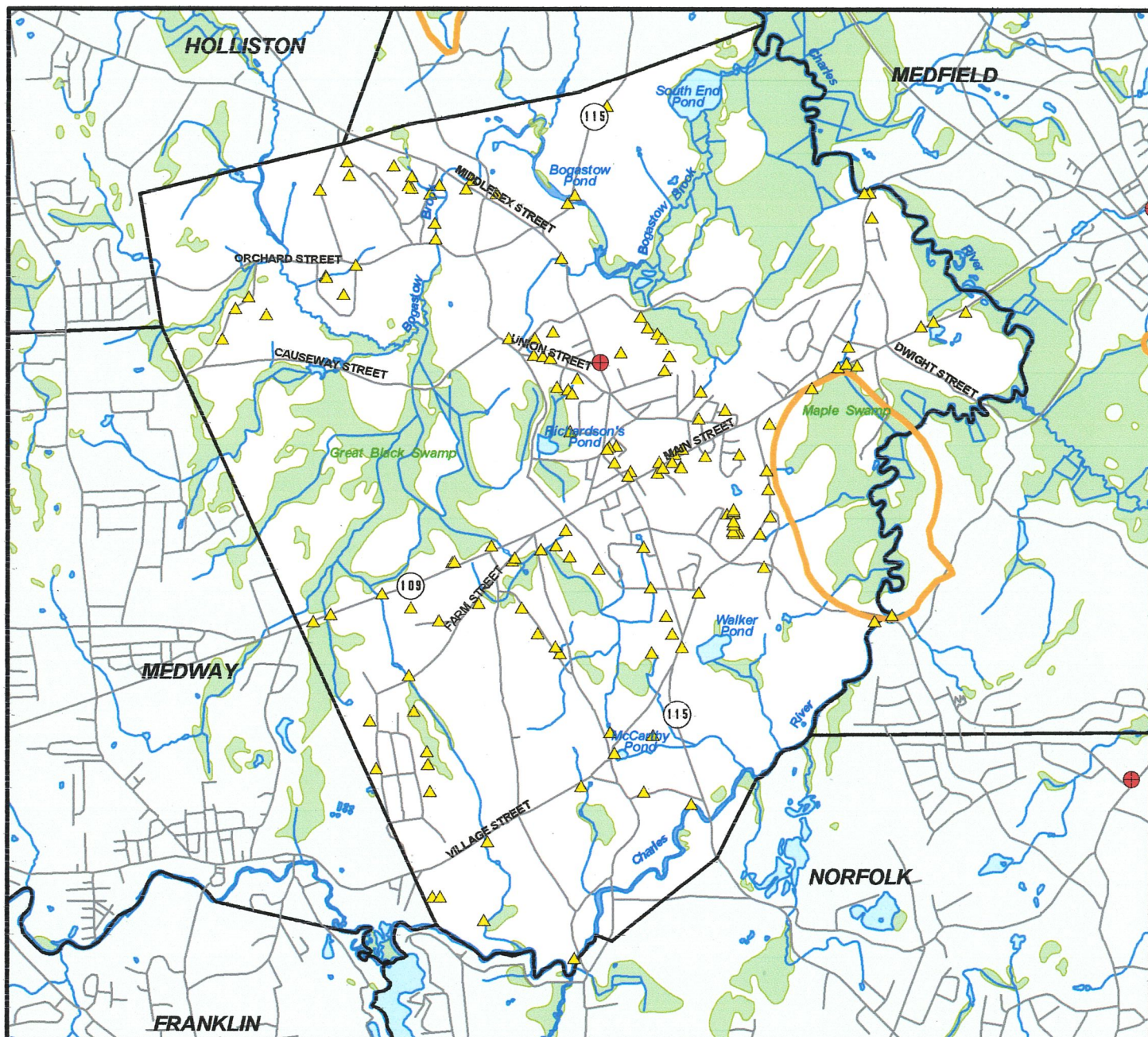
Figure 2-4

Resource Waters

Millis, MA



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- ▲ Drainage Outfalls
- State Register of Historic Places
- ▭ Priority Sites of Rare Species Habitats
- Road
- ▭ Town Boundary

Hydrography

- Wetland
- River
- Lake, Pond
- Brook, Stream

2000 0 2000 4000 6000 Feet

SCALE: 1:48000

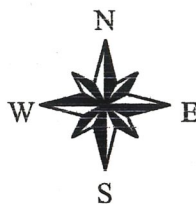


Figure 2-5

Critical Resources

Millis, MA



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Data Source: MassGIS, Massachusetts Historical Commission, NHESP, CEI

"Historic Districts - Massachusetts Historical Commission: This is a beta version and does not reflect listings past 1997. Users should consult the most recent State Register of Historic Places (available at the State House Bookstore) for updates. Listings are regularly updated in the weekly State Register."
(Includes National Register of Historic Places.)

"NHESP 1999-2001 Priority Habitats for State-Protected Rare Species: NOT equivalent to 'Significant Habitat' as designated under Massachusetts Endangered Species Act"

3.0 Subwatershed Prioritization

Prioritization of subwatersheds for implementation of Phase II activities needs to consider historical water quality information and current town characteristics or conditions (i.e., water supplies, urban areas, resource waters). The information used to evaluate and prioritize subwatersheds in Millis is discussed below.

3.1 Water Quality Information

CEI collected and reviewed available water quality data from the Millis Department of Public Works and Millis Board of Health. Information was reviewed to identify known water quality concerns in Millis. This information is useful for identifying problem areas within town and can be used to help prioritize specific areas to be addressed under the Phase II program.

Historical Information

Evaluation of historical water quality information can identify areas with recurring problems that should be kept under close watch. Water quality data and assessments exist from as early as the 1950s in Millis.

Historical problems in the town range from illegal dumping in waterways to sewage disposal through open ditches. These problems were solved through significant modifications in the Town's drainage and sewage systems in the latter half of the 1960s through the early 1980s. However, other water quality concerns arose as the town developed, as shown below.

- Town Wells #1 and #2 closed in 1983 due to chlorinated solvent contamination. The source of contamination was never identified. The wells were brought back online in 1998 with an air stripper treatment system.
- 1997 records concerning contaminants in stormwater discharges to Sugar Brook (drains to wetlands adjacent to Wells #1 and #2 to Bogastow Brook) from the industrial park of Millis and the former Millis sewage treatment plant.
- On September 8, 1997, lesions were found on a catfish caught at South End Pond. Substantial eutrophication had occurred in the pond. Investigations and water quality data pointed to contaminants from the tributary adjacent to the closed landfill off Island Road. Low levels of contaminants were observed at Well #4. Ongoing monitoring activities at the closed landfill have detected contaminants (VOCs, SOCs, and metals) in historical surface and groundwater



samples. Current reports indicate no significant surface water quality issues associated with the landfill.

- In March 1998, there was a coliform bacteria outbreak in the water supply system, originating at Well #4. Investigations pointed to a large manure pile 600 feet from Well #4. The drainage discharge from the manure pile went to South End Pond.
- On September 23, 1998, a synthetic organic compound (SOC), Dinoseb, was detected at Well #4.
- On September 8, 1999, there was a major fish kill at South End Pond attributed to low oxygen from an algal bloom, elevated water temperature, and possibly others sources. The Millis Board of Health suggested that the fish kill was attributed to over application of pesticides or herbicides at the nearby golf course. There was no supporting documentation.

Existing Conditions

The water quality concerns discussed above were addressed through Town efforts. However, the historical data shows that problems with water quality have been in the same general area. All of the areas listed above are located in the same subwatershed, which has been selected, based on other criteria discussed below, as one of the highest priorities for Phase II efforts.

Based on the most recent water quality data collected, there are no significant water quality concerns at other subwatersheds in Millis. Millis does not have any 303d listed waters (listed polluted waters).

3.2 Subwatershed Delineation and Prioritization

The delineation of the town into subwatersheds (drainage subwatersheds) is a useful tool to prioritize areas in town to focus and begin Phase II activities. The prioritization is most helpful for Phase II activities such as storm drain mapping and illicit discharge detection, which can be difficult to decide where to start and how large of an area to cover at one time.

CEI developed a base map using existing GIS data layers available through both the town and the state. The purpose of the base map was to show town features including town boundaries, roadways, surface waters, wetlands, water supplies, subwatersheds, topography, and urbanized areas that are important for planning Phase II activities. Figure 3-1 shows the base map with drainage subwatersheds. This map can be used to show additional information generated as a result of Phase II activities.



The majority of subwatersheds were obtained from the MA GIS system, which delineated subwatersheds for bodies of water within Massachusetts. Two of the largest subwatersheds were further divided by CEI to provide more manageable areas for Phase II implementation activities. Nine subwatersheds have been delineated in Millis.

CEI labeled and prioritized the subwatersheds within the town to help the town direct their implementation efforts. The following criteria, in order of priority, were considered in prioritizing the subwatersheds.

1. Water Supplies – The water supply of the town was identified as a priority for protection by the town of Millis (Millis Master Plan 2000) and was incorporated into the prioritization of subwatersheds for Phase II implementation. The well area and wellhead protection areas were both considered in prioritization. These areas were ranked the highest priority due to the importance of maintaining a clean water supply for residents and minimizing treatment costs.
2. Urbanized Areas (UAs) – Urbanized areas were previously discussed in Section 2.4 and described as the largest and most dense areas of settlement. Only the portion of Millis located within the UA boundaries is regulated. However, the UA comprises the majority of Millis and implementing the Stormwater Management Plan town-wide will be a more cost effective, long-term plan since the UA will likely grow during each census period, as it did for Millis from the 1990 to the 2000 US Census. Areas not currently in a UA can be set as a lower priority with efforts first focusing on those areas in the UA. UAs are used in prioritizing subwatersheds since Phase II must be implemented in UAs.
3. Resource Waters – The Millis Master Plan 2000 has identified several water resources throughout Millis that the town values for habitat preservation, active and passive recreational uses, and education purposes. These resource waters include the Charles River, Bogastow Brook, South End Pond, Bogastow Pond, Richardson's Pond, Walker Pond, and McCarthy Pond. South End Pond is also highlighted in the Master Plan as a potential location for the Town's first public beach and swimming area. These resource waters were considered in prioritization of subwatersheds for the implementation of Phase II activities with additional consideration for the Master Plan Goals (protection of water quality and natural resources; enhancement of open space and recreation opportunities).



Based on these criteria, the nine subwatersheds within the Town were prioritized. Although the urbanized area does not encompass the entire town, all nine subwatersheds were included for prioritization. A point system was used to prioritize the subwatersheds based on the criteria above. Consideration of water quality information discussed in Section 3.1 did not play a role in comparing subwatersheds for prioritization, since it became the highest priority due to groundwater supplies and resource waters.

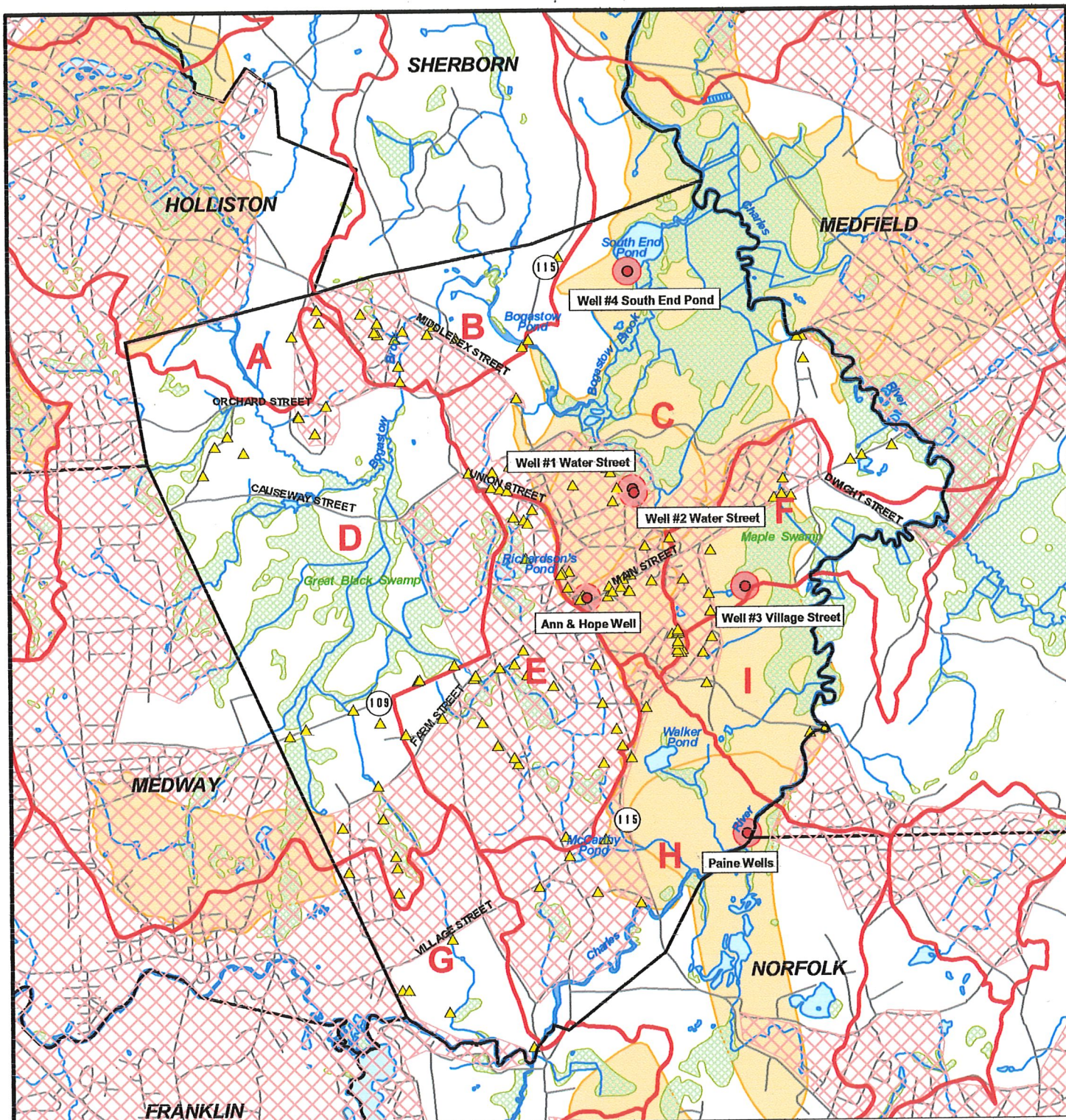
Table 3-1 lists the subwatersheds, corresponding criteria, and point score to illustrate the prioritization scheme for Millis. The subwatersheds were then grouped into three categories: high priority, medium priority, and low priority. Table 3-2 lists the subwatersheds according to these categories.

Table 3-1. Subwatershed Prioritization Scheme				
Priority Rank (Measured in Points)				
Sub-watershed	1 (3pts)	2 (2pts)	3 (1pt)	Total Points
	Ground Water Supplies	Urbanized Areas	Resource Waters	
A	None	✓	✓ Bogastow Brook	3
B	None	✓	✓ Bogastow Brook and Bogastow Pond	4
C	✓ 3 Wells	✓	✓ Bogastow Brook and South End Pond	13
D	None	✓	✓ Bogastow Brook	3
E	None	✓	✓ Richardson's Pond	3
F	✓ 1 Well	✓	✓ Charles River	6
G	None	✓	✓ Charles River	3
H	✓ Future Well, Existing Zone II	✓	✓ McCarthy Pond, Walker Pond, and Charles River	11
I	✓ Zone II	✓	✓ Charles River	6



Table 3-2. Subwatershed Priority Summary			
Rank	High Priority (10+ points)	Medium Priority (6-10 points)	Low Priority (0-5 points)
Subwatershed	C & H	F & I	A, B, D, E, G





LEGEND

- | | |
|---------------------------|--------------------|
| Subwatershed Boundary | Hydrography |
| Urbanized Area | Wetland |
| Drainage Outfalls | River |
| Public Water Supply Wells | Lake, Pond |
| Zone I | Brook, Stream |
| Zone II | Road |
| | Town Boundary |

2000 0 2000 4000 6000 Feet

SCALE: 1:48000



Figure 3-1

Subwatershed Prioritization Map

Millis, MA



Comprehensive Environmental Inc.

Data Source: MassGIS, US Census Bureau, CEI, Metropolitan Area Planning Council

4.0 Public Education and Outreach

4.1 Phase II Requirement

The Phase II Stormwater rule requires regulated operators of MS4s to develop and implement a public education program to distribute educational materials or otherwise communicate to the community about the impacts of stormwater discharges on local water bodies and steps to reduce stormwater pollution.

Many Towns are starting from scratch when it comes to stormwater education. However, the avenues of education are often present and can be used to educate the community about the impacts of stormwater. This section discusses the existing and proposed stormwater public education activities in Millis. Implementation of the proposed stormwater public education activities is discussed in Section 10.0.

4.2 Existing Public Education Activities

Currently there are no public education activities in Millis related to stormwater. However, the town does conduct some public education for other topics and the avenues currently used can also be used for stormwater education. Existing avenues include:

- Town Cable Network
- Utility Bill Mailers
- Press Releases

4.3 Proposed Public Education Activities

Public Education Avenues

Educating the community about the impacts of stormwater runoff is an important part of a stormwater management program. Making people aware of stormwater pollution and encouraging the public to take steps to reduce their impacts can have great benefits on local water bodies. The Phase II regulations do not specify which public education activities a community must implement, rather, it allows communities the flexibility to develop a public education program that fits within the existing framework of the town. Millis will begin public education outreach activities using familiar avenues used for other programs in town, including:

- Local Cable Broadcasts - a few minutes of airtime on the local cable channel can be an effective way to educate the public on the impacts



of stormwater runoff. Time for such a broadcast can be incorporated into the Selectmen's meetings, which are already broadcasted on a regular basis. Residents will be informed of broadcast video tapes during future selectmen meetings. Presentations will be broadcast at two selectmen meetings and aired annually on the local cable channel. Town employees or hired professionals will communicate the message.

- Mailings - mailings in the form of fact sheets, brochures, fliers, and newsletters will be distributed to the public, relevant to the topics discussed further in the text. This will be done through bulk mailings and inclusion of the educational material with water bills twice a year.
- Press Releases – press releases will be sent to local newspapers twice a year about the stormwater management program, the educational mailers, and the importance of stormwater management at home.

Public Education Topics

Outreach topics will vary by audience (i.e., resident, business) and at a minimum will include those outlined in the following sections, based on the target audience.

Residents

Residents are the largest audience and have the most to gain from reducing the impacts of stormwater runoff. Actions taken by residents can decrease community costs associated with the use and maintenance of expensive stormwater treatment facilities and treating degraded water quality and stream banks. The following topics will be covered in the public education efforts to residents:

- Lawn and Gardens
- Vehicle Leaks
- Septic Systems
- Household Hazardous Wastes
- Pet Waste
- Illicit Discharges

Businesses and Institutions

Many business and institution activities can contribute to stormwater pollution. For instance, poor housekeeping practices and large impervious parking lots can impact water quality. Large expensive stormwater treatment facilities, such as detention ponds, are often built to handle runoff from business sites. These systems can be an eye sore in a community and are often neglected resulting in a less than adequate performance. Providing incentives and encouraging good stormwater



management practices can be an effective way for towns to approach businesses and institutions. The following topics will be covered in the public education efforts to businesses:

- Housekeeping Practices
- Catch Basin Cleaning
- Vehicle/Equipment Washing
- Toxic Cleaners
- Parking Lots
- Illicit Discharges

Regardless of the audience, all public outreach materials will outline the impacts associated with each topic and describe practices the audience can take to reduce these impacts. Millis may begin with a smaller outreach program during the first Phase II permit period, depending on staff resources, and expand in later years as more people and groups become involved and take on some of the responsibilities. Volunteers, students, retirees, and interested organizations can help and/or direct education activities, thus reducing the workload to the town.

A public education plan that describes these and other public education activities in more detail is included in Appendix A. A reference list of existing public education materials for the above referenced topics is included as an attachment to the public education plan.



5.0 Public Participation and Involvement

5.1 Phase II Requirement

The Phase II Stormwater rule requires regulated operators of MS4s to comply with applicable State, Tribal, and local public notice requirements.

The intent behind this requirement is to allow the public the opportunity to have input on the Stormwater Management Plan, rather than communities developing and implementing the plan “behind closed doors.” EPA recommends that regulated entities involve the public in both the preparation and implementation of the Stormwater Management Plan. Public participation and involvement are important to the success of a stormwater management program and create the following benefits:

- Broader Public Support
- Shorter Implementation Schedules
- Broader Base of Knowledge Resources and Economic Benefits
- Support and Connectivity with Other Environmental Programs

The public involvement and control measure of the Phase II rule provides the opportunity for the entire community to become involved in improving stormwater quality and increasing public awareness. This section discusses the existing and recommended stormwater public participation and involvement activities in Millis. Implementation of the recommended public participation and involvement activities is discussed in Section 10.0.

5.2 Existing Public Participation and Involvement Activities

Currently there are no public participation and involvement activities pertaining to stormwater in Millis. Public interests concerning water resources and water quality in Town are discussed in the Millis Master Plan. The Millis Master Plan outlines the community interest in water quality and resource protection, open space preservation and enhancement, and increased public education and involvement. The interest in water quality and resource protection is already present in Millis. Town interests and the goals of the Master Plan were considered in developing the public involvement and participation recommendations discussed below.



5.3 Proposed Public Participation and Involvement Activities

Public participation and involvement activities should be developed to provide an opportunity for all audiences (e.g., residents, businesses) to have direct involvement in improving stormwater quality in Millis. The following activities should be developed and used for the Millis Stormwater Public Participation and Involvement Program:

- **Stormwater Telephone Hotline** – a telephone hotline for reporting or discussing stormwater issues provides an easy avenue for all members of the community to participate in the stormwater program. Community efforts to identify stormwater problem areas and illicit discharges or pollution incidents can add strength and support to the Town's stormwater program.
- **Storm Drain Marking with Stencils** - storm drain marking projects create opportunity for various groups of volunteers to participate in preventing degradation of water quality in town. Stenciling storm drains with words and symbols is an effective way of reducing the dumping of pollutants into drains.

Even if dumping is not considered a major threat, stencils can create public awareness toward the connection of water quality and storm drains. The use of door hangers in areas where stencils are completed will assist in conveying the importance of protecting water resources. It may not be feasible or necessary to mark all storm drains in town because of time and money constraints. However, storm drain marking should begin in the highest priority sub-basins (C and H) and proceed to lower priority sub-basins (F and I).

- **River, Stream, and Pond Cleanups** - river, stream, and pond cleanup activities are a great way for people to literally get their hands dirty and get fast results from their efforts. Working within the river, stream, or pond can give people a greater appreciation of this complex ecosystem. Trash in a water body can degrade water quality, harm wildlife and people, and is an eyesore in a community. Before and after photos can show the effectiveness of cleanup activities. This program may involve the use of town trucks and other equipment depending on the scope of involvement and available resources. Later additions to the program can include an onsite expert to teach people about the river and pond ecology.

The cleanups could be integrated into additional community efforts to preserve the resource waters of Millis (the Charles River, Bogastow Brook, South End Pond, Bogastow Pond, Richardson's Pond, Walker Pond, McCarthy Pond, Maple Swamp, and Great Black Swamp).

Cleanup activities will also contribute to many natural resource goals



outlined in the Master Plan, such as creating a continuous Bogastow Brook/ Charles River Greenway.

Depending on staff resources and the response of the Millis community to these participation and involvement activities, the Town may wish to expand the program to include additional activities. The public education plan in Appendix A describes the activities above as well as some of the public participation and involvement activities the Town can use in the future, if desired.



6.0 Illicit Discharge Detection & Elimination

6.1 Phase II Requirement

The Phase II Stormwater rule requires regulated operators of MS4s to develop and implement an illicit discharge detection and elimination program. An illicit discharge is defined as any non-stormwater discharge to the MS4 with a few exceptions as listed below:

- Water line flushing
- Fire flows
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Street wash water
- Residential building wash waters, without detergents

Note: The above discharges should be addressed only if they are significant contributors of pollutants.

Common illicit discharges include sanitary wastewater from crushed or collapsed pipes or from surcharges, overflow from septic tanks, car wash wastewater, laundry wastewater, and improper disposal of automobile and household products. These illicit discharges may contribute high levels of pollutants, including heavy metals, toxic chemicals, oil and grease, nutrients, viruses, and bacteria to waterbodies. Illicit discharges can enter the municipal system either through direct connections (pipes connected directly to the storm drain) or through indirect connections (through cracked pipes, leaking tanks, or dumped by hand into storm drains). Municipal stormwater systems are not designed to accept, process, or discharge such wastewaters.

By developing an illicit discharge and elimination program, towns will be better able to establish the legal, technical, and educational means necessary to eliminate these discharges. The following elements are required in developing this program:



- **Storm Sewer Outfall Mapping** – Stormwater outfall locations and the names and locations of the waters that receive discharges from these outfalls must be mapped.
- **Local Regulation** – A local regulation must be passed (typically through an ordinance, bylaw or other regulatory mechanism) to prohibit non-stormwater discharges into the MS4. The bylaw should include appropriate enforcement procedures and actions.
- **Illicit Discharge Detection Plan** – A plan for detecting and addressing non-stormwater discharges must be developed and implemented. EPA recommends the following steps in developing this plan: 1) locate problem areas, 2) find the source, 3) remove/correct illicit connections, and 4) document actions taken.
- **Public Education** – Public employees, businesses, and the general public must be educated about the hazards associated with illegal discharges and improper disposal of wastes.
- **Historic Properties Evaluation** – This component is not required as part of the Illicit Discharge Detection and Elimination Program; however, it is included in this section since illicit discharge detection efforts can be used to fulfill a large part of the work for the evaluation of historic properties. As part of the stormwater permit, towns must determine whether there are any federal listed historic properties in town and whether stormwater is impacting those properties (refer to Section 2.9).

This section discusses existing and recommended activities in Millis to comply with the above program requirements.

6.2 Existing Illicit Discharge Detection & Elimination Measures in Place

Storm Drain Outfall Mapping

The Town has developed a GIS drainage base map that includes roads, hydrology, resource waters, topography, and drainage sub-basins. Part of this effort included mapping the existing storm drain system through the review of historical maps, existing plans and interviews with town employees. Copies of these base maps can be found in Appendix B. Field verification and identification of any unmapped outfalls has not yet taken place.



Local Regulation

The central component of this minimum control measure is the mapping of the storm drain system and the development and implementation of a proactive plan to detect and eliminate illicit discharges. These are non-regulatory BMPs discussed above and in the following section. These non-regulatory BMPs need legal authority and direction through the adoption of a regulatory control mechanism.

Section XIV, Environmental Performance Standards, of the Zoning By-Law prohibits discharges “of any materials in such a way, or of such a nature or temperature as may contaminate any running streams, water supply, water body, or otherwise cause the emission of dangerous or objectionable elements and accumulation of wastes conducive to the breeding of rodents or insects” to surface waters, the ground, a private sewage disposal system, or municipal sewage disposal system. This section effectively meets the EPA requirement to “effectively prohibit through ordinance, or other regulatory mechanism, illicit discharges into the separate storm sewer system.” The enforcement provisions of Section XII of the Zoning By-Law apply to this section and meet the EPA requirement to “implement appropriate enforcement procedures and actions as needed.”

Illicit Discharge Detection Plan

In 1991 the Town of Millis participated in a MA DEP Floor Drain Pilot Program for the identification of illicit floor drain connections. The program resulted in the identification of 26 illicit floor drain systems throughout Town that were corrected with the assistance of the DEP Bureau of Resource Protection. Two of these illicit floor drain systems previously discharged to a stream/river.

Although the Town does not have a formalized illicit discharge detection plan, reported or suspected illicit discharges are investigated as they are identified. If the Town does locate an illicit discharge, the responsible party is contacted and the issue is typically remedied. Like most towns, this system is based solely on resident calls and passive identification by town staff. A more proactive approach is necessary to locate illicit discharges and provide appropriate enforcement.

Public Education

Currently there are no public education activities in Millis related to stormwater. However, the town does conduct some public education for other topics and the avenues currently used can also be used for stormwater education. Millis organizes household hazardous waste collection days with other towns on an annual basis. This service helps to reduce the potential for citizens to dispose of hazardous wastes through



illicit discharges and encourages them to recycle wastes through this town program.

Historic Properties Evaluation

As discussed in Section 2.9, the John Partridge House is the only federally listed historic property in Millis. Based on existing stormwater drainage maps there are no stormwater discharges in the vicinity of the John Partridge House. According to the historic properties assessment requirements included in Addendum B of the MS4 permit, the Town of Millis meets the National Historic Preservation Act Eligibility Criteria and no further action is required at this time.

6.3 Needed Illicit Discharge Detection & Elimination Measures

Storm Drain Outfall Mapping

As discussed above, Millis has an established GIS drainage base map developed from existing Town files and interviews, however some field verification will be needed to ensure all outfalls have been mapped. The purpose of this mapping and field effort is to identify all stormwater outfalls with the potential for contamination from illicit connections. The additional mapping efforts will be combined with illicit discharge investigations discussed further below.

Local Regulation

While Sections XIV and XII provide the minimum regulatory controls required to meet the EPA Phase II ruling, the Town wishes to adopt a more comprehensive bylaw that specifically addresses illicit discharges to the municipal storm drain system. The actual prohibition language will be adopted as a separate general bylaw so that the standards and requirements contained or referenced in it will apply throughout the town, similar to other environmental bylaws such as the Wetlands Protection Bylaw. The bylaw will outline enforcement authority, enforcement measures, and penalties.

Illicit Discharge Detection Plan

The Town needs to develop and implement an illicit discharge detection plan. The plan will include a prioritization scheme, sampling parameters and correction actions. The plan will build upon the above base map development beginning with the highest priority sub-basins and work its way down to the lowest priority sub-basins.

Once the plan is developed, the Town will perform visual inspections of all identified stormwater outfalls. Observations of the outlet and



surrounding area will be made at each outfall. Sample observation logs are included in Appendix C. If dry weather flows are encountered during the inspections, the town will collect a sample for analysis. EPA recommends analysis of the following:

- conductivity;
- ammonia;
- surfactants;
- pH; and
- *E. coli*

The Illicit Discharge Detection Plan will outline procedures for identifying the source of discharge and actions that will be taken to correct the illicit discharge once the source is found. Plan actions and results will be documented to illustrate the progress made to eliminate illicit discharges.

Public Education

The Town is required to provide educational outreach to public employees, businesses, property owners, the general community and elected officials regarding ways to detect and eliminate illicit discharges. In addition, a hotline telephone number will also be provided for people to call and report possible illicit discharges. The Town will incorporate these tasks into its town-wide public education efforts discussed in Section 4.0.



7.0 Construction Site Stormwater Runoff Control

7.1 Phase II Requirement

The EPA notes that “sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation’s waters.” (EPA 833-F-00-008, Fact Sheet 2.6, January 2000).

The Phase II Final Rule requires the Town to develop, implement, and enforce a program to reduce pollutants in stormwater runoff entering the municipal storm drain from construction activities that result in a land disturbance of greater than or equal to one acre. To meet the regulatory requirements of this minimum control measure, the Town is required to:

- Adopt an ordinance or other regulatory mechanism requiring the use of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites
- Consider potential water quality impacts during the review of construction plans
- Implement procedures for site inspection and enforcement of construction impact control measures
- Include sanctions within the regulatory mechanism to ensure compliance with the regulations and approved plans
- Establish procedures for the receipt and consideration of information submitted by the public

As with all minimum control measures, the Town is responsible for determining the most appropriate Best Management Practices (BMPs) to meet the Phase II requirements. Following is a discussion of recommended BMPs, along with an evaluation of any existing regulatory controls and a potential implementation plan.

7.2 Existing Measures in Place

As part of CEI’s Phase II compliance assessment for the town of Millis, the Town’s existing regulations and bylaws were reviewed. The following regulations, bylaws, and documents were among those reviewed to determine to what extent the town already meets the standards required under the Phase II ruling and to make appropriate recommendations:

Phase II Stormwater Management Plan
Town of Millis



- General Bylaws
- Master Plan 2000
- Zoning By-Law
- Land Subdivision Rules and Regulations
- Wetlands Protection Bylaw
- Board of Health Regulations, including Stormwater Management Regulations, Environmental Health Review, and Floor Drain Regulations

Substantial flexibility is provided for in Phase II, intended to allow communities to address the required controls and related provisions using methods appropriate to their community. CEI has evaluated the existing bylaws and regulations and met with Town staff with the intent of making recommendations that are most appropriate to the Town of Millis.

Most communities have identified the potential for pollution from construction sites and have adopted erosion and sediment control regulations either as a separate by-law, within an existing set of regulations, or as a required component of the application review process. Erosion and sediment control review is included in Section XIII.C.4.e. of Millis' Zoning By-Law, concerning special permit and site plan review of commercial and industrial development. While these regulations are effective in ensuring that erosion and sediment controls are incorporated into the review process, they apply only to certain development applications and do not apply specifically to all site disturbance activities in excess of one acre. They also do not explicitly define sanctions for non-compliance, as required by the EPA Phase II ruling.

7.3 Additional Measures Needed

Erosion and Sediment Control Bylaw

In order to meet the minimum requirements of the EPA NPDES Notice of Intent, the Town will adopt an Erosion and Sediment Control Bylaw. The State of Massachusetts Department of Environmental Protection (DEP) is in the process of developing a model bylaw for Erosion and Sediment Control. The Town will incorporate it into a separate Stormwater Management and Erosion Control Bylaw, written to satisfy the requirements of both this minimum control measure and the Post-Construction minimum control measure. The model bylaws available for these two control measures will need to be reviewed and may need to be modified to work most effectively for Millis.

The Stormwater Management and Erosion Control Bylaw will be adopted as a separate general town bylaw so that the standards and requirements contained or referenced will apply throughout the town, similar to the



Wetlands Protection Bylaw. The sediment and erosion control component of the bylaw will include procedures for site inspections and enforcement actions, and sanctions for non-compliance. Procedures for receipt and consideration of information submitted by the public will be incorporated into the bylaw or adopted as a department or Town policy. A more detailed discussion of what will be included in the combined bylaw is included in Section 8.0.

At a minimum, the Erosion and Sediment Control Bylaw will regulate all land disturbance activities in excess of 40,000¹ square feet.

Receipt and Consideration of Information Submitted by the Public

The Town will also establish procedures for the receipt of information submitted by the public with respect to stormwater runoff from construction activities. A specific Town Department will be assigned the responsibility of receiving and documenting such calls (the number may be published as a hotline), and a procedure will be developed for addressing the inquiries.

¹ 40,000 square feet is a slight reduction in the one-acre (43,560 square feet) requirement under Phase II and is a common method for ease of use.



8.0 Post-Construction Stormwater Runoff Control

8.1 Phase II Requirement

The term “post-construction” used by the EPA for this minimum control measure may be misleading, as most of the Best Management Practices recommended are intended to guide the design of new development and redevelopment and consequently precede construction activity. Phase II recommended actions include zoning tools (cluster or conservation subdivisions, low-impact development, urban growth boundaries, etc.) and other regulatory controls to reduce stormwater runoff and improve water quality. Towards meeting the Phase II goal of reducing pollutants to the maximum extent practical, the EPA recommends a number of structural and non-structural BMPs. Structural BMPs may include infiltration basins, proprietary devices, and other structural devices designed to capture stormwater runoff from a site and remove pollutants before discharging off-site. Non-structural BMPs include on-site treatment, better site design, open space design and preservation, conservation easements, flexible roadway standards, green parking, and zoning. In addition, Phase II requires that the town adopt measures to ensure long-term operation and maintenance of structural BMPs.

The Phase II rule requires that stormwater be addressed from new development and redevelopment projects that disturb one acre or more and which discharge to the Town’s municipal storm sewer system (MS4). While there may be portions of Millis which are not, or would not, be tied into the MS4, in practice it makes sense to adopt this threshold town-wide so as not to encourage development within the unregulated areas and discourage development within regulated areas. Also, the boundary is likely to change every ten years based on new U.S. Census data. In addition, many communities wish to set stormwater management goals on sites much smaller than one acre to increase the effectiveness of the protection, to promote good planning and construction methods, and to standardize review and other administrative processes.

8.2 Existing Measures in Place

As part of CEI’s Phase II compliance assessment for the town of Millis, the Town’s existing regulations and bylaws were reviewed. The following regulations, bylaws, and documents were among those reviewed to determine to what extent the town already meets the standards required under the Phase II ruling and to make appropriate recommendations:



- General Bylaws
- Master Plan 2000
- Zoning By-Law
- Land Subdivision Rules and Regulations
- Wetlands Protection Bylaw
- Board of Health Regulations, including Stormwater Management Regulations, Environmental Health Review, and Floor Drain Regulations

Substantial flexibility is provided for in Phase II, intended to allow communities to address the required controls and related provisions using methods appropriate to their community. CEI has evaluated the existing bylaws and regulations and met with Town staff to make recommendations that are most appropriate to the Town of Millis.

Many Massachusetts communities have adopted some of the non-structural BMPs listed above. Millis's Zoning By-Law includes regulations for excavation (Section XIII.F.), filling (Section XIII.G.), land clearing (Section XIII.K.), and groundwater protection (Section XV). The Land Subdivision Rules and Regulations include drainage and grading standards, encourage the preservation of natural features and prohibit the removal of topsoil from the site. In addition, Section 5.12.2 of the Subdivision Regulations promotes infiltration as a Best Management Practice, references outside sources for stormwater BMP design, and requires the preparation of a Stormwater Management Plan, including an Operation and Maintenance Plan for the stormwater BMPs. These regulations demonstrate that Millis is requiring that stormwater runoff and sediment and erosion controls be incorporated into the design and review of subdivision development proposals. However, while these regulations are beneficial in protecting water resources and handling stormwater, they do not apply specifically to all site disturbance activities in excess of one acre.

8.3 Additional Measures Needed

The Town will implement the following regulatory measures to meet the minimum requirements of the EPA Phase II ruling.

Stormwater Management and Erosion Control Bylaw

The State of Massachusetts Department of Environmental Protection (DEP) is in the process of developing model bylaws for Stormwater Management and Erosion and Sediment Control. As stated previously, the Town will combine the two model bylaws for clarity and simplicity. These bylaws will be reviewed and may be modified to work most effectively for Millis. The combined Stormwater Management and Erosion Control Bylaw will be adopted as a separate general town bylaw



so that the standards and requirements contained or referenced in it will apply throughout the town, similar to the Wetlands Protection Bylaw. A separate Stormwater Management and Erosion Control Bylaw will be written to satisfy the requirements of both this minimum control measure and the Construction Site minimum control measure. At a minimum, the Stormwater Management and Erosion Control Bylaw will regulate all land disturbance activities in excess of 40,000¹ square feet.

The stormwater management component of the bylaw will be very similar to the stormwater management requirements currently contained in Millis' Land Subdivision Rules and Regulations. It will include approved calculation methods and calculation variables such as runoff curve numbers. It will also specify BMP design criteria and standards with reference to BMPs and RPMs contained in documents outside of the bylaws. The advantages are that the referenced documents can be updated to incorporate new technologies and methods or changing standards.

The erosion and sediment control component of the Stormwater Management and Erosion Control Bylaw requires the preparation of an Erosion and Sediment Control Plan. The Erosion and Sediment Control Plan will include plans and documents describing:

- Construction phasing
- Minimization of clearing and grading
- Establishment of clearing and grading limit lines and limit of work lines to reduce the compaction of soils from construction machinery or storage of materials
- Procedures for proper disposal of construction waste
- Proper siting and design of erosion and sediment controls, and
- An inspection and maintenance program

The erosion and sediment control component will also require that soils compacted during construction be tilled and aerated prior to revegetation. Adequate topsoil cover and any necessary soil amendments will be required to improve the ability of the plant material to take root and stabilize the soils and to improve the ability of the soil to absorb water. The bylaw will also include procedures for site inspection and enforcement of control measures and sanctions for non-compliance. A process for receipt and consideration of information submitted by the public will either be included in the erosion and sediment control component or adopted as a separate policy.

¹ 40,000 square feet is a slight reduction in the one-acre (43,560 square feet) requirement under Phase II and is a common method for ease of use.



Operation and Maintenance (O&M) Plan

The Stormwater Management and Erosion Control Bylaw will also require an Operation and Maintenance Plan for structural BMPs, similar to the existing requirements included in Millis' Subdivision Regulations. The O&M Plan will require the applicant to provide documentation detailing the proper operation and maintenance of the structural BMPs proposed for the development. The O&M Plan will specify, at a minimum:

- Preventative maintenance activities proposed for the structure(s)
- The anticipated frequency of maintenance and inspection
- Mechanism for funding activities called for in the O&M Plan
- An easily identifiable way for the layperson to know when non-routine maintenance is needed
- A statement by the owner that they are aware of and assume full responsibility for compliance with the O&M Plan.
- A legal instrument, such as the covenant currently used by Millis, will be recorded in the registry of deeds to ensure that the O&M Plan is adhered to and to allow the Town's designee to enter the property for inspection of the stormwater management practices and/or structures. Millis' Land Subdivision Rules and Regulations includes language allowing the town to perform the maintenance in the event that the owner does not, and stating the town's right to seek reimbursement for such expenses by the property owner

In addition to requiring the preparation of an O&M Plan, the Town will implement a process in which to monitor and enforce the required maintenance detailed in the O&M plan. Property owners will be required to submit annual reports demonstrating compliance with the O&M plan.

Technical Review

The Town will amend the appropriate regulations to require the submission of a Stormwater Management Plan and an Erosion and Sediment Control Plan in the review processes for all development activity that disturbs in excess of 40,000 square feet of land. The Land Subdivision Rules and Regulations already include a section on stormwater management and erosion and sediment controls. These will be amended to reference the combined bylaw as well.



9.0 Pollution Prevention/Good Housekeeping for Municipal Operations

9.1 Phase II Requirement

The Phase II Stormwater rule requires regulated operators of MS4s to examine their municipal operations and to alter them as needed to help ensure a reduction of pollutants to stormwater discharges. The alteration of municipal operations should focus on reducing the pollution that collects on streets, parking lots, open spaces and storage and vehicle maintenance areas. Improvements to land development and flood management practices and the maintenance of storm drain systems should also be considered to reduce pollutant impacts.

By reviewing and improving municipal operations, operators can help reduce the quantity and improve the quality of stormwater discharges associated with municipal activities. While these improvements achieve compliance with Phase II, regulated operators can often see an added cost-savings benefit as their daily operations become more efficient.

The development of an operations and maintenance program and employee training for municipal operations are required to fulfill the pollution prevention/good housekeeping element of the Phase II Stormwater rule. EPA recommends including the following program elements:

1. Inspection and Maintenance Plan – includes implementation of maintenance activities, schedules and inspection procedures for structural and non-structural stormwater controls to reduce floatables and other pollutants.
2. BMPs for Municipal Maintenance/Storage Facilities and Town-Wide Municipal Operations – includes implementing actions or controls to reduce or eliminate discharges from streets, roads, highways, municipal parking lots, maintenance and storage yards, waste transfer stations, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations and snow dumps.
3. Handling and Disposing of Stormwater Residuals – evaluates the adoption of procedures for proper disposal of catch basin cleanings, material dredged from detention basins and the like.



4. BMPs for Stormwater Projects – includes the adoption of procedures to ensure that new flood management projects are assessed for water quality impacts and that existing projects are assessed for incorporation of additional water quality protection devices or practices.
5. Employee Training –helps staff learn how to incorporate pollution prevention and good housekeeping techniques into their everyday municipal activities. Municipal operations such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance should be included.

The following sections discuss the existing pollution prevention and good housekeeping practices in Millis and the necessary actions to fulfill the Phase II requirements as well as implementation recommendations (i.e., future O&M program components, training). Pollution prevention and good housekeeping implementation activities with measurable goals are included in Section 10.0.

9.2 Inspection and Maintenance Plan

Improper maintenance of structural stormwater controls, including catch basins and stormwater treatment devices can have adverse effects on stormwater quality and that of receiving water bodies due to re-entry of pollutants into the stormwater as it passes through the structure. An inspection and maintenance schedule can help reduce pollutant loads from the drainage network.

The Millis Department of Public Works (DPW) owns a street sweeper and cleans all streets in town at least annually. Streets that are more prone to sediment and debris buildup are cleaned more often. The Town hires a contractor to clean the catch basins and manholes in Town at least once a year. Other town-owned BMPs (e.g., swales, ditches) are cleaned when needed, based on the knowledge of town employees. Currently, the Town does not maintain any privately owned BMPs (e.g., detention ponds, swales at subdivisions).

Currently, there is no written inspection schedule for the storm drain system in Millis. Structural maintenance activities are performed as needed when drainage issues arise (i.e., complaints about flooding) or when damage is discovered during cleaning activities.

Millis will develop an inspection and maintenance plan for the storm drain system and existing town-owned BMPs. A cleaning frequency for catch basins and street sweeping will be established in the plan. The inspection and maintenance plan will outline the inspection frequency,



what to look for during inspections, and what conditions trigger maintenance. A standardized inspection form will help streamline these activities. Maintenance activities can then be based on the results of the inspection. As data is collected, the inspection frequencies will be reduced as appropriate. The inspection and maintenance plan will also incorporate a policy for disposing of maintenance-generated wastes (i.e., stormwater residuals), as discussed in Section 9.3.

9.3 BMPs for Municipal Operations

Millis maintenance/storage facilities and town-wide operations were evaluated to determine if additional Best Management Practices (BMPs) could be implemented to decrease any potential impacts to stormwater from municipal operations. The following town-owned facilities were reviewed to determine if operations or storage practices at those facilities have the potential to impact stormwater:

- Police/Fire Station
- Town Hall
- Transfer Station
- Town Library
- Highway Garage
- Old Town Hall
- Clyde Brown Elementary School
- Centennial Park
- Millis Middle/High School

The results of the winter and spring 2002 field review are summarized below for each location with a description of existing practices, stormwater issues identified (if any), and needed improvements (BMPs). This information is also presented in the BMP table in Section 10.0.

Police/Fire Station

The Millis Fire Department, located at 901 Main Street, washes vehicles indoors with vehicle wash water that is collected by floor drains that discharge to an oil/water separator and the sanitary sewer system in Main Street. The Police Department washes vehicles at a private vehicle washing facility in town. The Police and Fire Departments will continue existing practices for vehicle washing indoors or at a private vehicle washing facility.

Transfer Station

The Millis Solid Waste Transfer Facility, located at 12 Island Road, contains numerous storage/disposal containers for solid waste and recyclable materials, a small office/gatehouse building (currently used by animal control) near the facility entrance, and a yard waste/composting area at the northern portion of the site.

The general rubbish loading area is covered and leachate from the loading area is collected and stored in a double-walled tight tank located just



outside of the building. Two retention basins receive the stormwater associated with the recycling and trash transfer activities at the site. These retention basins do not discharge off-site.

The Millis Transfer Station also serves as a recycling center and is therefore categorized as an industrial facility (SIC Code 5093) that requires a stormwater permit for the site. However, there are no stormwater discharges from the Transfer Station, thus, the industrial permitting program does not apply.

Highway Garage

The DPW Highway Garage, located at 7 Water Street, consists of a large maintenance building, vehicle fueling station, water treatment facility, and separate salt storage shed. The property consists mostly of paved areas with dirt parking and traffic areas to the east of the maintenance building and surrounding the salt shed.

Maintenance for all Town-owned vehicles and equipment is performed at the Highway Garage. The existing pollution prevention and good housekeeping practices related to maintenance and operation activities at the Millis Highway Garage are bulleted below:

- A facility audit of the Highway Garage was completed in 2001 and Millis implemented the recommendations provided in the audit to comply with state and federal environmental regulations. Compliance with these regulations leads to better housekeeping practices.
- All vehicle maintenance is conducted indoors and routine inspections for vehicle and equipment leaks are conducted. Nearly all DPW vehicles and equipment are stored indoors and leaking vehicles are repaired immediately.
- The Highway Department does not perform any vehicle paint spraying at the Highway Garage or any other location throughout Town. Some paint touch-up work is occasionally performed using a brush or aerosol can.
- Solid waste activities at the Highway Garage entail disposal of solid wastes in small containers inside the garage that are transported to the Transfer Station. There is no bulk storage of waste materials at the Highway Garage. A licensed contractor disposes of hazardous wastes properly and oily rags are disposed with the normal trash.
- The Highway Garage has a Spill Prevention Control and Countermeasures (SPCC) Plan that outlines the proper storage and handling procedures for oil. It discusses oil spill prevention, control,



and countermeasure devices and techniques to minimize the risk of spills, as well as how to handle spills should they occur. As part of the SPCC plan, the Highway Department routinely inspects petroleum storage areas and employees receive annual training on spill prevention and countermeasure techniques to prevent a spill from occurring and leaving the site.

- Waste oil and virgin oil are stored indoors and all maintenance activities are performed indoors.
- The Millis DPW washes vehicles inside the Highway Garage maintenance building and wash water is collected by floor drains that discharge to an oil/water separator and the sanitary sewer system in Environmental Way.
- Salt is stored inside a shed to prevent contact with stormwater. The entrance and loading area at the front of the salt shed is a paved drive with curbing. Sand and salt are mixed outside the salt shed and are immediately placed inside the shed for later use during storms. Trucks are loaded just outside the salt shed during a storm, after which any excess spilled materials are cleaned from the loading area.

The Millis DPW will continue the existing pollution prevention and good housekeeping practices at the Highway Garage, since current practices are protective of stormwater. This includes storing salt under cover and cleaning the loading area, as well as ensuring compliance with the SPCC Plan for the site.

The following stormwater issues were noted at the time of the inspection at the Highway Garage:

- Earth materials are mostly stored to the north of the salt storage shed, with a large sand pile to the east of the shed in close proximity to the adjacent tributary that drains north to Bogastow Brook. There are no berms to prevent the migration of sediments to the nearby tributary.
- The unpaved areas of the site contribute sediment to runoff that enters the tributary. The sand pile adjacent to the salt storage shed and the tributary is not contained and may contribute sediment to runoff that enters the tributary. A sediment deposit is present in the tributary as a result of stormwater from the property and the adjacent roadway (Environmental Way).
- All municipal vehicles and equipment are refueled at the Highway Garage. The fuel pumps dispense diesel and gasoline from two aboveground storage tanks. The fuel dispensing area for the gasoline



and diesel ASTs is not protected from rainfall and runoff conditions. Runoff can pick up small spills and petroleum residues and convey them onto the adjacent unpaved ground or to the downgradient tributary.

The following improvements will be made at the Highway Garage to address the stormwater issues identified above:

- The DPW will evaluate BMP options to prevent sedimentation to the adjacent waterway from site runoff and road material storage. This could involve: relocating and containing the sand pile (e.g., move the pile to the west of the salt storage shed and contain the pile with interlocking concrete blocks) and/or constructing a berm along the eastern property boundary to divert runoff south to a small sediment forebay to remove sediment, with an overflow to the adjacent tributary.
- The DPW will evaluate pollution prevention BMPs (e.g., roof, regrading, catch basin with absorbent pillows) for the fueling station.

Town Hall, Town Library, Old Town Hall, Centennial Park, Clyde Brown Elementary School, Millis Middle/High School

CEI inspected the facilities above for stormwater issues. These facilities typically do not have a high potential to impact stormwater; however, were included in this evaluation to determine if stormwater improvements can be made at the properties.

Some of the town-owned properties listed above use infiltration devices for stormwater on-site, such as leaching catch basins and galleries at the Town Hall and Clyde Brown Elementary School for parking lot runoff. Roof drainage at the Millis Middle/High School is handled by several drywell structures. The Old Town Hall and Town Library have roof drains that are connected to the drainage system at those properties. No significant impacts to stormwater were observed at the properties listed above.

Town-Wide Municipal Operations

Existing Town-wide municipal operations include those associated with:

- Parks, Cemeteries, Open Space and Recreation Maintenance
- Road Maintenance
- Winter Roadway Treatments
- Town Waste Disposal
- Snow Disposal



Existing Town operations are highlighted below:

- Parks and Open Space - maintenance activities related to parks and similar public lands have the potential to impact stormwater due to the use of hazardous materials (e.g., fertilizers and pesticides). Overuse or over application of such materials can result in contaminated runoff that degrades water resources and aquatic life.

The Millis DPW has an Integrated Pest Management (IPM) program for the application of pesticides on Town-owned lands such as school fields, parks, and cemeteries. The IPM program promotes cultural management techniques for management of pest insects and weeds. Some of these cultural management techniques include varying standards of quality for vegetation (i.e., allow 30% weeds) depending on the use of greenspaces and using chemical applications when pests are present versus using preventative treatments. Pesticides and fertilizers are applied by a licensed applicator that is properly trained to prevent over application of materials. These existing techniques significantly reduce the likelihood of pesticides entering runoff and water bodies in Millis.

- Road Maintenance - the Town of Millis does not perform municipal construction projects that result in large construction or land disturbance. The DPW performs most minor road maintenance and repairs. Filter socks are used for discharges from hydrant flow testing and dewatering activities during excavation work for utility repairs. An outside contractor performs bridge repairs. DPW maintains roadways using cold patch and a contractor performs re-surfacing, paving, and sealing activities (chip-sealing) with oversight from DPW. The DPW cleans their own shovels and equipment used for road patches inside at the Highway Garage.

A contractor paints road lane lines and the DPW paints crosswalks, arrows, and other street markings. Painting operations are only performed during dry weather conditions, since the paint will not adhere to the roadway even during humid conditions. The paints used for roadways are a water-based, non-toxic formula.

In general, the DPW follows the Bay State Roads Guidelines for deicing activities and sand/salt mixes are applied to roadways as necessary. The sand/salt mixture varies depending on the weather conditions. De-icing activities (i.e., the application of sand/salt mix) begin when an ice or snowstorm begins. As mentioned earlier, the Highway Department applies a sand/salt mixture; however, straight



salt is applied during very icy conditions. Sand/salt spreaders can be adjusted to vary the rate of application and width of the application path to meet changing weather conditions and differing road characteristics (e.g., width, design, traffic concentration). The timing and duration of sand/salt applications is based on the current and forecasted weather conditions.

There is a salt use restriction on some roads in Millis along the Norfolk County line for the protection of nearby water resources. Millis does not have any other salt restriction designated areas in town.

- Solid and Hazardous Waste Disposal - some Millis residents contract with local disposal companies for curbside trash removal and others bring their trash to the Town's Transfer Station. Residents can take cathode ray tubes to the Transfer Station for off-site recycling. The Town organizes household hazardous waste collection days with adjacent towns on an annual basis. Other locations throughout Town, such as the Town Hall and schools, have dumpsters for solid waste disposal. DPW personnel indicate that all dumpsters are locked and intact to prevent unauthorized disposal of wastes by individuals.
- Snow Removal - the Town of Millis conducts snow removal activities as needed in the downtown area along Route 109. Snow is dumped at the old gravel pits along Island Road, near the Transfer Station, as shown on Figure 9-1. The DPW conducts snow dumping in accordance with the Town's zoning and water supply protection regulations for snow disposal activities in Zone II wellhead areas.

The Town of Millis will begin to document the protocols for municipal operations to ensure that existing practices are continued in the future. Documentation of these practices can also assist in evaluating staff needs, providing budget information, and scheduling work.

9.4 Handling and Disposing of Stormwater Residuals

Past practices of handling and disposing of stormwater residuals (i.e., street sweepings and catch basin cleanings) consisted of mixing the materials for use as fill at an old gravel pit in town. This practice ceased in the Spring of 2002 and the DPW filed a Major Beneficial Use Determination (BUD) application with the Massachusetts Department of Environmental Protection (DEP) for the reuse of street sweepings and catch basin cleanings at the old gravel pit site. Street sweepings and catch basin cleanings are currently stored at the Highway Garage until a decision can be made by DEP.



9.5 BMPs for Stormwater Projects

The Phase II rule recommends procedures to ensure that new flood management projects are assessed for water quality impacts and that existing projects are assessed for incorporation of additional water quality protection devices or practices. For example, BMPs implemented to control floods should be designed to improve water quality.

The DPW performs most of the drainage repairs throughout Town as they are reported to the DPW. Drainage repairs performed by the DPW typically include the addition of a drainage structure and/or drainpipe to provide drainage for flooded areas or replace failed structures. The DPW will typically install a “French drain” or other infiltration structure when necessary to remedy drainage problems alongside roadways.

New culvert crossing structures that reduce the risk of roadway flooding are currently being installed at stream crossings along Route 109 (Main Street) as part of the Route 109 Reconstruction Project by the Massachusetts Highway Department. Additionally, the reconstruction project includes the installation of a subsurface drainage system for the Route 109 roadway that will collect roadway runoff, remove sediment, and provide water quality treatment through specialized treatment structures. The Town must maintain any drainage structures associated with Route 109 since it is a Town-owned road.

Millis will ensure that any projects proposed to alleviate flooding also consider water quality improvements.

9.6 Employee Training

The Phase II rule requires that Town employees be trained on how to incorporate pollution prevention/good housekeeping. Town training programs for stormwater are intended to teach employees about stormwater management, potential sources of contaminants, and stormwater BMPs. An awareness of stormwater pollution prevention efforts throughout Town can significantly decrease the stormwater impact of municipal operations and other activities.

There are currently no Town employee training efforts that are specific to stormwater in Millis. However, the Town conducts some employee training for other programs, which also provide some protection of stormwater. Existing training programs are outlined below:

- The Millis DPW receives annual spill prevention and control training as part of facility requirements under the Highway Garage SPCC plan. SPCC training relates directly to stormwater pollution prevention practices, since employees are trained on how to properly



handle and store oil products and wastes to prevent a release to the environment. The DPW will incorporate stormwater pollution prevention into the annual SPCC training curriculum.

- Other departments in Millis, such as the Fire Department, are familiar with oil and hazardous material spill training techniques. Training programs such as the OSHA 40-hour HAZWOP course provide employees with the knowledge to manage spill scenes and mitigate cleanup efforts. Such training efforts focus on protecting human health and the environment and can be used to convey stormwater awareness and pollution prevention efforts.
- Town entities such as the Board of Health, Conservation Commission, and Building Department do not have any formal stormwater training programs in place. Stormwater issues are handled by each entity as they arise, unless through local permit processes such as a wetlands Notice of Intent.

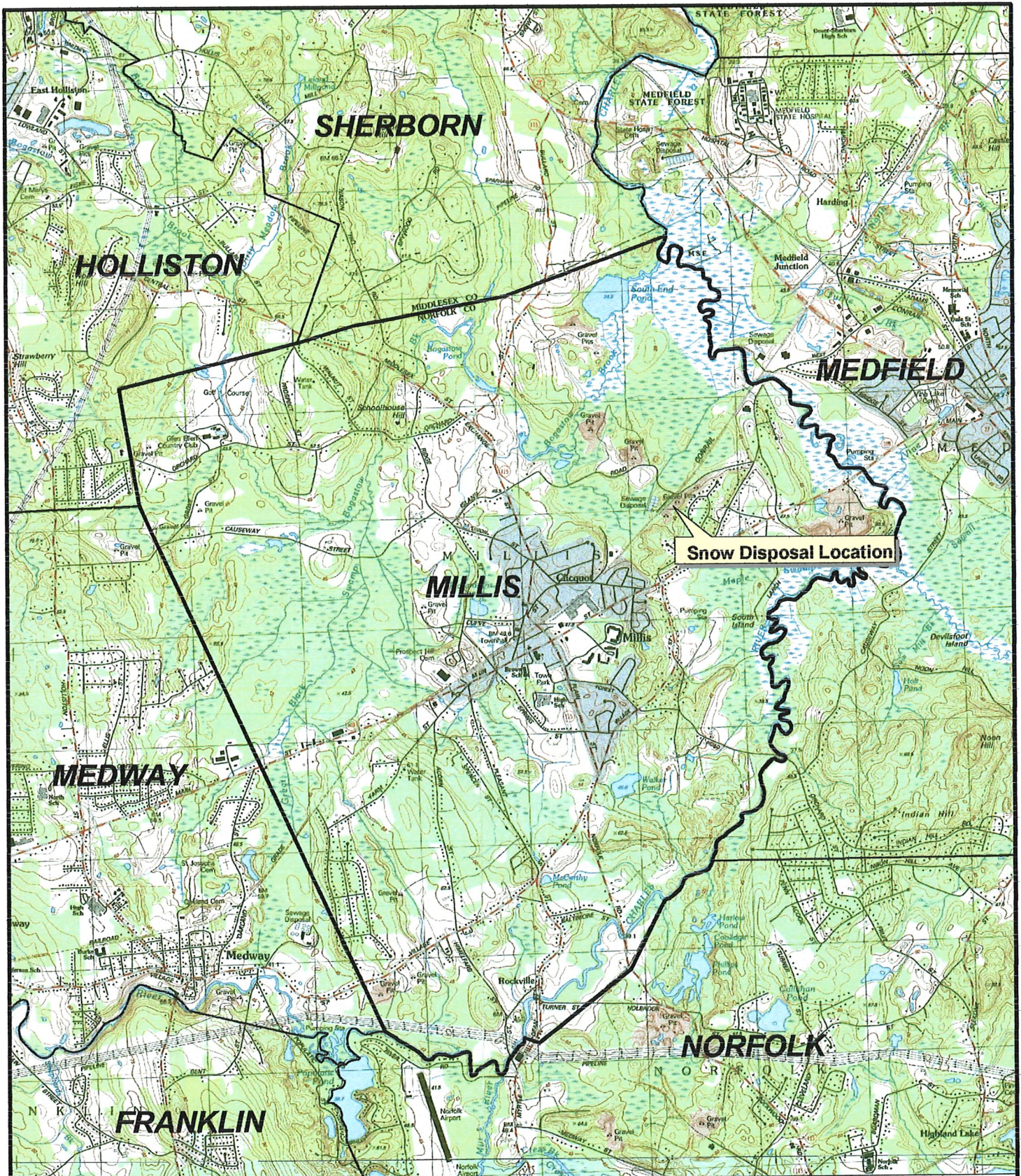
The requirements of Phase II impact several town agencies including the DPW, Building Inspector, Planning Board, Conservation Commission, and Board of Health, depending on how the town sets up compliance and enforcement actions. Each of the officials involved in Phase II regulated issues will be trained specifically in the stormwater areas that apply to them. For example, DPW personnel will be trained in appropriate operations to minimize stormwater impacts, while the Building Inspector will be trained to identify stormwater impacts from construction projects as part of a routine inspection.

The training program will include the following key elements, which can be tailored specifically to town operations.

- Phase II Program Overview
- Town Department Responsibilities
- Town Drainage System and Water Quality
- Spill Prevention and Response
- Good Housekeeping
- Material Management Practices
- Maintenance of Town-Owned Lands
- Stormwater Inspections
- Illicit Discharge Detection Program
- Construction Sites and Development

The town will build upon existing training programs, such as the SPCC training for the Highway Garage, when developing a program. Expanding these programs to cover a broader range of materials is often easier than developing a whole new program.





0.5 0 0.5 1 Miles

2000 0 2000 4000 6000 Feet

SCALE: 1:48000



Figure 9-1

Snow Disposal Location Millis, MA



Comprehensive Environmental Inc.

Data Source: MassGIS, USGS, CEI

10.0 Best Management Practices Plan, Notice of Intent & Stormwater Permit

Based on the recommendations provided in Sections 4.0 through 9.0, CEI developed a Best Management Practices Plan for the town to implement to improve water quality and comply with the six minimum measures of Phase II. This BMP Plan is a summary of the implementation measures provided in previous sections and outlines existing and required measures to meet Phase II. For consistency with the six minimum measures, the BMPs are broken down into six categories: 1) Public Education and Outreach; 2) Public Participation/Involvement; 3) Illicit Discharge Detection and Elimination; 4) Construction Site Runoff Control; 5) Post-Construction Runoff Control; and 6) Pollution Prevention and Good Housekeeping.

The following tables also outline the measurable goals for each BMP to gauge permit compliance, the responsible party(ies) for implementing each BMP, and an implementation schedule to be used throughout the five-year permit period. Cost estimates are provided on Table 10-2 for some BMPs based on Town input and the potential need for contractor assistance.

Notice of Intent and NPDES Stormwater Permit

The Town of Millis has completed and filed the required Notice of Intent (NOI) form: BRP WM 08A – NPDES Stormwater General Permit Notice of Intent for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). The NOI contains a summary of the information discussed in this Stormwater Management Plan, specifically Table 10-1, as well as the names of receiving waters and the number of stormwater discharges to those waters. Attached to the NOI is a detailed five-year schedule of the BMPs presented in Table 10-1.

The NOI outlines the Town's intentions for meeting the Phase II regulations and complying with the NPDES General Permit for MS4s. A copy of the Millis NOI and the NPDES permit that covers Millis is provided in Appendix D. This plan fulfills the requirements outlined in the NPDES General Permit for MS4s. In addition to the implementation activities outlined in this plan, the Town must also perform the following activities throughout the duration of the permit:

1. **Program Evaluation** – conduct annual evaluations of the Stormwater Management Program for compliance with permit conditions. The evaluation must include a determination of the appropriateness of the selected BMPs in efforts towards achieving the measurable goals outlined in Table 10-1. The Town must notify



EPA and DEP of additions or modifications to the Stormwater Management Program, some of which may require EPA or DEP approval. EPA or DEP may require that changes be made to the Stormwater Management Program over the permit term.

2. **Record Keeping** – maintain records that pertain to the Stormwater Management Program for a period of at least five years. Records need to be made available to the public and the Town may charge a reasonable fee for copying. Records need not be submitted to EPA or DEP unless specifically requested.
3. **Reporting** – submit an annual report to EPA and DEP at one year from the effective date of the permit (May 1, 2004) and annually thereafter. The content requirements for the report are outlined in detail on page 14 of the permit in Appendix D.



Table 10-1. Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation								
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year					
					1	2	3	4	5	
1. Public Education and Outreach										
1A	Distribute Brochures and Fact Sheets to Businesses and Residents	1. Procure/adapt education materials (see examples in Appendix A). 2. Mail to residents and businesses with water bills twice a year.	Department of Public Works	Number of articles and copies of materials.	*	*	*	*	*	*
1B	Develop and Broadcast Stormwater Presentation on Local Cable Network	1. Develop at least one presentation of Stormwater Management Plan. 2. Inform residents of stormwater broadcast video tapes during future selectmen meetings. 3. Show presentation and videos at two selectmen meetings and on cable annually thereafter.	Department of Public Works and Town Selectmen	Cable TV tapes of presentations. Show annually during permit term.	*	*	*	*	*	*
1C	Send out Stormwater Press Releases	1. Send press releases to all local papers twice a year regarding stormwater management program, the educational mailings, and the importance of stormwater management at each home.	Department of Public Works	Copies of Articles	*	*	*	*	*	*

Notes: These BMPs are discussed in report Section 4.0 and correspond with the BMPs identified in the Town's NOI form.

Table 10-1 *cont.* Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation							
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year				
					1	2	3	4	5
2. Public Participation/Involvement Options									
2A	Establish a Stormwater Telephone Hotline	1. Establish new telephone hotline number answered by the DPW for stormwater issues. 2. Advertise the number in local newspapers and include descriptive pamphlet about illicit discharges in utility bills. 3. Record telephone calls and response results in the existing DPW call log.	Department of Public Works	Record number of phone calls to hotline, copies of articles.	*	*	*	*	*
2B	Mark Storm Drains with Stencils During Cleaning	1. Identify contractor and/or watershed group(s) to participate/run. 2. Select and purchase storm drain stencils. 3. Mark catch basins starting in highest priority sub-basins. 4. Mark catch basins in medium priority sub-basins. 5. Identify marked storm drains on stormwater base map.	Department of Public Works	10 % of storm drains marked by year 1	*	*	*	*	*
2C	Conduct River, Stream, and Pond Cleanups	1. Identify program manager. 2. Recruit volunteers by advertising in local newspapers, Town website, cable TV, and through descriptive pamphlet included in tax or utility bill. 3. Identify cleanup methods and organization needs for different resource waters in Town (e.g., use of Town trucks, health and safety considerations). 4. Conduct cleanup activities for 2-3 resource waters per year. Start with small cleanup projects such as the drainage pond adjacent to Monroe Ave. and the swale along Centennial Park.	Department of Public Works and Volunteers	Cleaner streams as documented by before and after photographs.	*	*	*	*	*

Notes: These BMPs are discussed in report Section 5.0 and correspond with the BMPs identified in the Town's NOI form.

Table 10-1 *cont.* Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation							
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year				
					1	2	3	4	5
3. Illicit Discharge Detection and Elimination									
3A	Make Annual Household Hazardous Waste Collections Available to Residents	1. Setup a program with adjacent towns for annual household hazardous waste collections. 2. Establish a ticket system for residents to participate. 3. Organize collection events and advertise where to get a collection ticket with public education materials, emphasizing the need to collect wastes to avoid improper disposal and the resulting pollution.	Department of Public Works & Board of Health	Document quantity of tickets sold.	Program is established & running. * * * * * *				
3B	Develop Primary Town Storm Drain System Map	1. Develop a drainage base map showing town features (roads, hydrography, resource waters, topography, and drainage sub-basins). 2. Map storm drain system using historical mapping projects, existing plans, and knowledge of town employees. 3. Create a GIS base map and database for the Millis storm drain system.	Department of Public Works	80 % of system mapped on GIS.	Completed June 2002 Completed February 2003				
3C	Identify Illicit Floor Drain Connections at Businesses	1. Participate in MA DEP Pilot Program for disconnecting illicit discharges from floor drains at various businesses in Millis.	Department of Public Works	26 illicit connections identified and removed, 2 from the storm drain system and/or waterways in Millis.	Completed 1991				
3D	Complete Storm Drain System Map	1. Locate and field verify storm system outfalls in the highest priority sub-basin. 2. Locate and field verify storm system outfalls in the medium priority sub-basins. 3. Locate and field verify storm system outfalls in the lowest priority sub-basins. 4. Add outfall information to existing GIS base map.	Department of Public Works	All outfalls mapped by year 4.	* * * * *				
3E	Develop Illicit Discharge Prohibition Ordinance	1. Town planners review model bylaws and develop a comprehensive bylaw that specifically addresses illicit discharges to the municipal storm drain system. 2. Establish enforcement authority that includes the Department of Public Works. 3. Present draft to public. 4. Submit bylaw for Town meeting.	Department of Public Works and Board of Health	Obtain authorization to control inputs to the municipal drainage system. Bylaw at Town meeting by end of year 2.	* * * *				

Notes: These BMPs are discussed in report Section 6.0 and correspond with the BMPs identified in the Town's NOI form.


 **BMPs Already Completed**

Table 10-1 *cont.* Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation							
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year				
					1	2	3	4	5
3. Illicit Discharge Detection and Elimination									
3F	Develop Illicit Discharge Detection and Elimination Plan and Implement Activities	1. Develop illicit discharge detection plan (include prioritization scheme, sampling parameters, and correction actions). 2. Inspect all outfalls and sample dry weather flows at stormwater outfalls in the highest priority sub-basin. 3. Inspect all outfalls and sample dry weather flows at stormwater outfalls in the medium priority sub-basins. 4. Inspect all outfalls and sample dry weather flows at stormwater outfalls in the lowest priority sub-basins. 5. Analyze data and prioritize problem areas. 6. Seek sources of illicit discharges one by one and provide enforcement using newly adopted illicit discharge ordinance authority.	Department of Public Works, Board of Health, & Consultant	All outfalls examined by year 4. Sources traced and results documented within one year of discovery.	*	*			
					*				
						*			
						*	*		
					*	*	*		
					*	*	*	*	*
3G	Incorporate Information on Illicit Discharges into Public Education and Outreach Topics	1. Incorporate public education materials on hazards associated with illegal discharges and improper disposal of waste with public education program.	Department of Public Works & Board of Health	Copies of materials.	*	*	*	*	*
3H	Setup and Advertise a Hotline for Illicit Discharges	1. Tie hotline into BMP 2A. 2. Advertise (with public education materials) who to call to report dumping or other inappropriate inputs to the MS4. 3. Develop protocol for addressing complaints. 4. Keep records of complaints and actions taken.	Department of Public Works & Board of Health	Log of complaints and actions taken.	*				
					*				
					*				
					*	*	*	*	*

Notes: These BMPs are discussed in report Section 6.0 and correspond with the BMPs identified in the Town's NOI form.

Table 10-1 *cont.* Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation							
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year				
					1	2	3	4	5
4. Construction Site Runoff Control									
4A	Develop Erosion Control Regulation	1. Town planners review model bylaws. 2. Develop additional language to suit towns needs including sanctions for compliance. 3. Present draft to public. 4. Submit ordinance for Town meeting.	Building Inspector and Department of Public Works	Bylaw at Town meeting by end of year 2.	*	*	*	*	*
4B	Establish a Procedure for the Receipt of Information Submitted by the Public	1. Identify department to receive information or calls (whoever is responsible for inspections). May tie into BMPs 2A and 3H. 2. Advertise (with public education materials) who to call to report erosion or runoff concerns at construction sites in town. 3. Develop protocol for addressing inquiries or complaints. 4. Keep records of complaints and actions taken.	Building Inspector and Department of Public Works	Record number of phone calls to hotline, copies of articles.	*	*	*	*	*
4C	Develop & Adopt Design Standards Guidance for Erosion Controls	1. Develop and adopt a guidance outlining specific erosion control requirements, including design standards, desired by Millis. 2. Develop an inspection checklist. 3. Set up tracking program. 4. Conduct inspections of erosion controls.	Planning Board, Department of Public Works, Conservation Commission, and Consultant	Inspection checklist and documented inspections.	*	*	*	*	*

Notes: These BMPs are discussed in report Section 7.0 and correspond with the BMPs identified in the Town's NOI form.

Table 10-1 *cont.* Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation							
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year				
					1	2	3	4	5
5. Post-Construction Runoff Control (required)									
5A	Develop BMP Regulation	1. Town planners review model bylaws. 2. Develop additional language to suit Town needs. 3. Present draft to public. 4. Adopt ordinance.	Building Inspector and Department of Public Works	Bylaw at Town meeting by end of year 2.	*	*	*	*	*
5B	Develop and Implement Inspection Program	1. Identify the department(s) who will perform inspections. 2. Identify specific O&M requirements desired by Millis and reference in new Post-Construction Bylaw. 3. Require operation and maintenance plan of developers. 4. Set up permit program and maintenance tracking program that requires annual submittal of maintenance report by owner. 5. Conduct inspections of post-construction runoff controls for sites where no annual report is received.	Building Inpsector and Department of Public Works	Copies of maintenance reports received annually, plus records of inspections completed and results.	*	*	*	*	*
5C	Develop BMP Design Standards	1. Identify specific BMP requirements desired by Millis. 2. Develop design standards for developers to follow including design performance criteria, BMP examples, and maintenance requirements (i.e., access, inspection, frequency). 3. Set up review criteria. 4. Incorporate in regulations.	Planning Board, Department of Public Works, Conservation Commission, and Consultant	Copy of improved bylaws as adopted.	*	*	*	*	*

Notes: These BMPs are discussed in report Section 8.0 and correspond with the BMPs identified in the Town's NOI form.

Table 10-1 *cont.* Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation							
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year				
					1	2	3	4	5
6. Pollution Prevention and Good Housekeeping									
6A	Clean Catch Basins	1. Clean all catch basins in Town annually.	Department of Public Works	Clean all catch basins.	Ongoing (once/year)				
6B	Sweep Streets in Town	1. Sweep all streets in Town one to two times a year, depending on sub-basin priority.		Priority plan of sweeping based on water quality impact. Volume of sweepings collected.	Ongoing (1-2 times/ year)				
6C	Store Road Salt Under Cover and Clean Loading Area	1. Store all road salt materials under cover at the Highway Garage and ensure loading area is cleaned as needed.		Minimize stormwater contact with salt.	Ongoing				
6D	Calibrate Salt Spreading Equipment	1. Calibrate salt spreading equipment to suit roadway characteristics and prevent over-application.		Prevent over-application of salt as shown with calibration records.	Ongoing				
6E	Use Low Salt Applications at Designated Areas	1. Use low salt applications along the Norfolk county line for the protection of nearby water resources.		Use less salt at Norfolk county line than at other roadways as demonstrated with application rate.	Ongoing				
6F	Use IPM Practices for Application of Pesticides in Town	1. Use Integrated Pest Management (IPM) practices for application of pesticides (herbicides and insecticides) and fertilizers on Town-owned lands. 2. Promote cultural management techniques (i.e., use of greenspaces, high level of acceptance for weeds) throughout town. 3. Chemical applications used only when necessary.		Copy of IPM Plan.	Ongoing				
6G	Use Licensed Applicators for Fertilizers and Insecticides in Town	1. Use a licensed applicator to apply fertilizers and pesticides in Town.		Record quantities of fertilizers and pesticides purchased annually.	Ongoing				
6H	Ensure Compliance with SPCC Plan for the Highway Garage	1. Ensure compliance with existing Spill Prevention Control and Countermeasure (SPCC) Plan for the Highway Garage. Includes measures and procedures to prevent and control a discharge of oil from the facility.		Prevent releases of oil at the Highway Garage through weekly inspections, annual training, and annual plan evaluation.	Ongoing				
6I	Ensure Compliance for Snow Disposal in Town	1. Ensure compliance with zoning and water supply protection regulations for snow disposal activities in Town.		Map of acceptable snow disposal areas.	Already Completed				

Notes: These BMPs are discussed in report Section 9.0 and correspond with the BMPs identified in the Town's NOI form.


 BMPs Already Completed

Table 10-1 *cont.* Best Management Practices Plan - Implementation of Phase II Activities

BMP ID	BMP Description	Implementation							
		Tasks for each BMP	Responsible Dept./Person	Measurable Goal	Year				
					1	2	3	4	5
6. Pollution Prevention and Good Housekeeping									
6J	Use Filter Socks for Excavation and Hydrant Waters	Use filter socks for excavation dewatering activities and hydrant flow testing/flushing and control releases to prevent erosion.	Department of Public Works	Prevent discharge of sediments during dewatering and hydrant flow testing activities.	Ongoing				
6K	Evaluate Pollution Prevention BMPs for the Fueling Station at the Highway Garage	1. Evaluate BMP options (i.e., covering for fueling area) and develop designs for structures. 2. Obtain funding for construction. 3. Construct or implement BMPs at the fueling station.		As-built sketches or plans and photos.	* * *				
6L	Evaluate BMPs at the Highway Garage to Prevent Sedimentation to the Adjacent Waterway from Site Runoff and Road Material Storage	1. Design berms, swales, and sediment forebay for site discharges to the brook adjacent to the Highway Garage. 2. Obtain funding for construction. 3. Construct storm water control structures at the site.		As-built sketches or plans and photos.	* * *				
6M	Develop an Inspection and Maintenance Plan	1. Develop a written inspection/maintenance schedule for structural BMPs throughout Town. 2. Perform inspection and maintenance, modifying frequency as necessary. 3. Develop an in-house policy for disposing of maintenance generated wastes (i.e., catch basin cleanings, street sweepings, sediments from detention ponds).		Written policy. Records of inspections and maintenance.	* * * *				
6N	Ensure Water Quality Improvements are Considered for Flood Projects	1. Ensure, through DPW review, that any projects proposed to alleviate flooding also consider water quality improvements.		Records of Flood Control Projects	* * * *				
6O	Conduct Town Employee Storm Water Training	1. Identify program coordinator. 2. Evaluate the need for storm water training for all Town departments (e.g., Fire and Police Department) based on current and potential pollution prevention roles. 3. Prepare or contract curriculum/course materials. 4. Tie Highway Garage SPCC training into the storm water pollution prevention training curriculum. 5. Conduct annual storm water training session for Town departments in conjunction with SPCC training session for Highway Department employees.		Attendance sheet and copy of program.	* * * * * * *				

Notes: These BMPs are discussed in report Section 9.0 and correspond with the BMPs identified in the Town's NOI form.

 **BMPs Already Completed**

Table 10-2. Cost Estimates for BMP Implementation¹

BMP ID	BMP Description	Cost	Comments
3D	Storm Drain System Map	\$27,500	Includes field verification of storm system outfalls and drainage network and GPS equipment.
3F	Develop Illicit Discharge Detection and Elimination Plan and Implement Activities		
	Plan	\$3,900	Includes plan with existing data (if any), prioritization scheme, sampling parameters, sampling procedures, log sheets, source identification options.
	Sample dry weather flows	\$330	Cost is per location where dry weather flow is detected. Cost assumes that dry weather sampling will occur during field mapping identified under task 3D and is an add on to that cost estimate. Cost includes laboratory analysis of conductivity, ammonia, surfactants, pH and E. coli. Costs include field equipment to collect samples and measure temperature in the field.
4C	Develop Guidance for Erosion Controls		
	Guidance for use by developers	\$1,500	Includes typical sample designs and requirements for developers to use along with a matrix of when and where to use.
	Checklists for use by town for review and inspections	\$925	Includes checklists to review developers plans and to conduct on-site inspections for compliance.
5C	Develop BMP Design Standards		
	BMP checklist	\$800	Includes development of checklist to evaluate plans as they are received using existing in-house resources and incorporating the Stormwater Management Policy of other reference document used by the Town.
	Site specific BMP design standards	\$18,000 varies with development size	Includes adapting existing design standards to Millis and design of a BMP for an existing site within town for developers to use as an example.
	Developer Plan Review		Includes technical review of developers' designs and plans.
6O	Conduct Town Employee Stormwater Training		
	Highway Department training	\$2,000	Annual cost for CEI to conduct training.
	Police and Fire Department training	\$1,800	Annual cost for CEI to conduct training.
	Other Town departments training	\$1,800	Annual cost for CEI to conduct training.
	Combined training for all departments	\$5,000	Annual cost for CEI to conduct training.

1. Cost estimates are provided for the BMPs above based on the potential need for contractor assistance with these BMPs. Estimates were developed based on the costs for Comprehensive Environmental Inc. to complete the BMPs.

References

- Design Consultants, Inc., 1998 & Fay, Spoffard, and Thorndike, Inc., 2001. *Drainage Plans. Route 109 Reconstruction Project, Mass Highway Department. Roadway and Utility Reconstruction. Millis, Massachusetts.*
- GCG Associates, Inc., 1994 & 2001. *Forest Road and Walnut Street. Town of Millis, Massachusetts Water System and Roadway Improvements.*
- Gordon E. Ainsworth Associates, 1980. *1980 Drainage Maps.*
- Massachusetts Department of Education, 2002. *Profile. Millis – Directory Information.*
- Massachusetts Department of Environmental Protection, 1996, *Stormwater Management Policy.*
- Massachusetts Department of Environmental Protection and Office of Coastal Zone Management, 1997, *Stormwater Management Policy Handbook.*
- Massachusetts Department of Environmental Protection. Bureau of Waste Site Cleanup, 1999. *South End Pond, Millis. Release Log Form.* September 10, 1999.
- Massachusetts Department of Housing and Community Development, 2003. *Community Profile, Town of Millis.*
- Massachusetts Department of Revenue, 2003. *Socioeconomic Profile.* Division of Local Services. Municipal Data Bank.
- Massachusetts Executive Office of Environmental Affairs. Department of Environmental Protection, 1996. *Letter. Re: Millis – Solid Waste Island Road Landfill. BWP SW 23 – CSA. Comment Letter. Transmittal No. 77036.* February 9, 1996.
- Massachusetts Executive Office of Environmental Affairs. Department of Environmental Protection, 1997. *Letter, Re: Notice of Proposed Permit Decision and Statement of Basis. Howie Oil Company.* October 21, 1997.
- Massachusetts Executive Office of Environmental Affairs. Department of Environmental Protection, 1998. *Letter. Re: Millis Public Water Supply. Well #4-Disinfection and Land Use. PWS ID # 3187000.* June 16, 1998.
- Massachusetts Executive Office of Environmental Affairs. Department of Environmental Protection, 1999. *Letter, Re: Millis Public Water Supply. Revised Sample Schedule. PWS ID # 3187000.* January 12, 1999.
- Massachusetts Geographic Information System (MassGIS). State GIS Data Layers. Retrieved January, 2003, from <http://www.state.ma.us/mgis/>
- Phase II Stormwater Management Plan
Town of Millis*



Massachusetts Riverways Programs. *Pipe and Storm Drain Mapping Survey Sheet*. Adopt-A-Stream Program

Metropolitan Area Planning Council. GIS Data Layers for Town Zoning Districts and Public Water Supply Locations and Zones I and II.

Planners Collaborative Inc, 2001. *Millis Master Plan 2000*. Town of Millis, Massachusetts.

Town of Millis, 1999a. *General Bylaws*. August 1999.

Town of Millis, 1999b. *Zoning By-Law*. May 1999.

Town of Millis, 2001. *Millis Master Plan 2000*. April 2001.

Town of Millis, 1993. *Land Subdivision Rules and Regulations*. November 1993.

Town of Millis, Board of Health, 1990. *Public and Environmental Health Review Regulations and Standards*.

Town of Millis, Board of Health, 1991. *Storm Water Management Regulations*.

Town of Millis, Board of Health, 1994. *Floor Drain Regulations*.

Town of Millis Board of Health, 1997. *Board of Health Report. South End Pond Investigation*. September 8-9, 1997.

Town of Millis Board of Health, 1998 *Board of Health Report. South End Pond Sanitary Survey*. March 11, 1998.

U.S. Census Bureau, Census 2000a. *Table DP-1 – Profile of General Demographic Characteristics: 2000. Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data. Geographic Area: Millis town, Norfolk County, Massachusetts*. American FactFinder.

U.S. Census Bureau, Census 2000b. *Table DP-2 – Profile of Selected Social Characteristics: 2000. Data Set: Census 2000 Summary File 3 (SF 3) – Sample Data. Geographic Area: Millis town, Norfolk County, Massachusetts*. American FactFinder.

U.S. Census Bureau. GIS Data Layer of Urbanized Areas. Retrieved December, 2002, from <http://www.census.gov/geo/www/cob/ua2000.html>

U.S. Environmental Protection Agency, 1990. *Draft Manual of Practice: Identification of Illicit Connection*. Permits Division, EN-336.

Phase II Stormwater Management Plan
Town of Millis



- U.S. Environmental Protection Agency, 1992. NPDES Storm Water Sampling Guidance Document. Office of Water. EPA 833-B-92-001.
- U.S. Environmental Protection Agency, 1998. *Guidance Manual for Implementing Municipal Storm Water Management Programs*. Water Supply and Water Resources Division (Final Draft).
- U.S. Environmental Protection Agency, 1999. *National Pollutant Discharge Elimination System – Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule*. 40 CFR Parts 9, 122, 123, and 124. Federal Register: December 8, 1999, Vol. 64, No. 265.
- U.S. Environmental Protection Agency, 2000a. *Notice: Addendum A – Endangered Species Guidance*. Federal Register: October 30, 2000, Vol. 65, No. 210.
- U.S. Environmental Protection Agency, 2000b. *Storm Water Phase II Compliance Assistance Guide*. Office of Water. EPA 833-R-00-002.
- U.S. Environmental Protection Agency, 2000c. *Storm Water Phase II Final Rule – Fact Sheet Series 1.0-4.0*. Office of Water. EPA 833-F-00-001 through -015.
- Weston & Sampson Engineers Inc. *Letter. Re: Island Road Sanitary Landfill. Semi-annual Groundwater and Surface Water Monitoring Report. Millis, Massachusetts. WSE# 96159.A*. December 16, 1997.
- Whitman & Howard, Inc., 1967. *Drainage Maps. Drainage Study. Town of Millis, Mass.*



APPENDIX A

Millis Storm Water Public Education Plan, Focus Area Reference Materials

Stormwater Public Education Plan

Phase II Stormwater Management Program

Millis, MA

JULY 2003

Prepared for:

Town of Millis
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Millis, MA 02054



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Table of Contents

Section	Page No.
1.0 Introduction	1
2.0 Demographics	3
3.0 Residents	4
3.1 Focus Areas	4
3.2 Proposed Resident Education and Outreach Activities	5
3.3 Future Resident Education and Outreach Options	5
3.4 Proposed Resident Participation and Involvement Activities	6
3.5 Future Resident Participation and Involvement Options	7
4.0 Businesses and Institutions	8
4.1 Focus Areas	8
4.2 Proposed Business/Institution Education and Outreach Activities	9
4.3 Proposed Business/Institution Participation and Involvement Activities	10
4.4 Future Business/Institution Participation and Involvement Options	10

Tables

Table 1. Millis Stormwater Public Education Plan Summary	2
Table 2. Town of Millis Demographics	3

Attachment

Reference Materials for Public Education Focus Areas	end of plan
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1.0 Introduction

The Stormwater Phase II rule requires covered municipal separate storm sewer systems (MS4s) to develop and implement stormwater management programs and practices to control polluted stormwater runoff. A major component of the program is public education and outreach and participation. Specifically, regulated MS4s are required to:

“implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of stormwater discharges on local waterbodies and the steps that can be taken to reduce stormwater pollution; and determine the appropriate best management practices (BMPs) and measurable goals for this minimal control measure.”

MS4s are also encouraged to involve the public in the development and implementation of stormwater management programs and practices. The goal is to involve a diverse cross-section of people who could offer a multitude of concerns, ideas, and connections during the program development and implementation process.

This plan outlines the Town of Millis’s approach to a public education program that meets the requirements of Phase II. The plan includes a diverse array of educational outreach and participation programs in an attempt to reach as wide an audience as possible.

The educational plan, summarized in Table 1, is divided into two target audiences, residences and businesses/institutions. This is due to the different impacts each audience has on stormwater runoff and the different strategies needed to inform and involve them. The education plan for each audience is broken down into three sections: 1) focus areas; 2) outreach; and 3) involvement programs. The focus areas are where pollutants are most likely to be picked up and conveyed by stormwater runoff degrading nearby bodies of water. The outreach and involvement sections discuss different methods that can be used to educate the audience about the focus areas through materials and participation. Specific educational material and outreach activities can be further tailored to different residential communities such as urban, culturally diverse, and rural areas and to different types of businesses such as garden centers and vehicle repair shops.

The public education program may begin smaller due to time and financial constraints and grow as more people and groups get involved taking on some of these responsibilities. Volunteers, students, retirees, and interested organizations can help and/or direct education programs reducing the workload to the town.



Table 1 – Millis Stormwater Public Education Plan Summary				
Public Education Topics¹	Proposed Education & Outreach Activities²	Future Education & Outreach Options³	Proposed Participation & Involvement Activities⁴	Future Participation & Involvement Options⁵
Residents				
1. Lawns & Gardens 2. Vehicle Leaks 3. Septic Systems 4. Household Hazardous Waste 5. Pet Waste 6. Illicit Discharges	1. Mailings 2. Local Cable Broadcasts 3. Press Releases	1. Local Newspaper 2. Poster Display 3. Free Video Rental	1. Hotline 2. Storm Drain Stenciling 3. River and Pond Clean Up	1. Classroom Education 2. Native Tree/Shrub Planting 3. Stream Monitoring 4. Volunteer Stormwater Organization
Businesses and Institutions				
1. Housekeeping Practices 2. Catch Basins 3. Vehicle/ Equipment Washing 4. Toxic Cleaners 5. Parking Lots 6. Illicit Discharges	1. Mailings 2. Press releases	None at this time.	1. Hotline 2. Storm Drain Stenciling 3. River and Pond Clean Up	1. Employee Training 2. "Clean Stream" Participation Incentives 3. Adopt-A-Stream 4. Pilot Program Study

1. These are the public education topics that Millis will include in their Public Education Program.
2. These are the avenues Millis will use to relay the public education materials to residences and businesses.
3. These are other options the town may consider to relay public education materials in the future, depending on the success of the initial program.
4. These are the programs Millis will use to involve the public in stormwater management.
5. These are programs that will be considered to involve the public in the future depending on the success of and response to the public education program. Selected options will be based on the public's response and receptiveness.

2.0 Demographics

The public participation and involvement measures of Phase II state that MS4's should include all economic and ethnic groups. A look at the demographics (see Table 2) for the area provides information to determine the target audiences.

Demographic data from the U.S. Census Bureau indicates that 96.9% of the population over 5 years old speaks English "very well". Thus, it is not anticipated that bilingual outreach materials will be needed. It should also be noted that 77% of the population live in a family owned home. Accordingly, concentrating educational efforts toward children and including outreach material with utility bills could be an effective strategy based on these numbers.

Table 2 - Town of Millis Demographics ¹		
Millis Total Population	7,902	Percent of Total Population
Age		
0-14 yrs	1,833	23.2
15-24 yrs	692	8.8
25-54 yrs	3,957	50
55-64 yrs	677	8.6
65+ yrs	743	9.4
Housing Tenure (units)		
Owner-occupied	2,312	77.0
Renter-occupied	692	23.0
Race²		
White	7,660	96.9
Black or African American	56	0.7
Asian	90	1.1
Hispanic or Latino	74	0.9
Some other Race	19	0.2
American Indian and Alaska Native	11	0.1
Language Spoken at Home³		
English Only	6,684	92.0
Language other than English	579	8.0
Speak English Less than "Very Well"	224	3.1

1. US Census Bureau, Census 2000 American FactFinder.
2. Total population by race is greater than actual population due to people reporting under more than one race.
3. Figures are based on the population 5 years old and over in Millis.



3.0 Residents

Residents are the largest audience and have the most to gain from reducing the impacts of stormwater runoff. Actions taken by residents can decrease community costs associated with the use and maintenance of expensive stormwater treatment facilities and treating degraded water quality and stream banks.

3.1 Focus Areas

The following is a list of topics with a brief description of their stormwater impacts that will be included in the public education outreach and participation efforts to residents of the Town of Millis. Education materials will inform residents of the impacts these focus areas can have, and describe ways to reduce them. Reference materials for each of the focus areas are provided as an attachment to this plan.

- Lawns and Gardens - stormwater runoff can pick-up and convey fertilizers and pesticides to nearby water bodies. Proper yard maintenance to minimize impacts will be covered in education materials.
- Vehicle Leaks - vehicle fluids such as engine oil and coolant can leak on to road surfaces and get washed into storm drains, leading into nearby surface waters during storm events. Proper vehicle maintenance to minimize impacts will be addressed in education materials.
- Septic Systems - systems that are not properly maintained can leach septic wastes into nearby streams. Proper use and maintenance of septic systems will be conveyed in education materials.
- Household Hazardous Wastes - improper disposal of household hazardous wastes, including dumping into storm drains and onto the ground, can pollute nearby water bodies and harm human health and the environment. Proper handling and disposal practices including appropriate disposal locations will be addressed in education materials.
- Pet Waste - pet waste contains harmful pathogens that can be washed into nearby water bodies and degrade water quality. Proper handling of pet waste will be addressed in education materials.
- Illicit Discharges - an illicit discharge is a non-stormwater discharge due to illegal connections to the storm drain system. As a result of these illicit connections, wastes enter into storm drains or directly into local waters. Illicit discharges from residences can be the result of a failing septic system or illegal dumping practices.



3.2 Proposed Resident Education and Outreach Activities

Once the public education materials have been collected/developed, they will be distributed and conveyed to residents. The following outreach methods will be used in the Town of Millis to educate residents about the impacts of stormwater runoff.

- Mailings - mailings in the form of fact sheets, brochures, fliers, and newsletters will be distributed to the public, relevant to the focus areas previously identified. This will be done through bulk mailings and inclusion of the educational material with water bills twice a year. Mailings reach a wide audience since all residents have mailing addresses and most have utility bills to pay.
- Local Cable Broadcasts - a few minutes of airtime on the local cable channel can be an effective way to educate the public on the impacts of stormwater runoff. Time for such a broadcast will be incorporated into the Selectmen meetings, which are already broadcasted on a regular basis. Town employees or hired professionals will communicate the message. Television advertisement is a highly effective way to convey information to large groups of people. Additionally, the local cable broadcasts in Millis are well valued according to most viewers.
- Press Releases - press releases will be sent to local newspapers twice a year about the stormwater management program, the educational mailers, and the importance of stormwater management at home.

3.3 Future Resident Education and Outreach Options

Millis may consider the following outreach options at a later time period when more resources are available to the town.

- Local Newspaper - local newspapers can be used as a medium to educate residents and inform them of upcoming events related to stormwater and water quality. Newspapers can reach a wide audience.
- Poster Display - space can be made available at public places such as the town hall, library, and schools to display posters, brochures, fact sheets, and other stormwater related material for residents to view or take. These displays can be located in areas where residents frequently pass such as main entranceways and registration/voting areas.
- Free Video Rental - a video could be made through various agency resources to show the damaging effects of stormwater runoff such as



degraded stream banks, declining fish populations, scouring, and costly treatment facilities. The video could also demonstrate good stormwater management practices that residents can do themselves. This video can be made available by free rental or sold for a modest fee. The video can also be loaned to schools and other organizations. A visual presentation can have a larger impact for some people than printed material.

3.4 Proposed Resident Participation and Involvement Activities

The following programs will be used to increase community involvement in stormwater management and help reduce the impacts of stormwater.

- Hotline (Questions/Reporting) - a telephone hotline for reporting or discussing stormwater issues provides an easy avenue for all members of the community to participate in the stormwater program. Community efforts to identify stormwater problem areas and illicit discharges or pollution incidents can add strength and support to the Town's stormwater program.
- Storm Drain Marking with Stencils - storm drain marking projects create opportunity for various groups of volunteers to participate in preventing degradation of water quality in town. Stenciling storm drains with words and symbols is an effective way of reducing the dumping of pollutants into drains.

Even if dumping is not considered a major threat, stencils can create public awareness toward the connection of water quality and storm drains. The use of door hangers in areas where buttons or stencils are completed will assist in conveying the importance of protecting water resources. It may not be feasible or necessary to mark all storm drains in town because of time and money constraints. Storm drain marking will begin in the highest priority sub-basins (C and H) and proceed to lower priority sub-basins (F and I).

- River, Stream, and Pond Cleanups - river, stream, and pond cleanup activities are a great way for people to literally get their hands dirty and get fast results from their efforts. Working within the river, stream, or pond can give people a greater appreciation of this complex ecosystem. Trash in a water body can degrade water quality, harm wildlife and people, and is an eyesore in a community. Before and after photos can show the effectiveness of cleanup activities. This program may involve the use of town trucks and other equipment depending on the scope of involvement and available resources. Later additions to the program may include an onsite expert to teach people about the river and pond ecology.



The cleanups may be integrated into additional community efforts to preserve the resource waters of Millis (the Charles River, Bogastow Brook, South End Pond, Bogastow Pond, Richardson's Pond, Walker Pond, McCarthy Pond, Maple Swamp, and Great Black Swamp). Cleanup activities will contribute to many natural resource goals outlined in the Master Plan, such as creating a continuous Bogastow Brook/ Charles River Greenway.

3.5 Future Resident Participation and Involvement Options

Depending on staff resources and the response of the Millis community to these participation and involvement activities, the Town may expand the program to include additional activities, as outlined below.

- Classroom Education - a classroom education program can simply consist of a one-day presentation or be fully integrated into the curriculum. A program can focus on one grade level or many depending on the resources available and the schools' willingness to participate. Organizations such as *Project Wet* ("an international, interdisciplinary, water science and education program for formal and non-formal educators of kindergarten to grade 13 students") and *Green Teacher* ("a magazine by and for educators to enhance environmental and global education across the curriculum at all grade levels") can aid in preparing an education program.
- Native Tree/Shrub Planting - a native tree and shrub planting program can be very effective at reducing runoff while at the same time enhancing the aesthetics of a neighborhood. Native plants are better suited to the local environment and wildlife. Trees and shrubs planted along stream banks, wetland perimeters, street sides and medians, along sidewalks, and in parks all help to reduce the impacts of stormwater. Plants can prevent erosion by filtering and trapping pollutants, intercepting rainfall, absorbing and transpiring moisture, reducing flooding potential, and providing shade (reducing runoff temperatures). This program can either be coordinated by the town or by volunteers and/or interested organizations such as garden clubs or nursery centers. To reduce the cost of plants, saplings can be grown from collected seeds and replanted when mature.
- Stream Monitoring - taking samples of perennial streams is a great way to monitor water quality and identify any hotspots. Hotspots can alert the town of areas that need attention, which might have otherwise been missed. High levels of bacteria, phosphorus, road salt, and sediment can all be attributed to stormwater runoff and can have an adverse impact to the ecology of a stream. Volunteers can each be assigned a station where they sample the water. Sampling can be performed once or several times a year depending on funding and



volunteer schedules. Samples can be brought to a local laboratory or the state lab for testing.

The Charles River Watershed Association (CRWA) conducts monitoring at a site in Millis along the Charles River. The Town of Millis may wish to combine monitoring efforts and resources with the CRWA to conduct additional stream monitoring in town. Joint efforts could lead to significant cost savings for the town and the results would benefit the town and the CRWA.

- Volunteer Stormwater Organization - a stormwater organization can be a valuable addition to a community. Many of the programs and educational efforts mentioned in this plan could be spearheaded and coordinated by such an organization. Representatives from the town, community, non-profits, businesses, institutions, and other stakeholders can work together to solve stormwater issues within the watersheds of the Millis resource waters. Success can be more easily achieved by having common goals and objectives and rules and bylaws to follow. There are many similar organizations in New England that can provide useful guidance to communities.

4.0 Businesses and Institutions

Many business and institution activities can contribute to stormwater pollution. For instance, poor housekeeping practices and large impervious parking lots can impact water quality in a community. Large expensive stormwater treatment facilities, such as detention ponds, are often built to handle runoff from business sites. These systems can be an eye sore in a community and are often neglected resulting in a less than adequate performance. Providing incentives and encouraging good stormwater management practices can be an effective way for towns to approach businesses and institutions. It can also provide good publicity to a business or institution.

4.1 Focus Areas

The following is a list of topics and their potential impacts to stormwater quality that will be included in the public education outreach and participation efforts to businesses/institutions in the Town of Millis. Education materials will inform businesses of the impacts these focus areas could have, and describe ways to reduce them. Reference materials for each of the focus areas are provided as an attachment to this plan.

- Housekeeping Practices - keeping a property clean from trash and debris, properly storing materials, and site maintenance are all ways to reduce the impacts of stormwater runoff. These practices help keep debris, litter and unwanted contaminants from being picked up by stormwater and entering nearby surface waters.



- Catch Basins - businesses may be unaware of catch basins located on their property and their responsibility to clean them. Catch basins that are not properly maintained can fill up with sediment and debris and lose their intended function, contributing pollutants to stormwater runoff.
- Vehicle/Equipment Washing - washing company vehicles and equipment can lead to runoff containing contaminants such as oil, brake dust, paint chips, phosphates, soaps, and road salt that can affect water quality of nearby lakes/ponds and streams.
- Toxic Cleaners - using non-toxic biodegradable cleaners and solvents and/or recycling cleaning fluids reduces the chance that hazardous cleaning chemicals could enter nearby water bodies from site runoff.
- Parking Lots - encouraging low impact development practices that emphasize on-site stormwater collection and treatment, such as increased green space and vegetated infiltration islands, can significantly reduce the overall stormwater impact of a site.
- Illicit Discharges - an illicit discharge is a non-stormwater discharge due to illegal connections to the storm drain system. As a result of these illicit connections, contaminated wastewater enters into storm drains or directly into local waters. Illicit connections may be intentional (i.e., illegal dumping activities) or may be unknown to the business owner and often are due to the connection of floor drains to the storm sewer system.

4.2 Proposed Business/Institution Education and Outreach Activities

Once the public education materials have been collected/developed they will be distributed and conveyed to businesses. The following outreach methods will be used in the Town of Millis to educate businesses.

- Mailings - mailings in the form of fact sheets, brochures, fliers, and newsletters will be distributed to businesses. This will be done through bulk mailings and inclusion of the educational material with water bills twice a year. This approach reaches a wide audience since all businesses have mailing addresses and utility bills to pay.
- Press Releases - press releases will be sent to local newspapers twice a year about the stormwater management program, the educational mailers, and the importance of stormwater management at local businesses and institutions.



4.3 Proposed Business/Institution Participation and Involvement Activities

The same activities for residents will be used to increase business involvement in stormwater management and help reduce the impacts of stormwater. As discussed previously in Section 3.4, the involvement activities for businesses/institutions are provided below.

- Hotline
- Storm Drain Marking with Stencils
- River, Stream, and Pond Cleanups

The Town will try to involve businesses in these public involvement activities since they are also part of the community. Businesses may be willing to donate additional resources to some projects, since the involvement in the projects promote good publicity.

4.4 Future Business/Institution Participation and Involvement Options

Depending on the response of businesses in Millis to participation and involvement activities, the Town may explore additional activities with businesses, as outlined below.

- Employee Training - a training program can be encouraged at businesses to educate employees on what practices can be done to reduce the impacts of stormwater runoff. Topics could include good housekeeping, vehicle and equipment washing, periodic catch basin inspections and cleaning, non-toxic cleaners, waste collection/storage, and spill prevention and cleanup. A professional educator could conduct the training seminars.
- “Clean Stream” Participation Incentives - a “Clean Stream” listing could be made public to local newspapers and publications on an annual or semi-annual basis. Parameters would have to be established to designate “Clean Stream” businesses. For example, businesses that have been designated with a “Clean Stream” status must demonstrate what they are doing or have done to reduce stormwater runoff. This could include participation in a program such as Adopt-A-Stream, or using low impact development practices on their site.
- Adopt-A-Stream - for good publicity, businesses can be encouraged to adopt a portion of a river or a public section of the waterfront on a pond. The business would be responsible for keeping their designated area clean from trash and debris. Signs could be posted indicating which business is responsible for the clean-up efforts.
- Pilot Program Study - a business could be encouraged to implement a pilot program using low impact development practices such as



infiltration islands, perimeter vegetated swales, or a small wetland retention system. Incentives could include complete or partial funding of the project through state and local resources, publicity, and tax relief.



Stormwater Public Education Plan

Focus Area Informational Materials

Residents

Lawn and Garden

- ❑ NRCS. 1997. *Lawn and Garden Care*. USDA, National Resources Conservation Service. www.nrc.usda.gov/lawn.html
- ❑ Water Quality Consortium. 1998. *Surface Water Quality BMP: Fertilize*. Seattle Public Utilities, Seattle, WA. www.ci.seattle.wa.us/util/surfacewater/bmp/fertiliz.htm
- ❑ City of Eugene, OR. Stormwater Management Program. *Safe Use of Pesticides and Fertilizers*. <http://www.ci.eugene.or.us/PW/storm/Publications/pesticide.htm>

Vehicle Leaks

- ❑ University of Wisconsin – Extension in cooperation with the Wisconsin Department of Natural Resources. 1999. *Car Care*. <http://clean-water.uwex.edu/pubs/stormie/carcare.pdf>
- ❑ Massachusetts Department of Environmental Protection. *Automotive Wastes*. Consumer Information. <http://www.state.ma.us/dep/consumer/autowast.htm>
- ❑ Water Quality Consortium. 1998. *Surface Water Quality BMP: Motor Oil*. Seattle Public Utilities, Seattle, WA. www.ci.seattle.wa.us/util/surfacewater/bmp/motoroil.htm

Septic Systems

- ❑ Massachusetts Department of Environmental Protection. *Your Septic System – A Reference Guide for Homeowners*. Consumer Information. <http://www.state.ma.us/dep/brp/files/yoursyst.htm>
- ❑ New Hampshire Department of Environmental Services. *Septic Systems and Your Lake's Water Quality*. <http://www.des.state.nh.us/factsheets/bb/bb-11.htm>

Household Hazardous Wastes

- ❑ Stormwater Quality Management Committee. Las Vegas, NV. 2001. *Household Hazardous Waste*. <http://www.lvstormwater.com/hazwaste.html>
- ❑ Clinton River Watershed Council, Rochester Hills, MI. *Guide to Household Hazardous Waste*. <http://www.crwcc.org/projects/bearcreek/bchhw.html>
- ❑ Massachusetts, Department of Environmental Protection. *General Information for Municipalities*. Consumer Information. <http://www.state.ma.us/dep/recycle/hazards/geninfo.htm>

Pet Wastes

- ❑ Long Island Sound Study, NY. *When Your Pet Goes On The Lawn, Remember It Doesn't Just Go On The Lawn.*
<http://www.epa.gov/region01/eco/lis/posters/pet.html>
- ❑ Water Quality Consortium. 1998 *Surface Water Quality BMP: Pet Waste*. Seattle Public Utilities, Seattle, WA.
www.ci.seattle.wa.us/util/surfacewater/bmp/petwaste.htm
- ❑ Minnesota Urban Small Sites BMP Manual. *Animal Management*.
http://www.metrocouncil.org/environment/Watershed/bmp/CH3_RPPHousAnimal.pdf

General (Illicit Discharge)

- ❑ Chesterfield County, VA. *Household Guide to Chesterfield County's Illicit Discharge Ordinance*.
www.co.chesterfield.va.us/CommunityDevelopment/Engineering/HouseholdFactSheet.pdf
- ❑ University of Wisconsin – Extension in cooperation with the Wisconsin Dept. of Natural Resources. 1999. *Cleaning Up Stormwater Runoff*. <http://clean-water.uwex.edu/pubs/stormie/cleaning.pdf>
- ❑ Florida Department of Environmental Protection. Tallahassee, FL. *Pointless Personal Pollution*. www.fc3p2e.com/downloadables/npspollutionfs.pdf
- ❑ Massachusetts Department of Environmental Protection. 2001. *Give Your Lake the Blues! – Protecting Your Lake from Nonpoint Source Pollution*.
<http://www.state.ma.us/dep/brp/wm/files/npsbroch.doc>
- ❑ University of Missouri – University Extension. 1999. *Storm Drains and Water Quality*. <http://muextension.missouri.edu/xplor/wasteman/wm6011.htm>



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

Lawn and Garden Care

Rules of Thumb for Water Use on Lawns and Gardens

- One deep watering is much better than watering several times lightly.
- Lawns need about 1 inch of water each week. If the weather is very hot, apply an inch of water about every 3 days.
- Watering to a depth of 4-6 inches encourages deeper, healthier root development. It allows longer periods between watering.
- To measure the water, put an empty tuna can (or cat food can) on the lawn while watering. Stop watering when the can is full or if you notice water running off the lawn.

Know Your Soil

Different soil types have different watering needs. You don't need to be a soil scientist to know how to water your soil properly. These tips can help.

- Loosen the soil around plants so it can quickly absorb water and nutrients.
- Use a 1- to 2-inch protective layer of mulch on the soil surface above the root area. Cultivating and mulching reduce evaporation and soil erosion.
- Clay soil: Add organic material such as compost or peat moss. Till or spade to help loosen the soil. Since clay soil absorbs water very slowly, water only as fast as the soil absorbs the water.
- Sandy soil: Add organic material to supplement sandy soil. Otherwise, the water can run through it so quickly that plants won't be able to absorb it.
- Loam soil: The best kind of soil. It's a combination of sand, silt, and clay. Loam absorbs water readily and stores it for plants to use.

Water at the Right Time of the Day

- Early morning or night is the best time for watering to reduce evaporation.
- To help control where your water goes, water when it's not windy.

Rules of Thumb for Proper Fertilizer Use

Fertilizers provide nutrients necessary for plant health and growth, such as nitrogen, phosphorus, and potassium. These are what N, P, and K stand for on bags of fertilizer. Nitrogen (N) is needed for healthy green growth and regulation of other nutrients. Phosphorus (P) helps proper roots and seeds develop and resist disease. Potassium (K) is also important in root development and disease resistance. When properly applied, the nutrients in fertilizers are absorbed by plants and little of these nutrients enters ground or surface water resources.

Use the Right Fertilizer

- Test your soil to find out what nutrients are needed. Contact your local Natural Resources Conservation Service or Cooperative State Research, Education, and Extension Service office to get information on obtaining a soil test. Local fertilizer dealers can also be helpful.
- A soil test will help you understand what your plants require.
- Follow label directions.
- Choose a fertilizer that has at least one-fourth of the nitrogen in a slow-release form, such as sulphur-coated urea.

Mow Your Lawn Frequently

Leave the grass clippings to decompose on the lawn. Annually, this will provide nutrients equivalent to one or two fertilizer applications. Set mower at 2 inches to reduce water use during hot weather.

Apply Fertilizer Properly

- It is best to apply fertilizer when the soil is moist and then water lightly. This will help the fertilizer move into the root zone where it is available to the plants, rather than stay on top of the soil where it can be blown or washed away.
- Watch the weather. Avoid applying it immediately before a heavy rain system is predicted to arrive. Too much rain (or sprinkler water) will take the nutrients away from the lawn's root zone.
- Use the minimal amount of fertilizer necessary and apply it in small, frequent applications. An application of 2 pounds of fertilizer five times per year is better than 5 pounds of fertilizer twice a year.
- Calibrate your fertilizer spreader to be sure you know exactly how much material is being discharged in a given space. Follow instructions accompanying your spreader.
- When spreading fertilizer, cover ends of the lawn first, then go back and forth across the rest of the lawn, using half of the recommended amount. Shut the spreader off before reaching the ends to avoid over-application. Apply the other half of the fertilizer going back and forth perpendicular to the first pattern.
- Dispose of fertilizer bags or containers in a safe and state-approved manner.

Alternatives to Pesticides and Chemicals

When used incorrectly, pesticides can pollute water. They also kill beneficial as well as harmful insects. Natural alternatives prevent both of these events from occurring and save you money. Consider using natural alternatives for chemical pesticides: Non-detergent insecticidal soaps, garlic, hot pepper sprays, 1 teaspoon of liquid soap in a gallon of water, used dishwater, or forceful stream of water to dislodge insects.

Also consider using plants that naturally repel insects. These plants have their

own chemical defense systems, and when planted among flowers and vegetables, they help keep unwanted insects away. The table below contains a partial list of nature's alternatives.

Pest	Plant Repellent
Ant	mint, tansy, pennyroyal
Aphids	mint, garlic, chives, coriander, anise
Bean Leaf Beetle	potato, onion, turnip
Codling Moth	common oleander
Colorado Potato Bug	green beans, coriander, nasturtium
Cucumber Beetle	radish, tansy
Flea Beetle	garlic, onion, mint
Imported Cabbage Worm	mint, sage, rosemary, hyssop
Japanese Beetle	garlic, larkspur, tansy, rue, geranium
Leaf Hopper	geranium, petunia
Mexican Bean Beetle	potato, onion, garlic, radish, petunia, marigolds
Mice	onion
Root Knot Nematodes	French marigolds
Slugs	prostrate rosemary, wormwood
Spider Mites	onion, garlic, cloves, chives
Squash Bug	radish, marigolds, tansy, nasturtium
Stink Bug	radish
Thrips	marigolds
Tomato Hornworm	marigolds, sage, borage

Whiterly

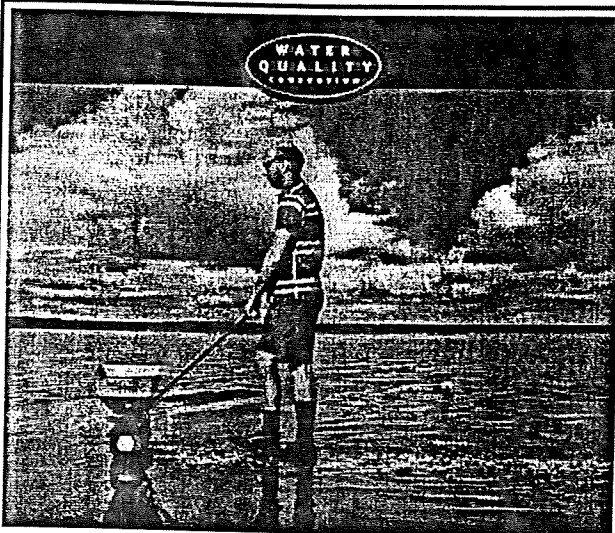
marigolds, nasturtium

[NRCS Homepage](#)

Send comments to Larry Davis at: ldavis@ftw.nrcs.usda.gov

This page was last modified on June 5, 2001

Best Management Practices>



Clean Water Tip:
How can you fertilize and help keep our waters clean?

Use fertilizers sparingly. Many plants do not need as much fertilizer or need it as often as you might think.

Don't fertilize before a rain storm.

Consider using organic fertilizers; they release nutrients more slowly.

Use commercially available compost or make your own using garden waste. Mixing compost with your soil means your plants will need less chemical fertilizer and puts your waste to good use. Commercial compost and soil amendments may be available from your solid waste or wastewater utility as well as your local garden store.

For more information on fertilizing alternatives and composting, call your local Cooperative Extension's Master Gardeners program or the number in your community listed below.

What's the problem with fertilizer ?

Fertilizer isn't a problem--if it's used carefully. If you use too much fertilizer or apply it at the wrong time, it can easily wash off your lawn or garden into storm drains and then flow untreated into lakes or streams. Just like in your garden, fertilizer in lakes and streams makes plants grow. In water bodies, extra fertilizer can mean extra algae and aquatic plant growth. Too much algae harms water quality and makes boating, fishing and swimming unpleasant. As algae decay, they use up oxygen in the water that fish and other wildlife need.

Report Surface Water Quality Problems On-line

This information is brought to you by the Water Quality Consortium, a group of public agencies working together to reduce nonpoint water pollution through education.

Partially funded by a Centennial Clean Water Fund grant from Washington State Department of Ecology.

[Top](#)

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Safe Use of Pesticides and Fertilizers

Healthy lawns, trees, and shrubs add to the beauty and value of a home. They also keep our rivers, lakes, and streams clean by allowing rainwater to filter into the soil rather than running into storm drains. Maintaining healthy lawns and landscape plants, however, often requires the use of fertilizers and pesticides; and improper use can cause water pollution and destroy beneficial insects. In short, applying unneeded pesticides and nutrients in a generic, multi-step fertilizer program can be expensive for the homeowner and harmful to the environment.

Fertilizers

Many fertilizer materials, including leaves and grass clippings, contain nitrogen and phosphorus. When these nutrients are carried into streams and waterways they:

- promote unsightly algae blooms and aquatic weed growth.
- lower dissolved oxygen levels in the water.
- may release ammonia - which is toxic to fish.

A. It All Adds Up - Fertilizer carelessly applied on one lawn can be a waste of the homeowner's money, and the wasted dollars may seem insignificant. On hundreds or thousands of lawns, however, careless applications can waste hundreds of dollars and add up to a major problem for our local streams and the Willamette River.

B. Fertilizer Selection - The label on a fertilizer bag has three numbers that show the percentage (by weight) of the three nutrients most essential to healthy lawns. Nitrogen (N) is always listed first; followed by phosphate (P_2O_5), which supplies phosphorus; and potash (K_2O), which supplies potassium. Therefore, a 25 lb. bag of 25-4-5 fertilizer contains 25 percent (6.25 pounds) nitrogen, 4 percent (1 pound) phosphate, and 5 percent (1.24 pounds) potash. The remainder is made of other ingredients, such as sand or ground limestone.

Plants do not distinguish between nutrients supplied by liquid, granular, or organic fertilizers. However, most organic fertilizers release nutrients more slowly and contain relatively low concentrations of plant nutrients as compared to synthetic fertilizers.

Slow-release fertilizers provide lower concentration of nutrients over a longer period of time. Fast-release fertilizers do the opposite. Thus, the right selection of fertilizer type(s), concentrations, and frequency of application is necessary for balancing both plant needs and environmental risks. On heavy (clay) or compacted soils, fast-release fertilizers are better than slow-release fertilizers. The longer a fertilizer granule remains undissolved, the greater the chance of it being washed into waterways. On sandy soils, however, nitrogen can leach through the soil into the groundwater. On these soils, slow release nitrogen is preferred.

C. Soil Tests - A fertilizer program should begin with a soil test. Soil tests provide specific fertilizer recommendations for your lawn and garden and can help you avoid applying more fertilizer than is needed. For more information on soil testing, contact the Lane OSU Extension Service at 682-4243.

D. Fertilizer/Pesticide Combinations - Many homeowners and lawn care companies routinely combine fertilizer and pesticides in a series of applications throughout the spring, summer, and fall. These multi-step programs are promoted as the sure and easy path to the perfect lawn. The pressure to have the perfect lawn, however, has clouded a number of issues and a number of ingredients have been mixed that

should have been kept separate.

Most commercial fertilizers contain phosphorus, a major water pollutant. Yet many soils already contain enough phosphorus to grow a healthy lawn. The underscores the need for a soil test before applying fertilizers. Low-phosphorus or phosphorus-free fertilizers can provide necessary nutrients while avoiding the threat to water quality.

E. Lawn Fertilizers - A lawn fertilizer program should begin in early October, rather than early May. Spring applications can actually harm lawns by promoting more top (leaf) growth than root growth. Shallow root systems are unable to sustain lawns through a drought or harsh winter. Fall fertilizer applications, however, promote deep, healthy root systems and hardy lawns.

F. Gardens, Trees, and Shrubs - Start with a soil test. The nutrient requirements for garden plants vary. In general, nitrogen promotes leafy top growth; phosphorus is used for root development; and potassium is necessary for winter hardiness, disease resistance, and general plant durability. Specific recommendations can be found in publications available at the Lane OSU Extension Office at 950 West 13th Avenue.

Healthy trees and shrubs in well-drained, fertile soils do not require annual fertilizer applications. If they appear unhealthy, the problem may be caused by insects, disease, or the weather. Fertilizers should be applied when trees and shrubs are growing poorly and the problem cannot be traced to other causes. If plants do not respond to fertilization, the problem may be soil related.

In general, trees and shrubs should be fertilized when they are dormant, in late fall or early spring. Fertilizing in early fall stimulates plant growth that might kill the plant in winter, which could provide an entrance for insects and disease. Similarly, fertilizing in late spring stimulates growth that depletes stored food supplies and weakens the plant. (However, if trees and shrubs are stressed by environmental conditions, fertilizer should be applied in June.)

When planting gardens, trees, or shrubs, cover the bare soil with a mulch to prevent erosion and sweep (don't wash) soil off paved areas. Phosphorus is often attached to soil particles. When these particles are washed into our waterways, the phosphorus stimulates excess weed and algae growth. You also save water by sweeping rather than spraying.

Pesticides

A. Weeds are not the cause of an unhealthy lawn, they are the result. The best defense against weeds is a thick healthy lawn and lawn root system that comes from proper watering, fertilizing, and mowing. Routine herbicide applications are unnecessary and their effects can be misleading.

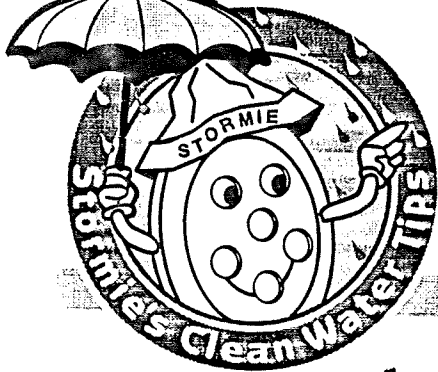
B. Insecticides should rarely be part of a lawn care program. Most insects found on a lawn are beneficial. Insecticides can harm these beneficial insects, as well as bird, pets, and people.

C. Pre-mixed, hand-held sprays for broadleaf weed control products are available at some local garden outlets for homeowners who want to "spot treat" weeds in their lawns. When the weeds die, scatter some fresh grass seed in the bare spot. When buying the pre-mixed spray, talk to the garden center's resource person to ensure you buy an herbicide that will not kill the grass. For example, "Roundup" will kill both the weed and the adjacent grass. "Dicamba" will kill broadleaf plants, but not grass.

For More Information:

Lane OSU Extension Service, 950 West 13th Avenue, Eugene OR 97401. Phone: 682-4243

VEHICLE LEAKS



Car Care for Cleaner Water

A SERIES OF WATER QUALITY FACT SHEETS ABOUT STORMWATER RUNOFF

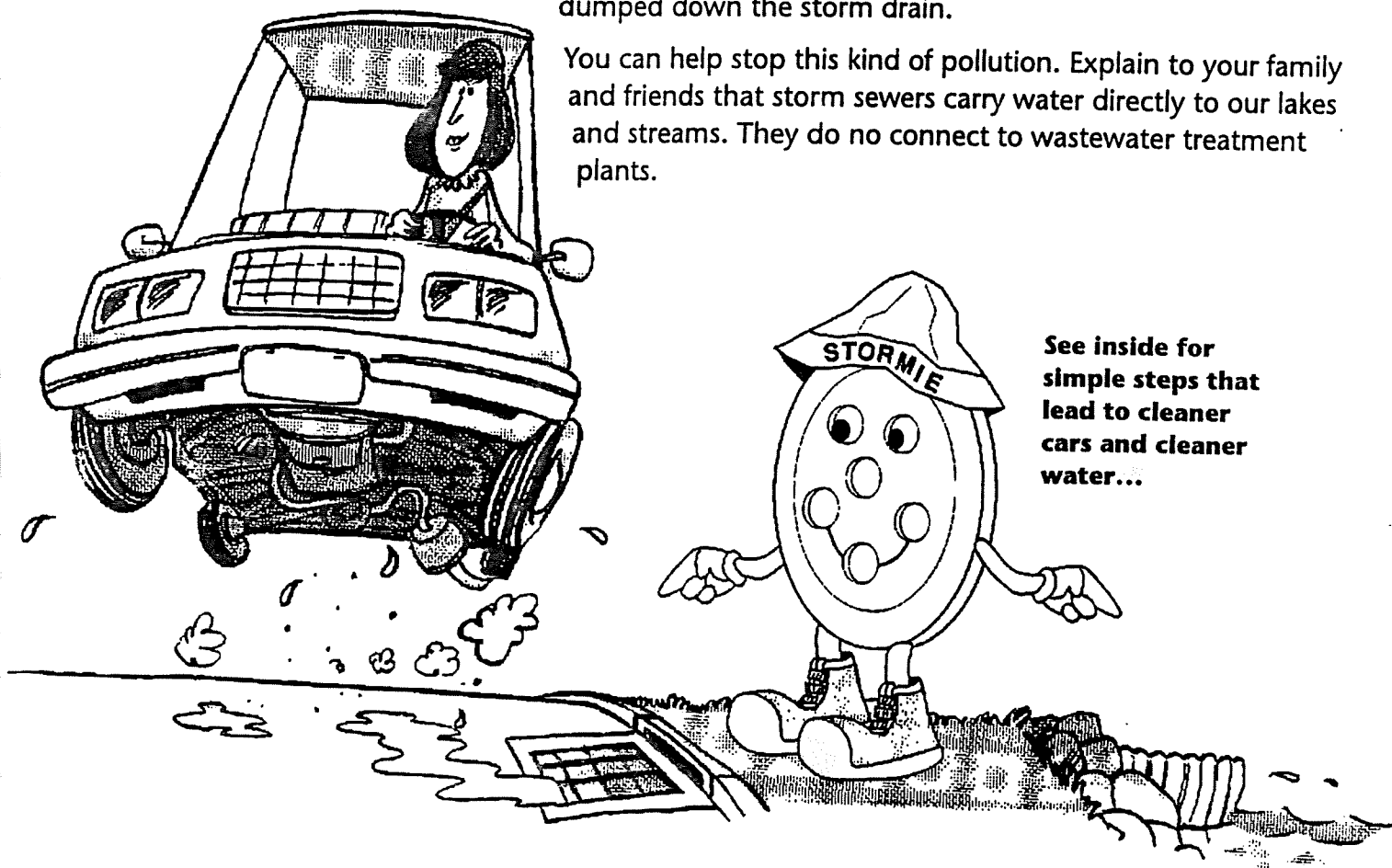
We all know that cars cause air pollution. But did you know that cars also cause water pollution? As we drive, our cars and trucks leave bits of tires, brakes and rusty metal on the street. When we park, our cars and trucks leave stains of oil, grease, and transmission fluid on driveways and parking lots. Less visible are the tiny exhaust particles that gradually settle out of the air or come down with the rain or snow.

What happens to all this "car dirt" when it rains? Rain and melting snow wash auto pollutants off the pavement, down the gutter, and into storm drains. Under these drains are storm sewers – pipes that carry the dirty water to lakes, streams or wetlands.

Even on sunny days, polluted water often flows out of storm sewers. To understand why, take a walk to a small stream in your town. Do you see mounds of foam? Streaks of blue? An oily sheen?

The foam may come from soapy water that runs down the street when we wash cars in our driveways. The bright blue streaks are probably antifreeze drained from radiators. The oily sheen may come from used motor oil dumped down the storm drain.

You can help stop this kind of pollution. Explain to your family and friends that storm sewers carry water directly to our lakes and streams. They do not connect to wastewater treatment plants.



**See inside for
simple steps that
lead to cleaner
cars and cleaner
water...**

SIMPLE STEPS TO CLEANER WATER

1. Recycle Oil

Old motor oil can be reprocessed and used again and again. Just put it in a container with a tight lid such as a plastic jug or metal can, and take it to a community oil recycling center. Don't pour anything else in with the oil because contaminated oil cannot be recycled.

Recycling is the only safe way to get rid of used motor oil. Never use old oil to kill weeds or to oil roads. Oil poured down the storm drain ends up in our lakes and streams. The five quarts from your car could create an oil slick the size of two football fields or pollute a million gallons of drinking water.

2. Use Commercial Car Washes

Taking your car to a commercial car wash or spray booth is a good way to protect our lakes and streams. The dirty water from the car wash goes to a wastewater treatment plant where pollutants are removed.

If you wash cars on a paved driveway or parking lot, the dirty water ends up in our lakes and streams. In addition, phosphates in the soap you use act like fertilizer. Weeds and algae decompose and use up oxygen needed by fish. If you want to wash your car at home, drive it onto the lawn or a gravel drive where the water will soak into the ground. The soil will filter out most pollutants.

Thinking of having a car wash to raise money for charity? Team up with a commercial car wash and sell car wash tickets for an environmentally-friendly fund raiser.

3. Keep Your Car Tuned Up

Cars that run smoothly burn less fuel and causes less pollution. A tuned-up car saves you money by using up to 20% less gasoline. Regular tune-ups also reduce the amount of hydrocarbons, nitrous oxides and other pollutants that come out of your car's exhaust pipe. These chemicals pollute our water as well as our air. Hydrocarbons can cause cancer and nitrous oxide is one of the ingredients in acid rain. Acid rain increases the toxicity of other pollutants in street runoff, which adds to the risk of sickness or death for fish and other aquatic life.

4. Repair Leaks

Spots on your driveway or garage floor mean the engine, transmission or radiator in your car is leaking. Have the leak repaired right away. Then clean up the spot by using cat litter or another absorbent material to soak up the spill. Sweep up the cat litter and put it in a sealed bag in the trash for disposal. Do not scrub the spot with detergent and wash the dirty water into the street. Remember, all that dirty water ends up in lakes and streams.

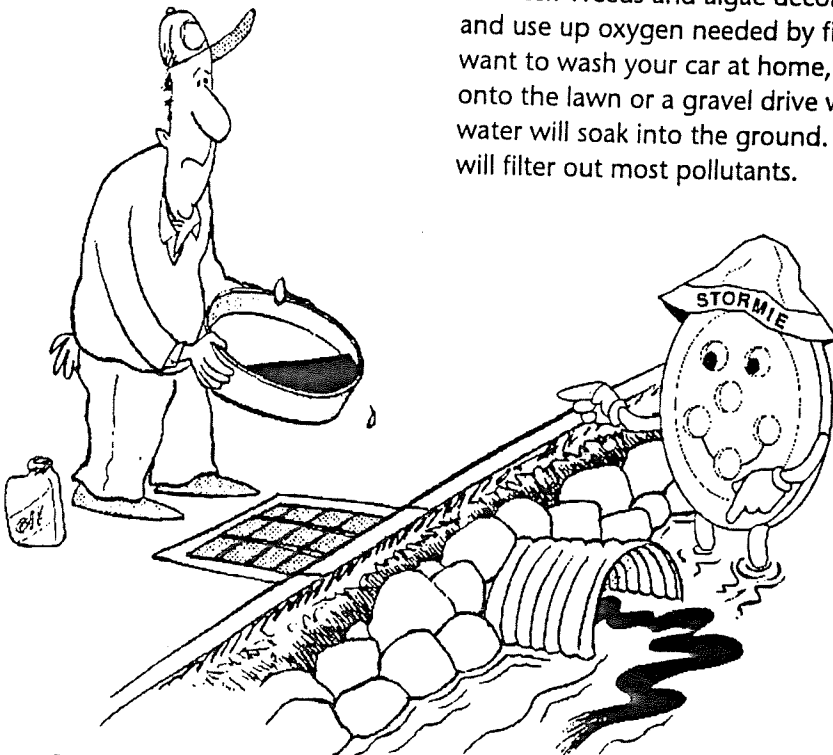
5. Recycle Antifreeze

Recycling antifreeze can be a challenge. A few recycling sites now have separate tanks for antifreeze collection. Check with your local gas station or auto repair shop – they may accept used antifreeze.

Used antifreeze should not be flushed down the drain because it has pollutants that may cause problems for sewage treatment plants or septic tanks.

Antifreeze is very poisonous to people and animals. Because of its sweet taste and smell, antifreeze may attract children or pets and other animals. Drinking only three ounces may kill an adult and even less will kill children or pets.

Anything dumped into a storm drain flows directly to a nearby stream or lake.



6. Return Used Batteries

Return your used car or truck battery to the place where you bought it. Other retailers may charge you for disposal. Be careful – old batteries may leak acid. Wear gloves and goggles and put the old battery in a leak-proof container. If you drop it, neutralize any spilled acid with baking soda or lime.

Do not throw old batteries in the trash or bury them – you'll be breaking the law. Old batteries contain hazardous chemicals that can leach through the soil and pollute our groundwater.

7. Check Tire Pressure

One of the simplest and cheapest ways to prevent pollution is to keep your tires inflated. For every pound that your tires are under-inflated, your car loses 1% in gas mileage. Under-inflated tires also wear out sooner. The solution is simple – check your tire pressure frequently, especially as temperature changes in the fall and spring. Tires lose a pound of pressure for every 10-degree drop in temperature. By reducing the amount of gasoline your car burns, properly inflated tires reduce the amount of polluted exhaust that your car makes.

8. Use Up Paints, Polishes and Cleaners

Paints, polishes and special cleaners for cars are usually flammable and toxic. Try to buy only what you need. If large amounts are left over, donate them to a friend or a school auto-repair class.

To dispose of small amounts, leave the container open in a safe place away from children, pets, wildlife and flames. When the liquid is gone and the substance is hard, cap the container and put it in the trash. The potentially toxic ingredients are locked into the hardened material and are less likely to cause pollution. However, burning will release the toxic chemicals. If your community burns trash, ask the public works department how to properly dispose of these materials.

9. Substitute Shoveling for Salt

Salt may be an easy way to get rid of snow and ice, but it pollutes lakes, streams and groundwater. It also kills trees and grass as well as corroding auto bodies, metal bridges and underground cables. Shovel your driveway and sidewalk before the snow gets packed down and icy. If the pavement is still slick, use sand or sand mixed with salt to provide some traction and melt the snow. After the snow melts, sweep up the sand to keep it out of storm sewers and waterways.

10. Drive Less

Driving less is the best way to prevent pollution. Water quality tests show that the most polluted runoff comes from heavily traveled streets and highways. This runoff often contains enough zinc, lead or copper to kill fish and other aquatic life.

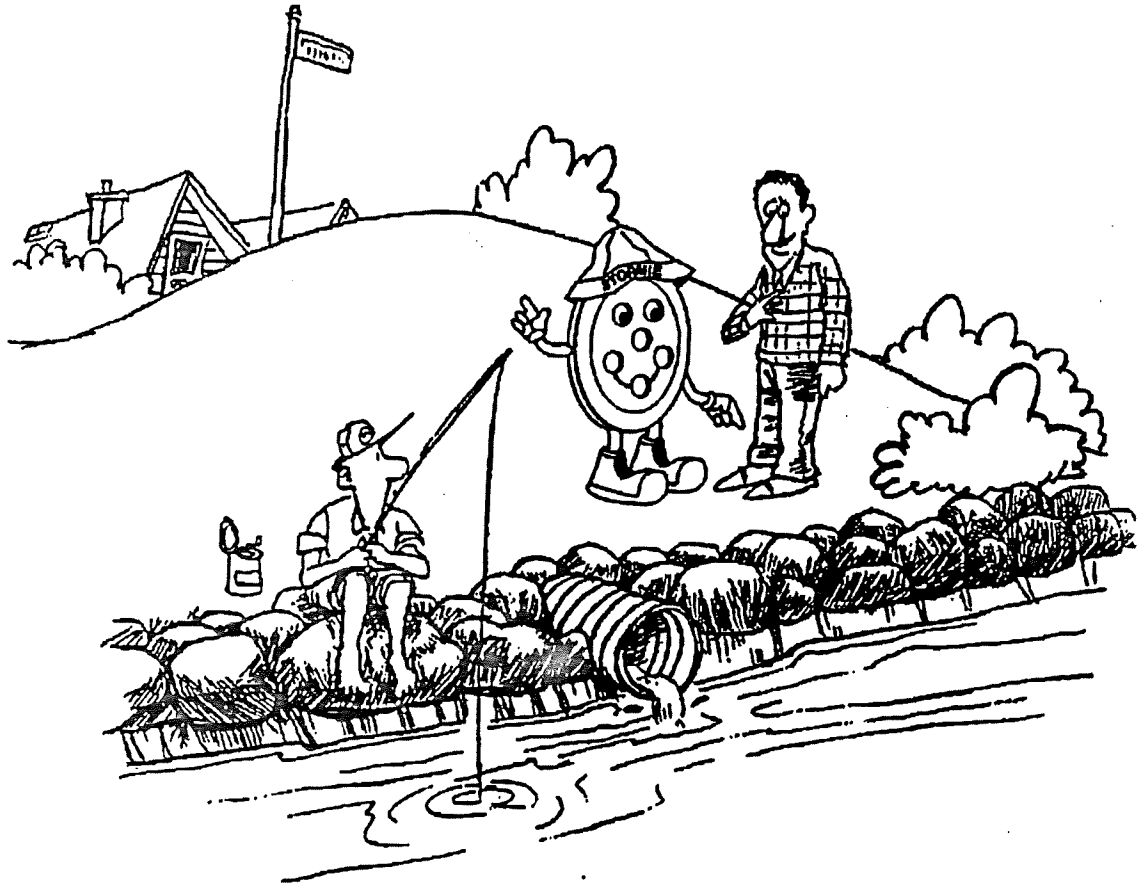
Is there a way you could help reduce water pollution by driving less? Could you walk, ride a bike, car pool or take the bus to work? If not every day, could you do this once or twice a week? Could you do several errands on your next shopping trip? Could you work at home one day a week?

Driving seems cheap and convenient, but many costs, such as road construction, are hidden in our tax bills. If we paid the full price of auto transportation at the gas pump, a gallon would cost \$4.50 or more.



IT ALL ADDS UP

By following the simple steps listed inside, we can all help reduce the pollution that comes from our cars, streets, driveways and parking lots. Together, our actions will add up to cleaner water for us and our children.



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GWQ019 Car Care for
Cleaner Water

DNR WT-533-99

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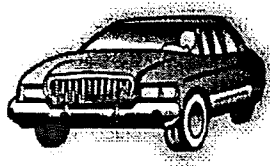
Author: Carolyn Johnson, UW-Extension.

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Automotive Wastes

Do-it-yourself auto maintenance and repair can save you time and money, but you should be careful with used motor oil, dirty oil filters, antifreeze, dead batteries and other automotive wastes. Handled or discarded improperly, they can pose serious risks to your health and environment. That's why the Massachusetts Department of Environmental Protection (DEP) wants to help you do the right thing.

Used Motor Oil should always be recycled - never thrown in the trash, dumped on the ground, or poured into the sewer or down the drain. Used oil contains heavy metals, which can contaminate water supplies and harm eco-systems. And it doesn't take much to do a lot of damage. One gallon of used oil can pollute one million gallons of drinking water. One pint can produce an oil slick the size of a football field.

After changing your own oil, remember to recycle. If there is a collection program in your community, take advantage of it. Or, take the oil back to where you bought it. Whoever sold it to you is required by Massachusetts law to take back up to two gallons of your used oil per day, without charge, provided you still have the sales receipt. Some stores and gas stations will accept your oil even if you didn't buy it from them. When blended with other fuels, used motor oil can be used to generate electricity or steam. For help in finding a collection center near you, call DEP's Used Oil Hotline at (617) 556-1022.

Dirty Oil Filters can be tossed in the trash so long as you take the proper precautions. First, remove any remaining oil by puncturing the filter and letting it drain over a container. Then add the recovered oil to the oil you previously drained from your engine. Finally, wrap the filter carefully in a rag or paper towel and throw it away.

Antifreeze is a poison, but it can attract children, pets and wild animals because it has a sweet taste. Since there are few readily available collection centers in Massachusetts, DEP recommends that you have your car's radiator flushed at a service station that recycles used antifreeze. If you decide to do it yourself, drain the antifreeze into a container - being careful not to spill any on the ground - then seal the container tightly and store it out of reach until the next household hazardous waste collection day in your community.

Dead Automotive Batteries should never be thrown in the trash. State law prohibits landfills from accepting them because they contain lead, which can contaminate drinking water supplies. But there's another important reason not to throw used batteries away. Many parts of them can be used again. You can take your used battery back to the retailer when you buy a new one. Many community recycling centers also accept used batteries. If you have accumulated several, check the Yellow Pages for scrap metal dealers.

Old Tires can be safely recycled in a number of ways. Recapping worn tires so they can be used again is a decades-old form of recycling. Because they make money on recapping, most dealers will take

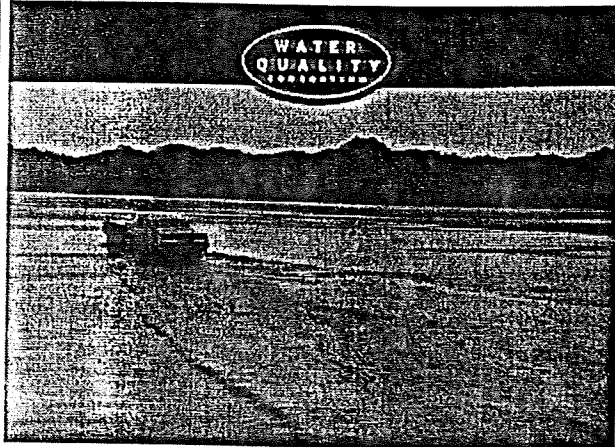
your old tires in partial trade for new ones. Also, a number of industrial processing facilities use chipped tires for fuel or as feedstock for recycled products such as rubberized asphalt. While it is better to recycle old tires than to throw them away, some Massachusetts landfills still accept tires if they are chipped or quartered.

What is Massachusetts Doing?

DEP is working with municipalities across the state to develop a network drop-off centers for common automotive and household wastes. To learn more about getting a program started in your community, or to find out the location of the recycling center nearest you, call DEP's Hazardous Waste Management Line at (617) 292-5898. Other good sources of information include your local board of health, recycling committee or public works department.

Privacy Policy

Best Management Practices>



What's the problem with motor oil?

Oil does not dissolve in water. It lasts a long time and sticks to everything from beach sand to bird feathers. Oil and other petroleum products are toxic to people, wildlife and plants. One pint of oil can make a slick larger than a football field. Oil that leaks from our cars onto roads and driveways is washed into storm drains, and then usually flows directly to a lake or stream. Used motor oil is the largest single source of oil pollution in our lakes, streams and rivers. Americans spill 180 million gallons of used oil each year into our waters. This is 16 times the amount spilled by the Exxon Valdez in Alaska.

Report Surface Water Quality Problems On-line

This information is brought to you by the Water Quality Consortium, a group of public agencies working together to reduce nonpoint water pollution through education.

Partially funded by a Centennial Clean Water Fund grant from Washington State Department of Ecology.

Clean Water Tip:

How can you use and change your motor oil and help keep our waters clean?

Stop drips. Check for oil leaks regularly and fix them promptly. Keep your car tuned to reduce oil use.

Use ground cloths or drip pans beneath your vehicle if you have leaks or are doing engine work. Clean up spills immediately. Collect all used oil in containers with tight fitting lids. Do not mix different engine fluids.

Never dispose of oil or other engine fluids down the storm drain, on the ground or into a ditch.

Recycle used motor oil. Many auto supply stores and gas stations will accept used oil.

Buy recycled ("re-refined") motor oil to use in your car.

To find out more about where you can take used oil for recycling, call the Department of Ecology's 1-800-RECYCLE line or the number in your community listed below.

[Top](#)



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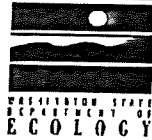
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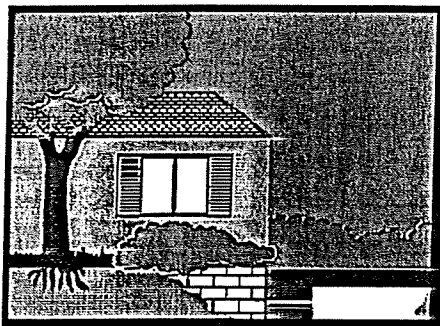
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SEPTIC SYSTEMS

Your Septic System

A Reference Guide for Homeowners



Caring for Your Septic System

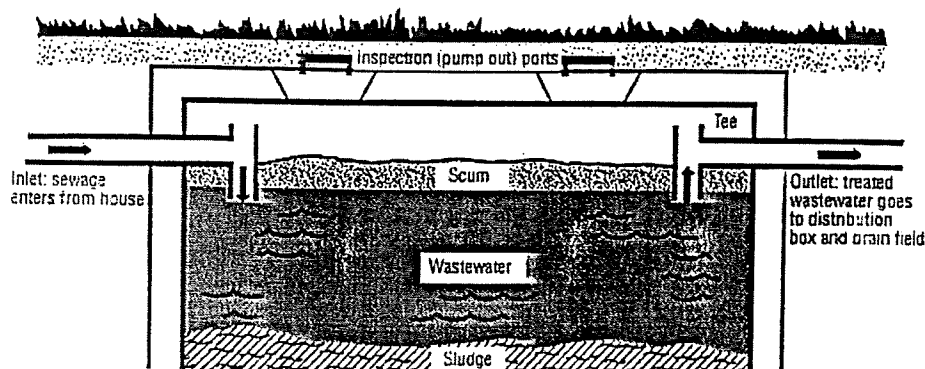
The accumulated solids in the bottom of the septic tank should be pumped out every **three to five years** to prolong the life of your system. Septic systems must be maintained regularly to stay working.

Neglect or abuse of your septic system can cause it to fail. Failing septic systems can

- cause a serious health threat to your family and neighbors,
- degrade the environment, especially lakes, streams and groundwater,
- reduce the value of your property,
- be very expensive to repair,
- and, put thousand of water supply users at risk if you live in a public water supply watershed and fail to maintain your system.

Be alert to these warning signs of a failing system:

- sewage surfacing over the drainfield (especially after storms),
- sewage back-ups in the house,
- lush, green growth over the drainfield,
- slow draining toilets or drains,
- sewage odors.





Tips to Avoid Trouble

DO have your tank pumped out and system inspected every 3 to 5 years by a licensed septic contractor (listed in the yellow pages).

DO keep a record of pumping, inspections, and other maintenance. Use the back page of this brochure to record maintenance dates.

DO practice water conservation. Repair dripping faucets and leaking toilets, run washing machines and dishwashers only when full, avoid long showers, and use water-saving features in faucets, shower heads and toilets.

DO learn the location of your septic system and drainfield. Keep a sketch of it handy for service visits. If your system has a flow diversion valve, learn its location, and turn it once a year. Flow diverters can add many years to the life of your system.

DO divert roof drains and surface water from driveways and hillsides away from the septic system. Keep sump pumps and house footing drains away from the septic system as well.

DO take leftover hazardous household chemicals to your approved hazardous waste collection center for disposal. Use bleach, disinfectants, and drain and toilet bowl cleaners sparingly and in accordance with product labels.

DON'T allow anyone to drive or park over any part of the system. The area over the drainfield should be left undisturbed with only a mowed grass cover. Roots from nearby trees or shrubs may clog and damage your drain lines.

DON'T make or allow repairs to your septic system without obtaining the required health department permit. Use professional licensed septic contractors when needed.

DON'T use commercial septic tank additives. These products usually do not help and some may hurt your system in the long run.

DON'T use your toilet as a trash can by dumping nondegradables down your toilet or drains. Also, don't poison your septic system and the groundwater by pouring harmful chemicals down the drain. They can kill the beneficial bacteria that treat your wastewater. Keep the following materials out of your septic system:

NONDEGRADABLES:

grease, disposable diapers, plastics, etc.

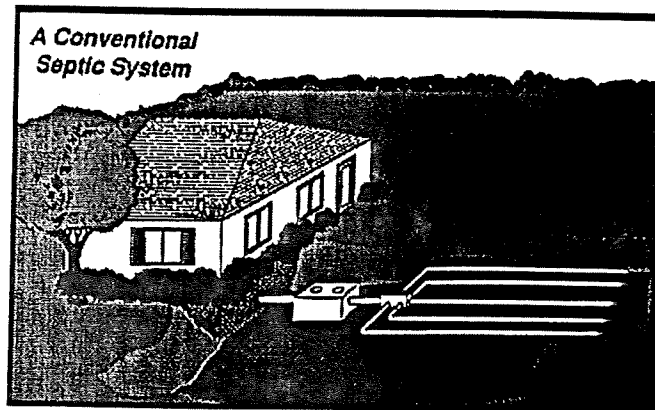
POISONS:

gasoline, oil, paint, paint thinner, pesticides, antifreeze, etc.

Septic System Explained

Septic systems are individual wastewater treatment systems that use the soil to treat small wastewater flows, usually from individual homes. They are typically used in rural or large lot settings where centralized wastewater treatment is impractical.

There are many types of septic systems in use today. While all septic systems are individually designed for each site, most septic systems are based on the same principles.



A Conventional Septic System

A septic system consists of a septic tank, a distribution box and a drainfield, all connected by pipes, called conveyance lines.

Your septic system treats your household wastewater by temporarily holding it in the septic tank where heavy solids and lighter scum are allowed to separate from the wastewater. This separation process is known as primary treatment. The solids stored in the tank are decomposed by bacteria and later removed, along with the lighter scum, by a professional septic tank pumper.

After partially treated wastewater leaves the tank, it flows into a distribution box, which separates this flow evenly into a network of drainfield trenches. Drainage holes at the bottom of each line allow the wastewater to drain into gravel trenches for temporary storage. This effluent then slowly seeps into the subsurface soil where it is further treated and purified (secondary treatment). A properly functioning

septic system does not pollute the groundwater.

For More Information

A videotape version of this brochure, also entitled "Your Septic System: A Guide for Homeowners", is available through the EPA Small Flows Clearinghouse. Call 1-800-624-8301.

For more information about maintenance or inspection of your septic system, contact your local board of health or the Department of Environmental Protection:

Central Regional Office (508) 792-7650
Northeast Regional Office (978) 661-7677
Southeast Regional Office (508) 946-2700
Western Regional Office (413) 784-1100
Boston Office (617) 292-5673

[Contact: Douglas.Roth@state.ma.us]

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Revised March 30, 2000

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Environmental Fact Sheet



BB-11

1997

Septic Systems and Your Lake's Water Quality

How do septic systems work?

Septic systems act as the digestive tract for household organic waste and destroy disease-producing bacteria. The most commonly approved systems today consist of a septic tank connected to a leach field. The septic tank stores solid organic waste, and pipes waste water into the leach field where it is filtered and drained into the soil below.

How is water quality related to septic systems?

Certain nutrients build up in organic waste from your home and are dissolved in the water that ends up in the leach field. The nutrients that do not get filtered out eventually drain into the water table below the ground or drain into rivers and lakes that may be nearby. Nutrients - especially phosphorus - are vital to plant and algae growth. High levels of phosphorus, however, act as a fertilizer and create an environment where growth is unnaturally rapid. This deprives aquatic animals of vital dissolved oxygen and will speed up the life cycle of a lake through the build up of plant and algal matter.

What can you do to help water quality?

In order to alleviate the problem of phosphorus build up, each of us must act responsibly when addressing waste disposal. Be sure to contact your state and local agencies to determine whether your existing septic system, or the one you plan to build, meets all the regulations.

If your system is 20 years or older, chances are that it is outdated. If your present system is up to date, follow these simple guidelines to help maintain the natural flow of nutrients:

- Pump your septic tank when needed and at least every two to three years.
- Compost your kitchen garbage rather than using a garbage disposal.

This keeps many nutrients from directly entering the water system.

- Report any sudden increase in aquatic algae or plant growth to the proper officials. This may be an indication of a phosphorus overload.
- Conserve water whenever possible. The more water in your septic system, the greater the possibility of nutrients leaching out through the system.
- Never flush toxic materials (such as paint, oil, or pesticides) down your drain. Not only do you risk the possibility of tainting your own drinking water, but you will also kill natural bacteria in your septic system that break down organic waste.
- Avoid flushing bulky materials down the drain. These will often clog your system and slow the decomposition process.
- Use phosphate-free or low phosphate dishwashing detergents.
- Run laundry or dishwashing cycles after a full load has been collected. This not only conserves water but will cut down on the amount of phosphates that drain into your septic system.

DES Programs | News and Events | Publications | Contact DES
Site Search | Site Index
NHDES Home Page

HOUSEHOLD HAZARDOUS WASTES

[? What is Stormwater Pollution](#)

[The Storm Drain System](#)

[Public Outreach](#)

[Community Programs](#)

[Monitoring Programs](#)

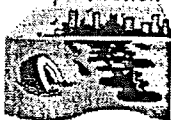
[Best Management Practices](#)

[Federal & State Requirements](#)

[Glossary of Terms](#)

[Stormwater Links](#)

[Click Here To Stop Pollution](#)

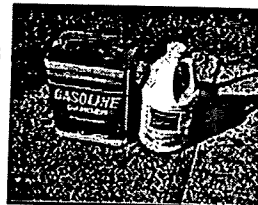


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Household Hazardous Waste

"Houshold hazardous waste is defined as common everyday products that people use in and around their homes including paint, paint thinner, herbicides, and pesticides that, due to their chemical nature, can be hazardous if not properly disposed."

The starting point for responsibly disposing of houshold hazardous waste is to determine if the chemical or waste fits the criteria of a "hazardous waste."



As a rule, persons who generate houshold hazardous wastes should not pour them down the sink or put them in the regular trash unless they are certain that the wastes are non-hazardous to humans or the environment. In general, only non-hazardous solids should be disposed of in the regular trash.

The following are some of the most commonly asked questions about household hazardous waste:

- [How can I tell if a material or waste is hazardous?](#)
- [Is used anti-freeze hazardous waste?](#)
- [I have some leftover latex paint. Is it hazardous waste?](#)
- [What can I do with empty containers?](#)
- [I have some paint/thinners/chemicals at home that need to be disposed of. Where can I take these?](#)

Q: How can I tell if a material or waste is hazardous?

A: To determine if a material or waste is hazardous, the material or waste must exhibit one or more of the following hazardous characteristics. You should review the manufacturer's container label to determine the hazardous ingredients of the materials:

Characteristic	Criteria
IGNITABILITY	Have a flash point less than 140 degrees F. Examples: acetone, gasoline, paint thinner.
CORROSIVITY	pH less than or equal to 2 or pH greater than or equal to 12.5. Examples: bleach, drain cleaner, hydrochloric acid.
REACTIVITY	Normally unstable; explosive; reacts violently with water or forms toxic gas. Examples: pool chemicals, fertilizers.

TOXICITY

Contains one or more of the following toxic ingredients:

Arsenic	Hexachlorobenzene
Barium	Hexachlorobutadiene
Benzene	Hexachloroethane
Cadmium	Lead
Carbon	Lindane
Tetrachloride	Mercury
Chlordane	Methoxychlor
Chlorobenzene	Methyl ethyl ketone
Chloroform	Nitrobenzene
Chromium	Pentachlorophenol
o-Cresol	Pyridine
m-Cresol	Selenium
p-Cresol	Silver
Cresol	Tetrachloroethylene
2,4-D	Toxaphene
1,4-Dichlorobenzene	Trichloroethylene
1,2-Dichloroethylene	2,4,5-Trichlorophenol
1,1-Dichloroethylene	2,4,6-Trichlorophenol
2,4-Dinitrotoluene	2,4,5-TP (Silvex)
Endrin	Vinyl chloride
Heptachlor (+epoxides)	

Q: Is used anti-freeze hazardous waste?

A: Used anti-freeze is considered hazardous and may contain many toxic ingredients found above. Used anti-freeze is very hazardous to humans and the environment. Every effort should be made **not** to pour it down the sink or in the regular trash.

Republic Services of Southern Nevada offer free household hazardous waste roundups every few months. Drop off times are from Wednesday through Saturday, 8:00 a.m. to 4:30 p.m. at 333 West Gowan Road. Please contact Republic Services at 702-734-5400 for the available collection dates, or visit their website at: <http://republicservicessnv.com/> for more information.

Q: I have some leftover latex paint. Is it hazardous waste?

A: Chemically, latex paint is hazardous because of the metal compounds used in the pigments. It should definitely not be disposed of in the garbage, down drains, or by letting it dry out. It also should be disposed of as hazardous waste.

Republic Services of Southern Nevada conducts Household Hazardous Waste roundups. Call Republic at 735-5151 for the collection and drop-off location nearest you.

Latex paint can also be recycled. You can donate your unwanted latex paint to your local graffiti removal organization. For information on donating your latex paint, contact the Clark County Graffiti Abatement Program at

Paint Waste Tip

Using the right amount of paint is the first step to avoiding paint waste. As a rule, one gallon will coat 300 to 400 square feet. Then, use up what you buy, recycle or give away the surplus, or, if necessary, dispose of the surplus properly.

455-4191.

Q: What can I do with empty containers?

A: Every effort must be made to ensure that containers that contained a hazardous material are completely empty. Residue left in containers should be less than 1 inch or 3% by weight of the total capacity of the container. The container may then be disposed of as solid waste in your trash bin.

Q: I have some paint/thinners/chemicals at home that need to be disposed of. Where can I take these?

A: Republic Services of Southern Nevada conducts free Household Hazardous Waste roundups. Call Republic at 735-5151 for the collection and drop-off location nearest you.

[Back to top ▲](#)

[home](#)

[members](#)

[contact us](#)

[faq](#)

[hotline](#)

Proper disposal

Tips for handling toxics

Non-toxic alternatives



Guide to Household Hazardous Waste

Cleaning products like aerosols, bathroom cleaners and drain cleaners, and car supplies like waxes, starting fluids and repair products are all considered household hazardous wastes. Many ingredients in these products are corrosive or reactive, and if they aren't disposed of properly, they can harm people and the environment. Chemicals in them can actually contaminate our rivers, lakes and drinking water.

Simple alternatives can replace many hazardous substances. If you choose to use commercial products, however, make sure to dispose of them properly! See the chart below for details.

If you see the words DANGER, CAUTION, WARNING, or TOXIC, you're probably handling a household hazardous waste.

Proper disposal of household hazardous wastes is easy - the trick is just knowing how!

Kitchen	Aerosol cans (empty)	OK to throw away
	Floor care products	Take to drop-off site*
	Household batteries	Take to drop-off site
Bathroom	Disinfectants	Pour down drain**
	Medicine (expired)	Pour down drain**
	Nail polish/remover (dried up)	OK to throw away
	Toilet, tub and tile cleaners	Pour down drain
Garage	Antifreeze	Take to drop-off site
	Battery (lead acid)	Take to drop-off site
	Garden fertilizer	OK to throw away
	Gasoline & kerosene	Take to drop-off site
	Motor oil	Take to drop-off site
	Insecticides & weed killers	Take to drop-off site
Workshop	Paint (latex - dried)	OK to throw away
	Paint (oil-based, auto, model)	Take to drop-off site
	Paint thinner, stripper or primer	Take to drop-off site
	Wood preservative	

* Drop-off site = local household hazardous waste drop-off site

** Pour small amounts down the drain with lots of water.



Tips for handling toxics

- Store household hazardous wastes in their original containers, and make sure the labels are readable.
- Save money and reduce waste by purchasing only what you need and use.
- Let solvents and paint thinners set in a closed jar to let dirt and paint settle to the bottom. You can reuse the top portion, and dispose of less waste!
- Never pour motor oil, paints or chemicals directly down the sink or into a catch basin in the street. Recycle or dispose of them properly. For disposal locations and drop-off dates, call the Southeast Oakland County Resource Recovery Authority (SOCRRA) 248-288-5150 or the Macomb County Environmental Health Department at 810-469-5236.



Non-toxic alternatives: Homemade solutions to prevent pollution

- **To disinfect**, use one-half cup borax or washing soda* dissolved in one gallon hot water.
- **To clean floors**, use 1/4 cup white vinegar, 1/4 cup washing soda* in one gallon warm water.
- **For glass cleaner**, mix one part vinegar to four parts water. Dry windows with newspapers.
- **To unclog drains**, use a plumber snake instead of drain cleaners.
- **Instead of toilet cleaner**, scrub with a toilet brush and baking soda.
- **To deodorize carpets**, sprinkle with baking soda, and vacuum after 30 minutes.

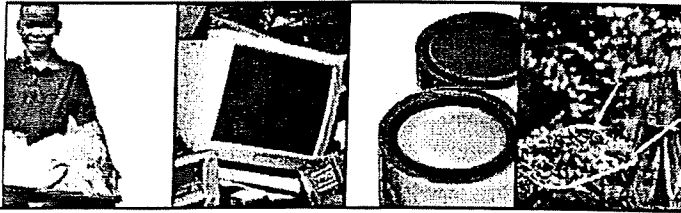
* Be sure to use washing soda (sodium carbonate) in these recipes, and not baking soda (sodium bicarbonate).

[Back to Bear Creek Restoration Project Home](#)

Last updated Friday, February 09, 2001 by CRWC.



recycling



recycling topics:

DEP general topics:

General Information for Municipalities

General Information

Commercial hazardous waste disposal facility:

Clean Harbors, Inc. 385 Quincy Ave.,
Braintree, MA
accepts most hazardous household products
@ \$2.50/lb.
Call 800-444-4244 for information or an appointment.

Important questions to ask callers with hazardous household products:

- What hazardous household products do they have and how much do they have of each?
- Has the material been mixed with anything? If so, or if the material is unknown, it will have to be handled at a household hazardous waste collection or commercial hazardous waste facility.
- Is the container in good condition? If not, they will need to repackage and re-label the material to store or transport it properly. It is important to keep product labels intact if possible.

General rules for consumers to manage hazardous household products

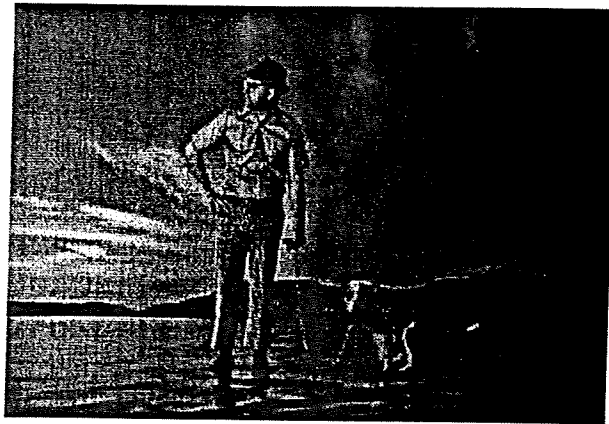
- Use up and store the product according to label directions.
- Use household chemical products only in well-ventilated areas or outside.
- Do not leave products unattended in the middle of a job.
- Keep children and pets away when products are in use.
- Keep lids on containers tightly sealed whenever the container does not need to be open.
- Store products out of reach of children and pets and away from food.
- Store away from sources of heat, flame

PET WASTES



WHEN YOUR PET GOES ON THE LAWN, REMEMBER IT DOESN'T JUST GO ON THE LAWN.

When our pets leave those little surprises, rain washes all that pet waste and bacteria into our storm drains. And then pollutes our waterways. So what to do? Simple. Dispose of it properly (preferably in the toilet). Then that little surprise gets treated like it should.



A CLEAN LONG ISLAND SOUND IS IMPORTANT TO ALL OF US

It's up to all of us to make it happen. In recent years, "point sources" of water pollution from factories and sewage treatment plants have been greatly reduced. Now, the current number one water pollution problem comes from diffuse or "nonpoint sources" like cars leaking oil, fertilizers washing off fields, lawns, and gardens, and failing septic systems. Each time it rains, these pollutants and others are washed into our stormwater drainage systems. These systems often lead directly, without treatment, into our rivers, lakes, oceans and groundwater. All of these sources add up to a big pollution problem. But each of us can do small things to help clean up our rivers, streams and Long Island Sound - and that adds up to a pollution solution.

Why do we need clean water?

Clean water is of vital importance for our health, economy, and environment. It exists in very limited supply, and yet, provides us with drinking water, wildlife habitats, opportunities for commerce and recreation, and adds beauty in our landscape, not to mention economic value. All of us benefit from clean water - and all of us have a role in keeping our lakes, rivers, oceans, and groundwater clean. Ordinary activities around the home, like cleaning up after a pet, can make a difference.

What's the problem with pet waste?

Droppings from dogs and cats and from other commonly kept animals like

exotic birds, rabbits, goats, and chickens may contain bacteria, parasites, or viruses that are a health risk to other pets and people, especially children. It's a nuisance in our neighborhoods. If it's washed into a storm drain and ends up in a lake, stream, river, or Long Island Sound, the bacteria can contaminate shellfish beds and cause the closing of bathing areas. People who swim in polluted water or eat these contaminated shellfish can get very sick.

Animal droppings also contain nutrients that can promote the growth of algae if they enter streams and lakes. The risk of stormwater contamination increases if pet wastes are allowed to accumulate in animal pen areas or left on sidewalks, streets, or driveways where runoff can carry them to storm sewers. Unless people properly dispose of pet waste, following the laws or ordinances established by their communities, these pet wastes enter our waters without treatment.

CLEAN WATER TIP:

How can you get rid of pet waste and help keep Long Island Sound clean?

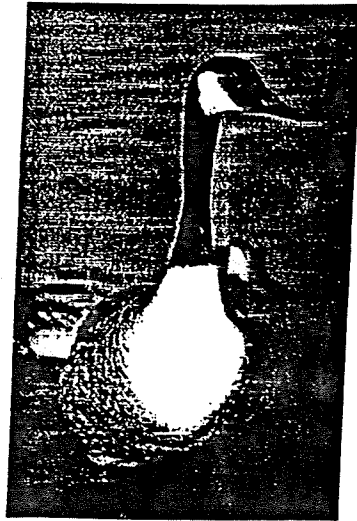
- Scoop up pet waste. As long as the droppings are not mixed with litter or other materials, flush it down the toilet. This is best because then your community sewage treatment plant or your septic system treats the pet waste.
- If local laws allow it, droppings may either be buried or sealed in a plastic bag and put it in the garbage.
- Never dump pet waste into a storm drain or catch basin.
- If your community does not regulate pet waste (e.g. "scooper" law), try to make it a priority of your local governing body. Encourage your community to adopt a "Pooper-scooper" ordinance.
- Parks should provide pet waste stations for collection and disposal of waste. Check to see if the parks in your community have them.

For more information on the problems with pet waste or their proper disposal and what you can do to prevent water pollution, call your local animal control officer, the local or state Department of Health or the agencies listed below.

The Long Island Sound Study thanks the Westchester County (NY) Department of Planning and the Washington State Department of Ecology, King County, and the cities of Bellevue, Seattle and Tacoma. For more information, call (203) 977-1541 or (631) 632-9216 or visit the website www.epa.gov/region01/eco/lis

[\[Fact Sheets Page\]](#) [\[What's New\]](#)

Animal Management



Description

Dog and goose waste deposited near water bodies or within a watershed can contribute excess nutrients to lakes, thus stimulating the growth of algae. As algae die and decompose, oxygen levels in the water are lowered, which may kill fish and other aquatic organisms. In addition, animal feces can carry pathogens (bacteria and viruses) that cause disease.

While city ordinances can dramatically decrease dog feces left near water bodies and stormwater conveyances, wild geese are more difficult to deal with. The following management practices can be implemented to decrease geese populations:

- No-feeding ordinances
- Scare tactics
- Habitat modifications (changes in vegetation and management)
- Goose barriers
- Repellents
- Use of trained dog patrols
- Relocating geese
- Lethal techniques such as adding eggs, sterilizing geese, hunting birds, and euthanizing geese.

Federal, state or local permits may be required for some of these control methods.

Purpose

	Water Quantity
Flow attenuation	N/A
Runoff volume reduction	N/A
	Water Quality
Pollution prevention	
Soil erosion	N/A
Sediment control	N/A
Nutrient loading	
Pollutant removal	
Total suspended sediment (TSS)	N/A
Total phosphorus (P)	N/A
Nitrogen (N)	N/A
Heavy metals	N/A
Floatables	N/A
Oil and grease	N/A
Other	
Fecal coliform	N/A
Biochemical oxygen demand (BOD)	N/A

- | | |
|-------------------------------------|-----------------------------|
| <input checked="" type="checkbox"/> | Primary design benefit |
| <input type="checkbox"/> | Secondary design benefit |
| <input type="checkbox"/> | Little or no design benefit |

Animal Management



Trained dogs can be used to "haze" unwanted geese

Habitat modifications combined with no-feeding ordinances are good first steps to dissuade goose flocks from an area. Geese are attracted to ponds and lakes that have banks with low incline and lawns, which allow them to freely walk between water and land. Ponds or lakes with an open upland habitat provide geese with protection from predators, while the nicely mown lawns surrounding ponds and lakes present them with one of their favorite foods, new shoots of grass. Increasing the height of shoreline vegetation may create an effective barrier. Dense shrub plantings or a 20 to 100-foot strip of herbaceous vegetation at least 3 feet high will discourage geese. Artificial barriers, such as wooden snow

fencing or a fine-meshed plastic fence at least 30 inches high, will also dissuade geese.

Advantages

- Controlling animal waste reduces nutrient loading in water bodies, thereby helping to control algae bloom and associated water quality issues.
- "Dog poop ordinances" and no-feeding ordinances for geese, combined with habitat modifications are an economical way to help improve water quality.

Limitations

- City ordinances only work with a willing and compliant public. Many individuals enjoy seeing geese near homes and public places and may not agree that geese numbers should be decreased to increase water quality.
- Geese habitat modifications may be perceived as "messy" by some people, and artificial barriers may not be aesthetically pleasing.

Design/Construction

- The design or type of barrier around a water body will be largely dependent on cost, and what the landowner considers to be aesthetically pleasing.
- A barrier of vegetation or buffer zone has ecological functions and structural benefits in addition to providing an effective goose barrier. For lower maintenance use native vegetation to create a natural buffer zone along all or a majority of the shoreline, that has a minimum width of 20 feet. The buffer zone can contain native trees, shrubs, wildflowers, grasses, and sedges. A qualified landscape designer with experience in designing plantings for wetlands, ponds, streams, or lakeshores may also be commissioned to develop a detailed shoreline buffer zone. To further decrease goose upland habitats eliminate "unneeded" lawn and restore native plants to as much of that area as possible. For more information of buffer zones, See *Lakescaping for Wildlife and*

Animal Management

Water Quality (Minnesota Department of Natural Resources, 2000).

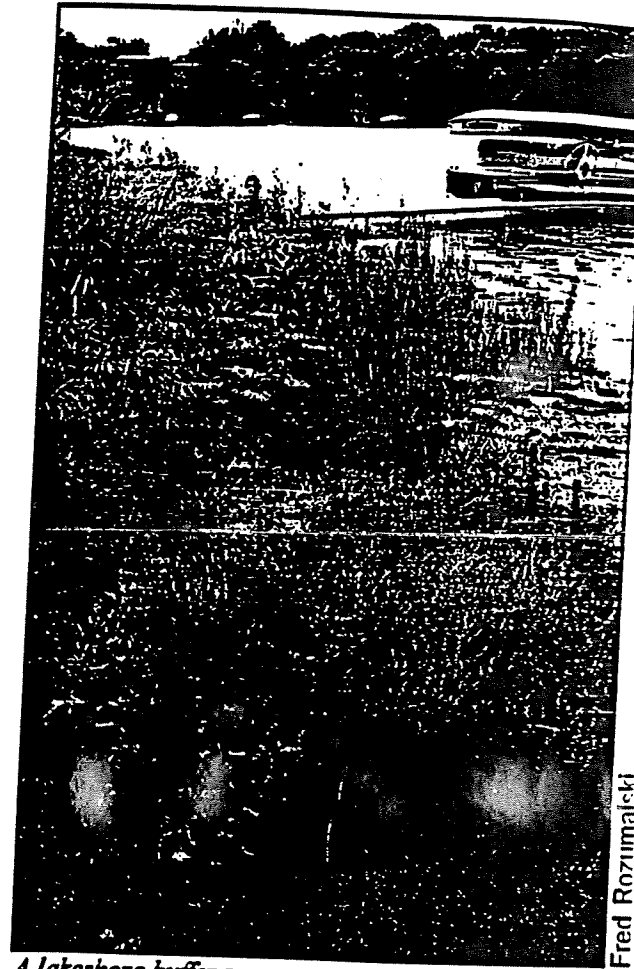
- Most any fencing material that is at least 30 inches high is appropriate for discouraging geese. Snow fencing is effective, although unattractive.

Maintenance

- The community animal ordinance may need to be modified over time to better fit problems as they evolve.
- Artificial barriers require very little maintenance and can be repaired easily when required.
- The cost to maintain vegetative buffer zones is only a fraction of what it takes to maintain turf grass and may only consist of an annual mowing in late fall or early spring.

Sources

1. Henderson, Carrol L., Carolyn J. Dindorf, and Fred J. Rozumalski. 1998. *Landscaping for Wildlife and Water Quality*. Minnesota Department of Natural Resources. Saint Paul.
2. Sperling, David L. 1998. *Making Peace with Geese*. Wisconsin Department of Natural Resources. Madison.



Fred Rozumalski

A lakeshore buffer zone serves as an attractive amenity as well as a discouragement to geese.



Fred Rozumalski

A wide expanse of mown lawn is a favorite congregation place for geese.

Best Management Practices>



What's the problem with pet waste?

It's a health risk to pets and people, especially children. It's a nuisance in our neighborhoods. Pet waste is full of bacteria that can make people sick. If it's washed into the storm drain and ends up in a lake, stream or marine water, the bacteria ends up in shellfish. People who eat those shellfish can get very sick. The waste produced by Seattle's dogs and cats is about what a city the size of Renton or Kennewick--about 50,000 people--would produce. Unless people take care of it, the waste enters our water with no treatment.

Report Surface Water Quality Problems On-line

This information is brought to you by the Water Quality Consortium, a group of public agencies working together to reduce nonpoint water pollution through education.

Partially funded by a Centennial Clean Water Fund grant from Washington State Department of Ecology.

Clean Water tip: How can you get rid of pet waste and help keep our waters clean?

Here are some options.

Scoop it up and flush it down the toilet. That's best because then your community sewage treatment plant or your septic system treats the pet waste.

Seal the waste in a plastic bag and throw it in the garbage. (This is legal in most areas, but check local laws.)

Bury small quantities in your yard where it can decompose slowly. Dig a hole one foot deep. Put three to four inches of waste at the bottom of the hole. Cover the waste with at least eight inches of soil. Bury the waste in several different locations in your yard and keep it away from vegetable gardens.

Use commercially available compost or make your own using garden waste. Mixing compost with your soil means your plants will need less chemical fertilizer and puts your

waste to good use.
Commercial compost
and soil amendments
may be available from
your solid waste or
wastewater utility as
well as your local garden
store.

To find out more about
the problems of pet
waste and what you can
do to prevent water
pollution, call the
number of your local
community listed below.

[Top](#)

[SPU Home](#) [Contact Us](#) [Site Index](#)

Last Updated: 05/03/01



King County
Water & Land Resources Division
(206) 296-6519
<http://waterquality.metrokc.gov/>



City of Bellevue
Utilities Department
(206) 451-4480
<http://www.ci.bellevue.wa.us/bellevue/>



City of Seattle
Public Utilities
(206) 684-7560
<http://www.ci.seattle.wa.us/seattle/util>



City of Tacoma
Public Works Department
(206) 591-5588
<http://www.ci.tacoma.wa.us/>



Washington State
Department of Ecology
(360) 407-6400
<http://www.wa.gov/ecolog>

GENERAL (ILLICIT DISCHARGE)

Water Quality Watch



Household Guide to Chesterfield County's Illicit Discharge Ordinance

In 1997, Chesterfield County enacted an **Illicit Discharge Ordinance**, which makes it illegal to discharge pollutants to the storm sewer system or to County waters.

The County's Illicit Discharge Ordinance is required by the Clean Water Act. It is designed to help maintain and protect the quality of the water in our streams, lakes and rivers.

What does the ordinance prohibit?

- *Directly discharging anything that is not composed entirely of stormwater into the storm sewer system or into County waters is prohibited.*
- *Connecting any structure that carries any liquid other than stormwater to the storm sewer or to County waters also is prohibited.*

You can report illicit discharges to the Chesterfield County Water Quality Section at **717-6161**

What is the penalty for a violation?

Anyone who *knowingly violates* the County's Illicit Discharge Ordinance can be found guilty of a Class 1 misdemeanor.

Inadvertent or *unknowing violations* can result in a civil penalty—a fine of \$250 to \$1,000.

Violators also will have to pay for the cost of testing, cleaning up, and disposal of their pollutants.

What does the ordinance allow?

Discharges from several everyday activities are allowed to flow into storm sewers or County waters.

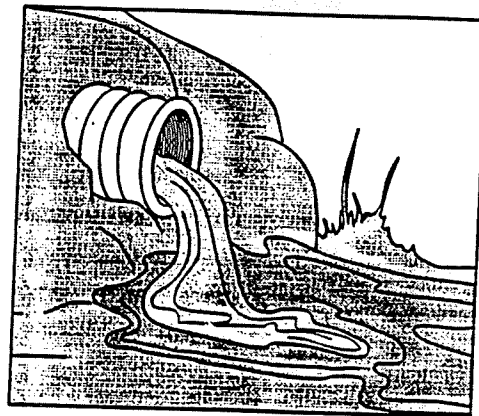
For example:

- Draining the water from a swimming pool, but *only after the water has been dechlorinated (usually 2 to 3 days after you last added chlorine—use a pool water test kit to be sure)*
- Washing cars *only at home*
- Watering lawns and irrigating landscapes

What is the County's storm sewer system?

Stormwater is the water from rain, melting snow or ice, which flows over the ground or pavement without soaking into the ground.

The **storm sewer system** includes the roadside ditches, gutters, inlets, catch basins, and underground pipes that collect stormwater and carry it away from our streets, parking lots, and yards.

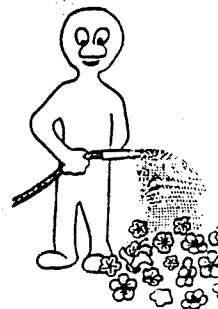


County waters include the creeks, lakes, and rivers in Chesterfield County. Stormwater can flow directly into these waters, so they are part of the storm sewer system, too.

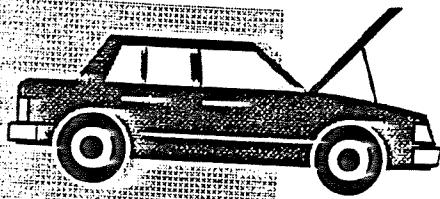
Did you know? Anything that is washed into the storm sewer system ends up in County waters. That's because, unlike the wastewater from our kitchens and bathrooms, stormwater is not treated before it's released into our waters.

- Flushing water lines
- Water from crawl spaces and foundation drains
- Condensation from air conditioners
- Runoff from springs or drinking water sources
- Discharges from fighting fires
- Discharges that are allowed under the terms of a Federal or State permit

However, if any of these activities are found to be causing water pollution, the County will ask that the activity be stopped or be conducted differently so that our waters are not polluted.



How can I prevent stormwater pollution at home?



Never dump motor oil, antifreeze, or any other chemicals down the storm drain. *One quart of oil can contaminate 250,000 gallons of water!*

If you spill motor oil or other fluids, don't hose the spill into the gutter or ditch. Instead, spread kitty litter to absorb the spill, then sweep it up and put it in the trash.

Inspect and maintain your car to keep oil, antifreeze, and other fluids from leaking.

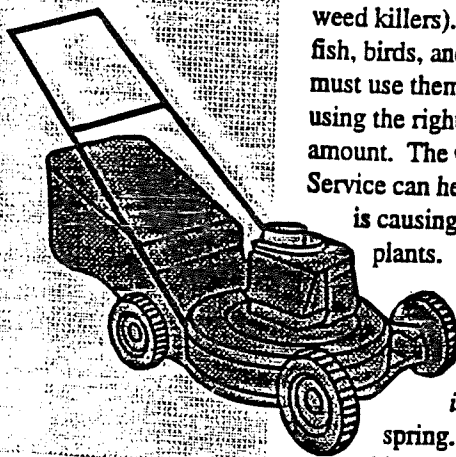


Brushes used with water-based (latex) paint should be rinsed in the sink. If you have a small amount of paint left in the can, stuff it loosely with newspaper, let the paint dry out completely, and put it in the trash.

Save and reuse paint thinner and turpentine whenever you can. Leftover paint and paint thinner can be taken to a County transfer station for disposal.



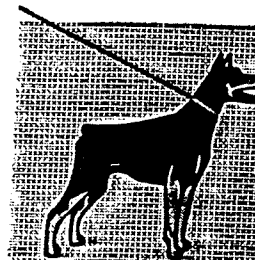
Try to minimize your use of pesticides and herbicides (insect and weed killers). They are deadly to fish, birds, and other wildlife. If you must use them, make sure you are using the right product and the right amount. The County Extension Service can help you find out what is causing damage to your plants.



It's better to fertilize your lawn in the fall than in the spring. First, get a soil test kit from the County Extension Service to find out what nutrients your yard really

needs. Look for low phosphate fertilizers. Most mature lawns need more nitrogen than phosphate.

For tips on using fertilizers and pesticides, other ways to control pests, soil testing, and other lawn and gardening problems, call the County Extension Service at 751-4401.



Put pet waste in a plastic bag and dispose of it in the trash can or flush it down the toilet. When pet waste is left on the ground, harmful bacteria can be carried away by stormwater to contaminate our streams.

Please don't dump leaves and grass clippings into ditches, storm drains, or creeks. They clog storm sewers, which can

cause flooding. Decaying leaves and grass add excess nutrients to our waters, which can cause algae to grow too fast and kill fish.



Compost your leaves and grass clippings, and use the compost to enrich and condition your soil. Or, you can put your leaves out for collection or take them to a County transfer station.

What should I do with hazardous household products?

Some garages and gas stations will accept used motor oil and antifreeze for recycling.

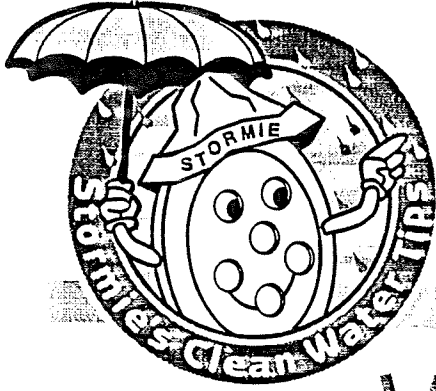
You can take used motor oil, gasoline, antifreeze, brake fluid, paint, solvents (like turpentine), and other household hazardous wastes to:

- Northern Area Transfer Station at 3200 Warbro Road, off Genito Road (across from the Southside Speedway)
- Southern Area Transfer Station at 6700 Landfill Drive, off Ironbridge Road (behind the water tower)

Pesticides, herbicides, pool chemicals, and similar materials are accepted *only at the Northern Area Transfer Station on scheduled Hazardous Waste Days.*

For more information about household hazardous waste, recycling, and leaf collection, call the Chesterfield County Solid Waste Department at 748-1297.

This is one of a series of fact sheets about surface water quality issues in Chesterfield County. The series is produced by the Water Quality Section of the Department of Environmental Engineering. Our mission is to protect, maintain, and restore the chemical, physical, and biological integrity of Chesterfield County's waters in order to enhance the quality of life for County citizens.



Cleaning Up Stormwater Runoff

A SERIES OF WATER QUALITY FACT SHEETS ABOUT STORMWATER RUNOFF

What is stormwater runoff? It is the rain and melting snow that flows off streets, rooftops, lawns, and farmland. The flowing water carries salt, sand, soil, pesticides, fertilizers, leaves and grass clippings, oil, litter, and many other pollutants into nearby waterways. Since these pollutants are washed off a wide area and cannot be traced to a single source, they are called nonpoint source or runoff pollutants.

Storm Sewers – Rivers Beneath Our Feet

In developed areas, much of the land surface is covered by buildings and pavement which do not allow water to soak into the ground. Instead, storm sewers are used to carry the large amounts of runoff from these roofs and paved areas to nearby waterways.

Storm sewers are simply pipes laid underground, often below streets. Inlets or drains located along curbs and in parking areas collect the runoff, which then flows to nearby streams or lakes. A common misconception is that water running off streets goes into a sewage treatment plant. It does not. In fact, stormwater usually receives no treatment. Water that runs off lawns, streets, and parking lots flows directly into lakes and streams.

Stormwater is Not Clean Water

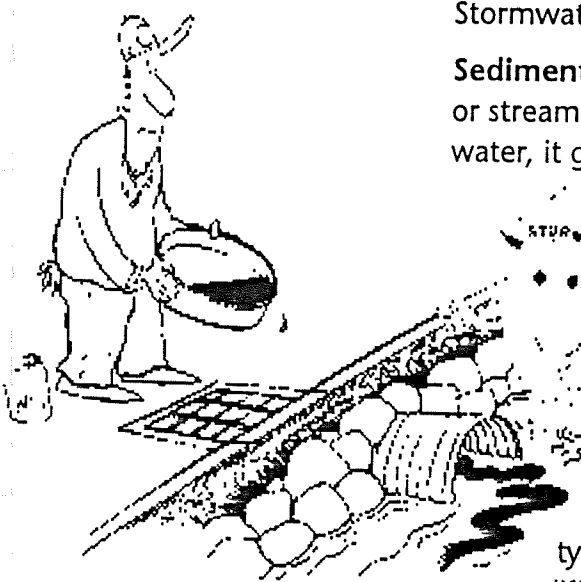
Stormwater runoff carries pollutants that seriously harm our waters:

Sediment. Soil particles washed off construction sites or farm fields into a lake or stream make the water cloudy or turbid. When sediment settles out of the water, it gradually fills in the stream or lake bed.

Phosphorus. This nutrient, often attached to soil particles, fuels the growth of algae and aquatic weeds. These plants are important in providing habitat for fish and wildlife. However, rapid and excessive growth of algae and aquatic plants can degrade water quality and interfere with swimming, boating and fishing.

Micro-organisms. Bacteria, viruses and other disease causing organisms make waterways unsafe for swimming, wading and other types of recreation. Some of these organisms, notably Cryptosporidium, are difficult to remove through water treatment and may endanger people who depend on drinking water supplies drawn from lakes or streams.

Toxic chemicals. Motor oil, lead from gas and auto exhaust, zinc from roof drains and tires, and pesticides in stormwater runoff may kill aquatic organisms or impair their health, growth or ability to reproduce.



Did you know that oil dumped into the storm sewer pollutes our water?

The Goals of Urban Stormwater Programs are to:

- Slow down water, decreasing its ability to cause erosion and carry pollutants.
- Reduce the amount of runoff by encouraging water to soak into ground.
- Prevent pollution by reducing the use of toxic chemicals, controlling erosion, and by covering outdoor storage piles.
- Remove pollutants by routing runoff through settling ponds, grass filter strips, or other treatment devices.

STORMWATER MANAGEMENT IS NOW THE LAW

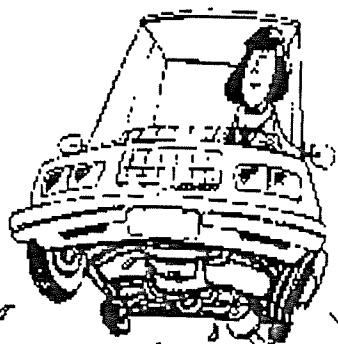
Federally mandated stormwater permits require many industries and cities to control stormwater runoff. Even communities without stormwater permits require erosion controls on construction sites and better stormwater management in new development.

Federal laws also require all farmers who participate in federal programs to develop farm conservation plans that help control cropland erosion, barnyard runoff and other sources of water pollution.

We Can All Help!

Each of us contributes to stormwater pollution and each of us can help stop it. Here are some ways you can help:

- Keep pesticides, oil, leaves and other pollutants off streets and out of storm drains.
- Divert roof water to lawns or gardens where it can safely soak in.
- Clean up pet waste – bury it or flush in down the toilet.
- Keep cars tuned up and repair leaks – or better yet, walk, bike or take the bus.



The amount of pollution that you stop may seem small, but together it all adds up to cleaner water for everyone to enjoy. For more information, contact the Department of Natural Resources or your county Extension or Land Conservation office.



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Author: Carolyn Johnson, UW-Extension.

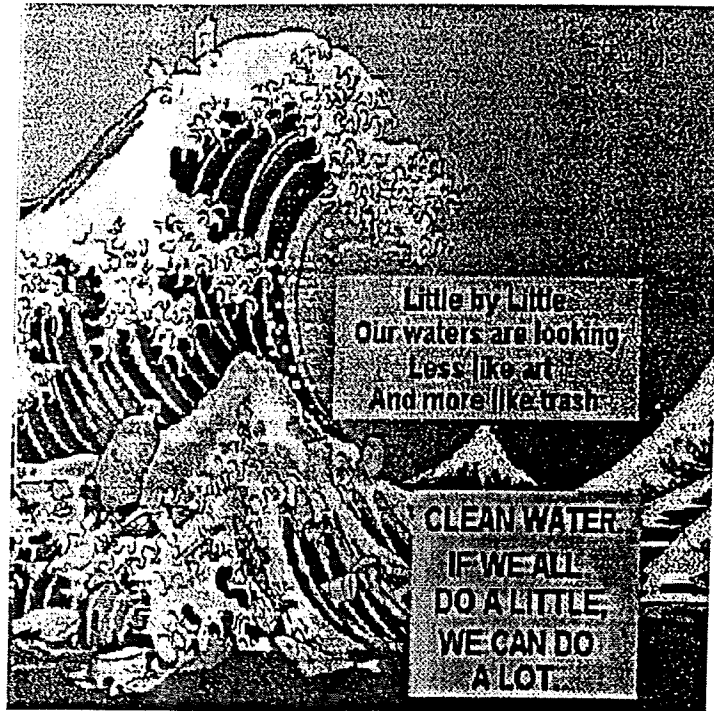
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UW
Extension



POINTLESS PERSONAL POLLUTION



prepared
by

The Florida Department of Environmental Protection
Stormwater/Nonpoint Source Management Section

WHEREVER YOU LIVE, YOUR DAILY ACTIVITIES COULD END UP POLLUTING FLORIDA'S WATER

Pollutants from our homes, businesses and farms are major contributors to the pollution of Florida's surface and ground waters. This pollution is washed into the state's waters by rain or irrigation water and is known as **POINTLESS PERSONAL POLLUTION**. Unlike many other types of pollution, **WE** cause this pollution and **WE** can stop it!

WHAT IS POINTLESS PERSONAL POLLUTION?

The blame for water pollution often is aimed at "point sources," such as industrial or sewage treatment facilities. Discharges from these sources flow through pipes and can be readily identified and treated.

But **Pointless Personal Pollution** is difficult to identify and treat. This is because many of our daily activities can cause this pollution and it can travel by many different routes into the ground and surface waters.

Take a look around your home and property. You can find many sources of **Pointless Personal Pollution** that could end up in the state's waters. Some examples of these pollutants are:

- ♦ Sediments from soil erosion caused by unvegetated soils and by uncontrolled construction activities.

- ♦ Automotive and lawn equipment oil and grease leaking on paved areas or improper disposal of used oil and other products into storm drains.
- ♦ Runoff of pesticides, herbicides and fertilizers from lawns, gardens, farms and golf courses.
- ♦ Organic contaminants from litter, yard trash, sludge, garbage from dumpsters and garbage cans and pet and livestock wastes.
- ♦ Pathogens and excessive nutrients from sewer leaks and septic tanks overflowing or located in areas with high water tables.

HOW DOES POINTLESS PERSONAL POLLUTION IMPACT OUR WATERS?

Pointless Personal Pollution contains many kinds of pollutants which contaminate our waters in many ways, such as:

- ♦ Nutrients from fertilizers, septic tanks and animal wastes enter our waters causing excessive growth of algae and aquatic weeds.
- ♦ Heavy metals and pesticides that can kill aquatic organisms and contaminate sediments.
- ♦ Sewage, garbage and litter reduce oxygen in the water to levels that can kill aquatic life.
- ♦ Sediments from soil erosion clog fish gills and shellfish filter systems cutting off their oxygen supply.
- ♦ Pathogens from septic tanks and animal wastes contaminate shellfish and lead to the closing of swimming areas.

WHAT YOU CAN DO TO REDUCE POINTLESS PERSONAL POLLUTION ?

HOME & HOUSEHOLD



MAINTENANCE

SHOP WISELY. Buy products labeled biodegradable, non-toxic, non-phosphorus, or water soluble. **WHY...**they readily decompose and will not pollute surface or ground water.

STORE PRODUCTS SAFELY. Keep toxic products in original containers, closed and clearly marked in safe storage places. **WHY...**to prevent spillage or accidents to children or pets.

PROPERLY MAINTAIN SEPTIC SYSTEM. Inspect systems annually and pump out as needed. Avoid caustic cleaners, chemicals or solvents. **WHY...**they might destroy waste reducing bacteria or clog absorption fields, which could cause runoff of inadequately treated wastes during rainstorms.

LAWN AND GARDEN

USE GARDEN AND LAWN CHEMICALS WISELY. Follow package directions carefully and only use pesticides, herbicides and fertilizers when other methods fail. Do not apply if rain is in the forecast. **WHY...**excessive fertilizers and chemicals wash off the property and into surface and ground waters.

KEEP IRRIGATION WATER ON THE LAWN AND GARDEN (NOT ON PAVED SURFACES). Divert rain spouts onto unpaved areas or swales and wash vehicles on vegetated areas. **WHY...**this allows runoff to soak into the soil and not wash over paved surfaces into nearby waterbodies. **COMPOST LEAVES, GRASS AND SCRUB CLIPPINGS.** Use as mulch for fertilizer and do not rake into roadways. **WHY...**these materials will decompose and return nutrients to the soil and avoid the necessity of applying fertilizers.

AUTOMOTIVE

DON'T DRAIN USED MOTOR OIL INTO STORM DRAINS. Take used motor oil and antifreeze to service stations to recycle them. **WHY...**these products are toxic and add pollutants to surface waters if placed or washed into storm drains.

SERVICE YOUR CAR REGULARLY. Have your car inspected and maintained regularly. **WHY...**to prevent leakage of motor oil, antifreeze and other fluids which can end up in the nearest waterbody. Well maintained vehicles reduce air emissions which can contaminate surface waters.

**IF YOU WANT TO BE PART OF THE SOLUTION AND WANT MORE INFORMATION,
CONTACT THE FOLLOWING :**

**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Stormwater/Nonpoint Source Management Section
2600 Blairstone Road, Tallahassee, FL 32399
Phone: (850) 921-9472**

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Phone: 407/686-8800**

**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Phone: 352/796-7211**

**ST JOHNS RIVER WATER MANAGEMENT DISTRICT
Phone: 904/329-4500**

**SUWANNEE RIVER WATER MANAGEMENT DISTRICT
Phone: 904/362-1001**

**NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Phone: 850/539-5999**

LOCAL SOIL AND WATER CONSERVATION DISTRICTS

CITY OR COUNTY GOVERNMENTS

COOPERATIVE EXTENSION SERVICE



MASSACHUSETTS
DEPARTMENT OF

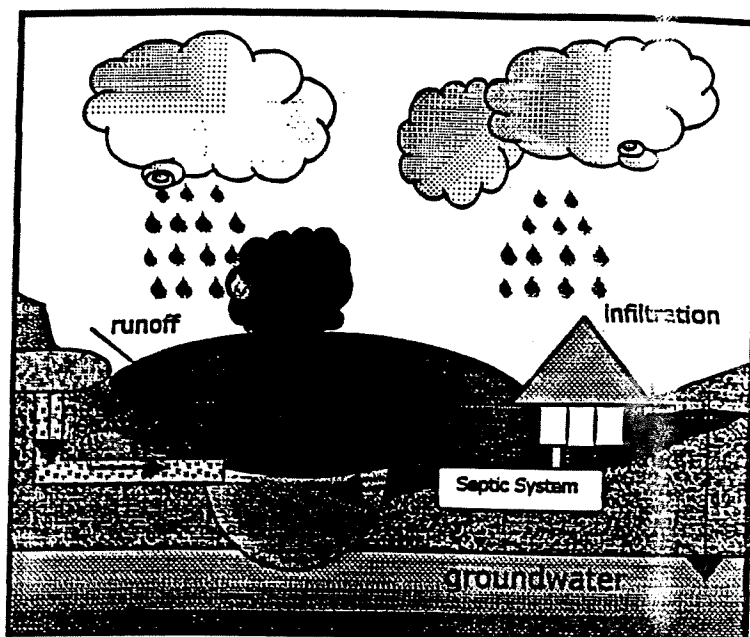
ENVIRONMENTAL
PROTECTION

GIVE YOUR LAKE THE BLUES

Protecting Your Lake from Nonpoint Source Pollution

Lake Water Quality, Watersheds, and Nonpoint Source Pollution

A lake's water quality reflects what is happening in its surrounding watershed. A watershed includes all the land, or drainage area, that drains into a stream, lake or other waterbody. Nonpoint source (NPS) pollution occurs when water (i.e. stormwater, snowmelt, water from a garden hose) flows throughout the watershed, picking up pollutants and depositing them into water resources. Common types of NPS pollutants include phosphorus and nitrogen in lawn and garden fertilizers, pet waste, phosphorus and bacteria from septic systems, oil and grease from parking lots, and sediment from construction activities and soil erosion.



NPS pollution does not observe property lines. It flows wherever water takes it throughout the watershed – typically to stormdrains and then, without any treatment, into nearby streams and lakes.

How Does NPS Pollution Affect Lake Water Quality?

The combined effect of NPS pollutants such as phosphorus, sediment and bacteria result in degraded water quality and loss of recreational use and wildlife habitat. This accelerated degradation as a result of human activity in the watershed is called "cultural eutrophication".

- ◆ Excessive nutrients such as phosphorus stimulate algal and plant growth, limiting the recreational use of the lake (fishing, swimming and boating) and degrading wildlife habitat.
- ◆ Sediment can cause serious damage to the lake by causing turbidity and filling-in sensitive habitat that is needed for aquatic life. It also transports phosphorus.
- ◆ Bacteria from failing or substandard septic systems, pet waste, and waterfowl often cause swimming beach closures.

This information is available in alternative format by calling our ADA Coordinator at (617) 574-6872.

Produced by the Massachusetts Department of Environmental Protection, Division of Watershed Management, Nonpoint Source Program.

July 2001

Is There a Solution to NPS Pollution?

Cumulatively, watershed residents can have the greatest impact on the health of a lake. Steps to prevent or reduce NPS pollution can be simple and inexpensive. Preventing and reducing NPS pollution is the key to improving lake water quality. Every little bit helps!

Best Management Practices (BMPs) are activities that prevent nonpoint source pollution or mitigate the effects of NPS. It is easier and more cost effective to prevent pollution than to restore a degraded resource. BMPs can be structural, such as planting a buffer strip, or non-structural, such as analyzing lawn soils prior to applying fertilizer. Some simple and cost effective BMPs for residents include:

Encourage Infiltration and Control Sedimentation

- ◆ Minimize impervious surfaces such as driveways and parking lots to encourage infiltration.
- ◆ Slow or divert stormwater runoff toward vegetated areas where water can seep into the ground.
- ◆ Mulch and seed exposed soils to eliminate erosion.
- ◆ Wash cars over pervious surfaces, such as lawns, not over driveways, and wash undercarriages at a commercial car wash facility.

Reduce and Eliminate Nutrients and Bacteria

- ◆ Plant vegetation around driveways, shorelines and on slopes. The vegetation will absorb nutrients, filter out pollutants and trap sediment.
- ◆ Keep yard waste such as grass clippings and leaves out of the lake, storm drains, and off streets. Although yard waste is natural, when it decomposes it becomes high in nutrients.
- ◆ Reduce or eliminate fertilizer application, use organic, no-phosphate or slow-release fertilizer. To determine the phosphorus content in a fertilizer, look at the middle number in the formula on the package (i.e. Formula 16-4-8). Also, have your soil tested (Call the UMASS Extension Soil Testing Lab at (413) 545-2311 or download a soil test order form at <http://www.umass.edu/plsoils/soiltest>). You may not need to add fertilizer.
- ◆ Use phosphate free or low phosphate (less than 1%) automatic dishwashing detergents. Phosphate content in various dishwashing detergents sold in Massachusetts ranges from 0% up to 8.7% by weight. Gel detergents tend to have less phosphorus than powder detergents.
- ◆ Maintain septic tanks with regular pumping and inspection at least every 3-5 years.
- ◆ Pick up pet waste and dispose of it in the trash.
- ◆ Establish a vegetated buffer strip along shorelines to discourage waterfowl, such as geese, and avoid feeding them. The average goose will produce one pound of droppings a day!

For more information contact DEP's Regional Nonpoint Source Coordinators:

Northeast: Rosalia Barber

(978) 661-7816

rosalia.wollenhaupt@state.ma.us

Southeast: Jeff Brownell

(508) 946-2702

jeffrey.brownell@state.ma.us

Central: Brian Duval

(508) 849-4027

brian.duval@state.ma.us

Western: Tracey Miller

(413) 755-2162

tracey.miller@state.ma.us

Storm Drains and Water Quality

Household Hazardous Waste Project, University of Missouri

Improving water quality — The responsibility rests on all our shoulders

Government regulation of business and industry has improved Missouri's water quality. However, not all pollution comes from these sources. Improper disposal of motor oil, pet wastes, yard debris, litter, and misuse of pesticides and fertilizers also threaten our water resources.

This guide describes how storm drains are linked to water quality and what you can do to prevent water pollution.

For more information, contact: Household Hazardous Waste Project, 1031 E. Battlefield, Suite 214, Springfield, MO 65807.

The U.S. Environmental Protection Agency has determined that nonpoint source pollution is a major cause of our nation's water quality problems.

Household wastes are a significant source of nonpoint source pollution. Household wastes often enter our waterways via storm drains, negatively impacting water quality by depleting oxygen reserves and contaminating the water.

Aquatic plants and animals need sufficient oxygen and clean water to survive. Storm drains should never be used to dispose of household wastes.

Storm drains

Storm drains or catch basins are the square metal grates at the sides or curbs of streets. They are designed to collect stormwater to prevent streets and property from flooding. When it begins to rain, the first raindrops soak into the ground.

But once the soil is saturated, or if the soil has been replaced by cement or another impervious barrier, the rain runs along the surface and is caught in storm drains.

Any debris or garbage from driveways, backyards or streets, including products and wastes applied to the ground, can be washed into the storm sewer system.

For many communities, the storm sewer system carries runoff water through pipes to larger pipes or trunk lines buried underground. These pipes then take the water and empty it untreated into the nearest waterway, such as a stream, river or lake. In parts of Missouri, the storm sewer trunk line empties into a sinkhole, which is a direct conduit to groundwater.

In some communities, the storm sewer system (stormwater) is combined with the municipal sewer system (wastewater). This is called a combined sewer system. Both water streams are carried through pipes to the wastewater treatment plant.

The water is treated at the plant according to the level of available treatment. However, when there is a large flow of water from a storm, the water at the wastewater treatment plant may be released with minimal treatment. As a result, raw sewage and stormwater enter the waterway.

What you can do

Following is information on specific types of wastes that enter our waterways through storm drains and how you can prevent this pollution.

Antifreeze

Antifreeze is primarily composed of ethylene glycol, a sweet and poisonous compound which can kill or injure pets, birds, fish, and other wildlife when carelessly disposed into the environment.

It can also contain heavy metal contaminants picked up from vehicle engines during use.

Solutions

- Repair any leaks in your vehicle's radiator system.
- If available in your community, take your used antifreeze to an antifreeze recycling center.
- If recycling is not an option, contact your local wastewater treatment plant to determine if you can dispose of the antifreeze down a drain connected to the wastewater treatment plant. Never pour antifreeze into a septic system or lagoon.
- If no options are available, antifreeze must be saved for a household hazardous waste collection. Do not mix antifreeze with any other substance.

Fertilizers

Fertilizers contain large amounts of phosphorus and nitrogen which can cause algal blooms in aquatic areas. These blooms deplete the oxygen in water, resulting in fish kills.

Solutions

- Sweep and collect any fertilizer from driveways and walkways. Do not wash these materials into storm drains.
- Avoid overusing fertilizers. Determine the mineral needs of your soil and apply the necessary amendments. Contact University Extension for assistance.
- Never apply fertilizer before it rains.

- Donate unwanted fertilizer to a friend, local garden club, or other organization that can use it up.
- Save unusable fertilizer for a household hazardous waste collection.

Motor oil

Motor oil can damage or kill underwater vegetation and aquatic life.

Each year in the United States, do-it-yourself motor oil changers improperly dispose of 192 million gallons of used motor oil into our environment.

This is more than 17 times the oil spilled by the Exxon Valdez. One gallon of used motor oil can contaminate 1 million gallons of water. When used motor oil is applied to roads, more than 90 percent of it leaves the road surface on dust particles or in surface runoff.

The use of motor oil as a dust suppressant on a road, a parking lot, a driveway or other similar surface is prohibited in Missouri.

Since January 1, 1991 Missouri solid waste disposal areas cannot accept used motor oil for disposal.

Solutions

- Repair any leaks in your vehicle.
- Put used motor oil into a sealed container (a plastic milk jug with a screw-on cap works well) and take it to a used motor oil collection site. Do not mix used motor oil with any other substance.
- If recycling is not available, used motor oil must be saved for a household hazardous waste collection. Do not mix used motor oil with any other substance.

Paint

Paint, even latex paint, can contain a variety of hazardous ingredients including lead, mercury, and organic solvents, all of which can impact the environment when disposed of improperly.

Paint rinse water can also contain sufficient hazardous materials to harm the environment.

Solutions

- Never rinse painting equipment where the rinse water can run into the storm drain.
- If it is usable and less than 10 years old, donate the paint to a friend or a community group, such as a theater or school, that can use it up.
- If the paint is unusable or older than 10 years, save it for a household hazardous waste collection.

Pesticides

Pesticides contain toxic materials that are harmful to humans, animals, aquatic organisms, and plants.

When it rains these toxic materials can run into storm drains and waterways.

Solutions

- Minimize the use of pesticides by using Integrated Pest Management practices. Contact University Extension or HHWP for more information.
- Always determine what the pest is and if the pesticide is specific for that pest.
- If you must use a pesticide, follow the label directions very carefully.
- Never apply a pesticide before rain unless instructed to do so by the label.
- Never rinse pesticide application equipment where the rinse water can run into the storm drain.
- Consult with lawn care companies about the products they use on your property. Request that they use environmentally safe practices and ask to see material safety data sheets on their products.
- If a pesticide is usable, is not banned or restricted, and you no longer have a use for it, donate it to a friend, neighbor or community group who will safely use it. Contact University Extension to determine if the pesticide is banned or restricted.
- Save unusable, unwanted or leftover pesticides for a household hazardous waste collection.

Other household hazardous wastes

Many other household products such as paint thinners, automotive waxes, cleaners, and swimming pool chemicals, contain hazardous ingredients that can be a threat to human health and the environment when improperly disposed.

Solutions

- Purchase products which are less hazardous.
- Give unwanted but usable products to someone who can safely use them.
- Save any unwanted or unusable portions of these products for a household hazardous waste collection.

Pet wastes

Pet waste is raw sewage. Allowing it to enter our waterways releases both potentially harmful bacteria and oxygen-consuming materials.

Solutions

- Dispose of pet wastes by flushing them down the toilet or by burying them away from any food-growing locations.

Street litter and plastics

Street litter, such as plastic bags, cups, candy wrappers and cigarette butts, are washed from the street by stormwater and end up floating in area streams and lakes.

Many animals mistake plastic for food and, as a result, become ill. Plastic can take hundreds of years to degrade and so will continue to contaminate our waterways and threaten their inhabitants.

Solutions

- Never throw garbage into the street or down storm drains.
- Dispose of all garbage, including cigarette butts and fast food containers, into garbage cans.
- Adopt your street and periodically collect any garbage that might be washed into a storm drain. Ask your family, friends and neighbors to do the same.

Yard wastes and erosion

Leaves and grass clippings allow bacteria, oxygen-consuming materials, phosphorus, and nitrogen to be released into our waterways. Yard wastes can also clog storm drains, making them ineffective and causing local flooding. Soil that erodes from your yard increases the sediment load in waterways, blocking sunlight essential for aquatic plants and suffocating animals.

Solutions

- Do not allow soil, leaves or grass clippings to accumulate on your driveway, sidewalk, or in the street.
- Collect leaves and grass clippings and compost them. Check with University Extension for information on composting and the status of community composting services.
- Leave vegetation on steep slopes to hold soil in place. Mulch and seed exposed soil as soon as possible.
- Use hay bales to catch sediment that might wash off of bare soil areas.
- Leave vegetation along drainages and waterways to slow and filter yard runoff.

Other water protecting activities

- If you wash your car at home, wash it in a grassy area, using minimal amounts of no-phosphate soap (be careful not to drive over your septic system!). Or better yet, take your car to a car wash

that sends the wastewater to the wastewater treatment plant.

- Keep your engine-driven machines (for example cars, motorcycles and lawn mowers) well tuned. Gases and particulates from engine exhaust greatly contribute to stormwater pollution.

Current legislation

In November 1990, the U.S. Environmental Protection Agency (EPA) issued a final rule to implement Section 402(p) of the Clean Water Act, federal legislation aimed at preserving the quality of America's waters.

This final rule requires cities with populations greater than 100,000 that have separate storm sewer systems to obtain a National Pollutant Discharge Elimination System (NPDES) permit.

Cities must apply for this permit to ensure the EPA that their storm sewer systems are operating as efficiently and cleanly as possible.

Some privately owned businesses are also required to file for a permit if they discharge anything into the storm sewer system. Cities filing for an NPDES permit must, among other requirements, identify ways to improve the system and educate the public about nonpoint source pollution.

Although this permit application is only required for cities larger than 100,000 and for specified counties, all other cities, towns, and counties should be aware of the problems caused by nonpoint source pollution.

Local rivers and streams often receive pollutants that can damage the water quality of any town, regardless of size. The government is trying to improve water quality, but it is largely the responsibility of the citizens of Missouri to tackle nonpoint source pollution and stormwater runoff.

Missouri Storm Drain Stenciling Project

One way you can become involved in water protection is to participate in the Missouri Storm Drain Stenciling Project. Stencils bear the message "Dump No Waste, Drains To Stream," which serves as a reminder that storm drains should never be used to dispose of household wastes. Kits contain stencils and everything else needed to start a community education program.

The Missouri Storm Drain Stenciling Project was developed by the Household Hazardous Waste Project with assistance from the Missouri 4-H Youth Programs. Funding was provided by the Missouri Department of Natural Resources, and the Missouri Stream Team.

Contact the Household Hazardous Waste Project for information on how to obtain a free kit, or for information on storm drain stenciling in your area.

Household Hazardous Waste Guides

MU publications:

WM6000, *Safe Use, Storage and Disposal of Pesticides* (25 cents)

- WM6001, *Safe Use, Storage and Disposal of Paint* (25 cents)
- WM6002, *Selecting Household Safety Equipment* (75 cents)
- WM6003, *Household Hazardous Products, Consumer Information* (25 cents)
- WM6005, *Store Hazardous Products Safely* (50 cents)
- WM6006, *Material Safety Data Sheets: Identifying Products Hazards* (50 cents)

Household Hazardous Waste Educational Activities

MU publications:

- WM5000, *Stored Waste Abatement Program: SWAP Your Waste* (75 cents)
- WM5001, *What Your Home Haz: A Household Hazardous Waste Game* (75 cents)
- WM5002, *Home Hazardous Product Survey* (75 cents)
- WM5003, *Tools for the Environmental Teacher* (\$2)
- WM6004, *Managing Household Hazardous Wastes* (25 cents)

The Household Hazardous Waste Project is a program of the University of Missouri Extension System in cooperation with the Environmental Improvement and Energy Resources Authority.

Though much effort has been made to ensure the accuracy of the information contained herein, the Household Hazardous Waste Project assumes no responsibility and disclaims any injury or damage resulting from the use or effect of any product or information specified in this publication.

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To order, request WM6011, *Storm Drains and Water Quality* (25 cents).

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Businesses/Institutions

Housekeeping Practices

- ❑ EPA Office of Water. 1999. *Storm Water O&M Fact Sheet – Preventive Maintenance*. <http://www.epa.gov/npdes/pubs/prevmain.pdf>
- ❑ Minnesota Urban Small Sites BMP Manual. 2001. *Housekeeping – BMP Maintenance*. http://www.metrocouncil.org/environment/Watershed/bmp/CH3_RPPHousBMP_Maint.pdf
- ❑ Environmental Services. Portland, OR. *Inspection and Monitoring Activities*. BMP Fact Sheet 11. <http://www.cleanrivers-pdx.org/pdf/bmp11.pdf>
- ❑ Stormwater Quality Management Committee. Las Vegas, NV. 2001. *BMP – Food Service Industry*. http://www.lvstormwater.com/bmps_foodservice.html

Catch Basins

- ❑ EPA Office of Water. 1999. *Storm Water O&M Fact Sheet - Catch Basin Cleaning*. <http://www.epa.gov/npdes/pubs/catchbas.pdf>
- ❑ Seattle Public Utilities. 1998. *Maintaining Drainage Structures*. Seattle Public Utilities, Seattle, WA. <http://www.ci.seattle.wa.us/util/surfacewater/images/bmppg1.jpg>
- ❑ Salt Lake County, UT. 1999. *BMP: Catch Basin Cleaning*. <http://www.co.slc.ut.us/pw/engin/bmp/municipal/cbc.pdf>

Vehicle/Equipment Washing

- ❑ EPA Office of Water. 2001. *Source Water Protection Practices Bulletin – Managing Vehicle Washing to Prevent Contamination of Drinking Water*. <http://www.epa.gov/safewater/dwa/electronic/swp/vehicle.pdf>
- ❑ P2 Texas Natural Conservation Commission. *Pollution Prevention for Wastewaters – TIPS: Vehicle Washing*. http://www.twua.org/p2/Tips/Vehicle_Washing.html
- ❑ EPA Office of Wastewater Management. *Pollution Prevention/Good Housekeeping for Municipal Operations – Vehicle Washing*. http://www.epa.gov/npdes/menuofbmps/poll_18.htm

Toxic Cleaners

- ❑ Stormwater Program, City of Los Angeles. 1996. *Stormwater BMPs – Food Service Industry*. www.ci.la.ca.us/SAN/swmd/downloads/PDFs/foodserv.pdf
- ❑ Kansas State University. Small Business Environmental Assistance Program. 1999. *Solvent Management – Increase your bottom line: Manage cleaning solvents better*. <http://www.sbeap.org/ppi/publications/solmgmnt.pdf>

HOUSEKEEPING PRACTICES

APPENDIX B

**Town-Wide Drainage Maps,
5 Plan Sheets**



Storm Water O&M Fact Sheet Preventive Maintenance

DESCRIPTION

Preventive maintenance involves the regular inspection, testing, and replacement or repair of equipment and operational systems. As a storm water best management practice (BMP), preventive maintenance should be used to monitor systems built to control storm water. These systems should be inspected to uncover cracks, leaks, and other conditions that could cause breakdowns or failures of storm water mitigation structures and equipment, which, in turn, could result in discharges of chemicals to surface waters either by direct overland flow or through storm drainage systems. A preventive maintenance program can prevent breakdowns and failures through adjustment, repair, or replacement of equipment before a major breakdown or failure occurs.

Typically, a preventive maintenance program should include inspections of catch basins, storm water detention areas, and water quality treatment systems. Without adequate maintenance, sediment and debris can quickly clog storm drainage facilities and render them useless.

APPLICABILITY

Preventive maintenance procedures and activities are applicable to almost all industrial facilities. This concept should be a part of a general good housekeeping program designed to maintain a clean and orderly work environment. Often the most effective first step towards preventing storm water pollution from industrial sites is to improve the facility's preventive maintenance and general good housekeeping methods.

For many facilities, preventive maintenance to protect water quality is simply an extension of current plant preventive maintenance programs. Most plants already have preventive maintenance programs that provide some degree of environmental protection. Such programs could be expanded to include storm water considerations.

ADVANTAGES AND DISADVANTAGES

Preventive maintenance takes a proactive approach to storm water management and seeks to prevent problems before they occur. A preventive maintenance program can improve water quality by controlling pollutant discharges to surface water that would result from spills and leaks. Preventive maintenance programs can also save a facility money by reducing the likelihood of having a system breakdown and also by reducing the likelihood of funding costly cleanup projects. In addition, a preventive maintenance program can be an effective community relations tool.

The primary limitations of implementing a preventive maintenance program include:

- ☐ Cost.
- ☐ Availability of trained preventive maintenance staff technicians.
- ☐ Management direction and staff motivation in expanding the preventive maintenance program to include storm water considerations.

APPENDIX C

Sample Observation Logs for Illicit Discharge Detection Efforts

Outfall Observations

Date: _____ Surveyor/Observer: _____	Weather Today: _____ Weather over past 72 hours: _____
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Outfall ID#	Time	Deposits	Surrounding Vegetation	Erodibility	Surrounding Land Use	Appearance / Color	Odor	Sediment Depth (inches) (if any)
		None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Paper/Trash <input type="checkbox"/> Foam <input type="checkbox"/> Other *	<input type="checkbox"/> Little or No Distress <input type="checkbox"/> Moderate Distress <input type="checkbox"/> High Distress	<input type="checkbox"/> Little or No Erosion <input type="checkbox"/> Small Areas of Erosion <input type="checkbox"/> Many Eroded Areas	<input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *	
		None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Paper/Trash <input type="checkbox"/> Foam <input type="checkbox"/> Other *	<input type="checkbox"/> Little or No Distress <input type="checkbox"/> Moderate Distress <input type="checkbox"/> High Distress	<input type="checkbox"/> Little or No Erosion <input type="checkbox"/> Small Areas of Erosion <input type="checkbox"/> Many Eroded Areas	<input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *	
		None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Paper/Trash <input type="checkbox"/> Foam <input type="checkbox"/> Other *	<input type="checkbox"/> Little or No Distress <input type="checkbox"/> Moderate Distress <input type="checkbox"/> High Distress	<input type="checkbox"/> Little or No Erosion <input type="checkbox"/> Small Areas of Erosion <input type="checkbox"/> Many Eroded Areas	<input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *	
		None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Paper/Trash <input type="checkbox"/> Foam <input type="checkbox"/> Other *	<input type="checkbox"/> Little or No Distress <input type="checkbox"/> Moderate Distress <input type="checkbox"/> High Distress	<input type="checkbox"/> Little or No Erosion <input type="checkbox"/> Small Areas of Erosion <input type="checkbox"/> Many Eroded Areas	<input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *	
		None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Paper/Trash <input type="checkbox"/> Foam <input type="checkbox"/> Other *	<input type="checkbox"/> Little or No Distress <input type="checkbox"/> Moderate Distress <input type="checkbox"/> High Distress	<input type="checkbox"/> Little or No Erosion <input type="checkbox"/> Small Areas of Erosion <input type="checkbox"/> Many Eroded Areas	<input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *	
		None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Paper/Trash <input type="checkbox"/> Foam <input type="checkbox"/> Other *	<input type="checkbox"/> Little or No Distress <input type="checkbox"/> Moderate Distress <input type="checkbox"/> High Distress	<input type="checkbox"/> Little or No Erosion <input type="checkbox"/> Small Areas of Erosion <input type="checkbox"/> Many Eroded Areas	<input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *	
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		None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Paper/Trash <input type="checkbox"/> Foam <input type="checkbox"/> Other *	<input type="checkbox"/> Little or No Distress <input type="checkbox"/> Moderate Distress <input type="checkbox"/> High Distress	<input type="checkbox"/> Little or No Erosion <input type="checkbox"/> Small Areas of Erosion <input type="checkbox"/> Many Eroded Areas	<input type="checkbox"/> Forest <input type="checkbox"/> Agriculture <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *	

* Provide additional comments to describe the observations made for the category.









Outfall Observations

(continued)

Outfall ID#	Pipe Material	Pipe Condition	Diameter (inches)	Slope (degrees)	Outlet Structure	GPS Coordinates	Is Flow Occurring?	Discharge directly to surface water?	Comments:
	<input type="checkbox"/> Clay <input type="checkbox"/> Concrete <input type="checkbox"/> Corrigated Metal <input type="checkbox"/> PVC	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Corroded <input type="checkbox"/> Other			<input type="checkbox"/> Headwall <input type="checkbox"/> Riprap <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Other*	_____ Lat. _____ Lon.	<input type="checkbox"/> Yes (See Flow Observation sheet) <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
	<input type="checkbox"/> Clay <input type="checkbox"/> Concrete <input type="checkbox"/> Corrigated Metal <input type="checkbox"/> PVC	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Corroded <input type="checkbox"/> Other			<input type="checkbox"/> Headwall <input type="checkbox"/> Riprap <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Other*	_____ Lat. _____ Lon.	<input type="checkbox"/> Yes (See Flow Observation sheet) <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
	<input type="checkbox"/> Clay <input type="checkbox"/> Concrete <input type="checkbox"/> Corrigated Metal <input type="checkbox"/> PVC	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Corroded <input type="checkbox"/> Other			<input type="checkbox"/> Headwall <input type="checkbox"/> Riprap <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Other*	_____ Lat. _____ Lon.	<input type="checkbox"/> Yes (See Flow Observation sheet) <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
	<input type="checkbox"/> Clay <input type="checkbox"/> Concrete <input type="checkbox"/> Corrigated Metal <input type="checkbox"/> PVC	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Corroded <input type="checkbox"/> Other			<input type="checkbox"/> Headwall <input type="checkbox"/> Riprap <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Other*	_____ Lat. _____ Lon.	<input type="checkbox"/> Yes (See Flow Observation sheet) <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
	<input type="checkbox"/> Clay <input type="checkbox"/> Concrete <input type="checkbox"/> Corrigated Metal <input type="checkbox"/> PVC	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Corroded <input type="checkbox"/> Other			<input type="checkbox"/> Headwall <input type="checkbox"/> Riprap <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Other*	_____ Lat. _____ Lon.	<input type="checkbox"/> Yes (See Flow Observation sheet) <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
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	<input type="checkbox"/> Clay <input type="checkbox"/> Concrete <input type="checkbox"/> Corrigated Metal <input type="checkbox"/> PVC	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Corroded <input type="checkbox"/> Other			<input type="checkbox"/> Headwall <input type="checkbox"/> Riprap <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Other*	_____ Lat. _____ Lon.	<input type="checkbox"/> Yes (See Flow Observation sheet) <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No*	
	<input type="checkbox"/> Clay <input type="checkbox"/> Concrete <input type="checkbox"/> Corrigated Metal <input type="checkbox"/> PVC	<input type="checkbox"/> Good <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Corroded <input type="checkbox"/> Other			<input type="checkbox"/> Headwall <input type="checkbox"/> Riprap <input type="checkbox"/> No Outlet Protection <input type="checkbox"/> Other*	_____ Lat. _____ Lon.	<input type="checkbox"/> Yes (See Flow Observation sheet) <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No*	

* Provide additional comments to describe the observations made for the category.

Flow Observations

Outfall ID#	Time	Flow Depth (inches)	Flow Appearance / Color	Flow Odor	Field Analysis				Laboratory Analysis			
					Temperature	pH	Conductivity	Fluoride	Surfactant	Ammonia Concentration	E. coli	VOCs or Oils and Grease (if solvent or petroleum odor is present or sheen observed)
		 _____ Depth	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *								
		 _____ Depth	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *								
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		 _____ Depth	<input type="checkbox"/> Clear <input type="checkbox"/> Cloudy/Milky <input type="checkbox"/> Dark (Tea) <input type="checkbox"/> Sheen <input type="checkbox"/> Other *	<input type="checkbox"/> None <input type="checkbox"/> Chemical <input type="checkbox"/> Petroleum <input type="checkbox"/> Sewage <input type="checkbox"/> Other *								

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BMP Inspection

BMP ID #	Type of BMP	Does BMP appear to be working properly?	Is maintenance required?	Maintenance Access	Sediment Accumulation	Sediment Depth	Deposits	Structural Condition	Erodibility	Vegetation	Comments
	<input type="checkbox"/> Leaching Catch Basin <input type="checkbox"/> Proprietary Unit <input type="checkbox"/> Swale <input type="checkbox"/> Detention Pond <input type="checkbox"/> Forebay <input type="checkbox"/> Other*	<input type="checkbox"/> Yes <input type="checkbox"/> No*	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Easy <input type="checkbox"/> Moderate <input type="checkbox"/> Difficult	<input type="checkbox"/> None <input type="checkbox"/> Slight build up <input type="checkbox"/> Heavy build up	_____ inches	<input type="checkbox"/> None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Grass Clippings/Compost <input type="checkbox"/> Trash/Debris <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> Good <input type="checkbox"/> Corroded <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Channeling/Depressions <input type="checkbox"/> Bank Erosion <input type="checkbox"/> Displaced Riprap <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> No Distress <input type="checkbox"/> Distressed <input type="checkbox"/> Sparse <input type="checkbox"/> Undesirable Woody <input type="checkbox"/> Invasive Plants	
	<input type="checkbox"/> Leaching Catch Basin <input type="checkbox"/> Proprietary Unit <input type="checkbox"/> Swale <input type="checkbox"/> Detention Pond <input type="checkbox"/> Forebay <input type="checkbox"/> Other*	<input type="checkbox"/> Yes <input type="checkbox"/> No*	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Easy <input type="checkbox"/> Moderate <input type="checkbox"/> Difficult	<input type="checkbox"/> None <input type="checkbox"/> Slight build up <input type="checkbox"/> Heavy build up	_____ inches	<input type="checkbox"/> None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Grass Clippings/Compost <input type="checkbox"/> Trash <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> Good <input type="checkbox"/> Corroded <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Channeling/Depressions <input type="checkbox"/> Bank Erosion <input type="checkbox"/> Displaced Riprap <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> No Distress <input type="checkbox"/> Distressed <input type="checkbox"/> Sparse <input type="checkbox"/> Undesirable Woody <input type="checkbox"/> Invasive Plants	
	<input type="checkbox"/> Leaching Catch Basin <input type="checkbox"/> Proprietary Unit <input type="checkbox"/> Swale <input type="checkbox"/> Detention Pond <input type="checkbox"/> Forebay <input type="checkbox"/> Other*	<input type="checkbox"/> Yes <input type="checkbox"/> No*	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Easy <input type="checkbox"/> Moderate <input type="checkbox"/> Difficult	<input type="checkbox"/> None <input type="checkbox"/> Slight build up <input type="checkbox"/> Heavy build up	_____ inches	<input type="checkbox"/> None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Grass Clippings/Compost <input type="checkbox"/> Trash <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> Good <input type="checkbox"/> Corroded <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Channeling/Depressions <input type="checkbox"/> Bank Erosion <input type="checkbox"/> Displaced Riprap <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> No Distress <input type="checkbox"/> Distressed <input type="checkbox"/> Sparse <input type="checkbox"/> Undesirable Woody <input type="checkbox"/> Invasive Plants	
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	<input type="checkbox"/> Leaching Catch Basin <input type="checkbox"/> Proprietary Unit <input type="checkbox"/> Swale <input type="checkbox"/> Detention Pond <input type="checkbox"/> Forebay <input type="checkbox"/> Other*	<input type="checkbox"/> Yes <input type="checkbox"/> No*	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Easy <input type="checkbox"/> Moderate <input type="checkbox"/> Difficult	<input type="checkbox"/> None <input type="checkbox"/> Slight build up <input type="checkbox"/> Heavy build up	_____ inches	<input type="checkbox"/> None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Grass Clippings/Compost <input type="checkbox"/> Trash <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> Good <input type="checkbox"/> Corroded <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Channeling/Depressions <input type="checkbox"/> Bank Erosion <input type="checkbox"/> Displaced Riprap <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> No Distress <input type="checkbox"/> Distressed <input type="checkbox"/> Sparse <input type="checkbox"/> Undesirable Woody <input type="checkbox"/> Invasive Plants	
	<input type="checkbox"/> Leaching Catch Basin <input type="checkbox"/> Proprietary Unit <input type="checkbox"/> Swale <input type="checkbox"/> Detention Pond <input type="checkbox"/> Forebay <input type="checkbox"/> Other*	<input type="checkbox"/> Yes <input type="checkbox"/> No*	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Easy <input type="checkbox"/> Moderate <input type="checkbox"/> Difficult	<input type="checkbox"/> None <input type="checkbox"/> Slight build up <input type="checkbox"/> Heavy build up	_____ inches	<input type="checkbox"/> None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Grass Clippings/Compost <input type="checkbox"/> Trash <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> Good <input type="checkbox"/> Corroded <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Channeling/Depressions <input type="checkbox"/> Bank Erosion <input type="checkbox"/> Displaced Riprap <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> No Distress <input type="checkbox"/> Distressed <input type="checkbox"/> Sparse <input type="checkbox"/> Undesirable Woody <input type="checkbox"/> Invasive Plants	
	<input type="checkbox"/> Leaching Catch Basin <input type="checkbox"/> Proprietary Unit <input type="checkbox"/> Swale <input type="checkbox"/> Detention Pond <input type="checkbox"/> Forebay <input type="checkbox"/> Other*	<input type="checkbox"/> Yes <input type="checkbox"/> No*	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Easy <input type="checkbox"/> Moderate <input type="checkbox"/> Difficult	<input type="checkbox"/> None <input type="checkbox"/> Slight build up <input type="checkbox"/> Heavy build up	_____ inches	<input type="checkbox"/> None <input type="checkbox"/> Grease/Oil <input type="checkbox"/> Grass Clippings/Compost <input type="checkbox"/> Trash <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> Good <input type="checkbox"/> Corroded <input type="checkbox"/> Cracked <input type="checkbox"/> Exposed Steel <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> None <input type="checkbox"/> Channeling/Depressions <input type="checkbox"/> Bank Erosion <input type="checkbox"/> Displaced Riprap <input type="checkbox"/> Other*	<input type="checkbox"/> N/A <input type="checkbox"/> No Distress <input type="checkbox"/> Distressed <input type="checkbox"/> Sparse <input type="checkbox"/> Undesirable Woody <input type="checkbox"/> Invasive Plants	
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* Provide additional comments to describe the observations made for the category.

APPENDIX D

**Notice of Intent Form BRP WM 08A &
NPDES General Permit**



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

W040942
Transmittal Number

BRP WM 08A NPDES Stormwater General Permit

**Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)**

Facility ID (if known)

A. Instructions

Submission of this Notice of Intent constitutes notice that the entity named at item B1. of this form intends to be authorized by the DEP General Permit issued jointly with EPA for stormwater discharges from the small municipal separate storm sewer system (MS4), in the location identified at item B2. of this form. Submission of the Notice of Intent also constitutes notice that the party identified at item B1. has read, understands and meets the eligibility conditions of Part I.B. of the NPDES Small MS4 General Permit, agrees to comply with all applicable terms and conditions of the NPDES Small MS4 General Permit, and understands that continued authorization to discharge is contingent on maintaining eligibility for coverage. **In order to be granted coverage, all information required on BRP WM 08A, including the Stormwater Management Program Summary and Time Frames form, must be completed. Please read the permit and make sure you comply with all requirements, including the requirement to develop and implement a stormwater management program.**

B. Applicant Information

1. Small MS4 Operator/Owner Information:

Town of Millis

Name

900 Main Street

Mailing Address

Millis

MA

City/Town

State

508-376-7040

Telephone Number

Email (if available)

2. Municipality Name

Millis

City/Town

3. Legal Status:

☐ Federal

☒ City/Town

☐ State

☐ Tribal

☐ Private

☐ Other public entity:

Specify Public Entity

4. Other regulated MS4(s) within municipal boundaries:

None

5. Based on the instructions provided in Part I of the NPDES Small MS4 General Permit, have the eligibility criteria for "listed species" and critical habitat been met?

☒ yes

☐ pending

☐ no



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

W040942
Transmittal Number

BRP WM 08A NPDES Stormwater General Permit
Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

Facility ID (if known)

B. Applicant Information (cont.)

6. Based on the instructions provided in Part I of the NPDES Small MS4 General Permit, have the eligibility criteria for protection of historic properties been met?

☒ yes ☐ pending ☐ no

Note:
Section C may
be duplicated to
accommodate a
larger list of
receiving waters

C. Names of (Presently Known) Receiving Waters

Receiving Water:	No. of Outfalls	Listed as Impaired?	Impairment
Charles River Name	6 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Bogastow Brook Name	9 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
McCarthy Pond Name	1 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Tributary along E. Main St. to Charles River Name	2 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream crossing Myrtle St. to Charles River Name	1 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream adjacent to Charles River Estates to Charles R. Name	2 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream crossing Eden St. to Charles River Name	4 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Wetland east of Timberline Rd. tributary to Charles River Name	5 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream crossing Bogastow Cir. to Bogastow Brook Name	3 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream crossing Brookview Rd. to Bogastow Brook Name	1 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream adjacent to Pleasant St. to Bogastow Br. Name	5 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream north of Greenwood Rd. to Bogastow Brook Name	2 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify
Stream crossing Spring St. to Bogastow Brook Name	2 Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

W040942
Transmittal Number

BRP WM 08A NPDES Stormwater General Permit

Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

Facility ID (if known)

C. Names of (Presently Known) Receiving Waters (continued)

Stream crossing W. Main St. to Bogastow Brook Name	<u>2</u> Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify _____
Stream crossing Rosenfeld Rd. to Richard's Pond Name	<u>3</u> Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify _____
Wetland Tributary to Richardson Pond Name	<u>2</u> Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify _____
Stream Crossing Island Rd. to Bogastow Brook Name	<u>6</u> Number	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Specify _____

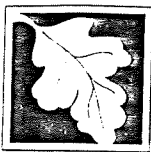
D. Stormwater Management Program Summary

1. Public Education:

<u>1A</u> BMP ID # Distribute Brochures & Fact Sheets to Residents & Businesses Specify Best Management Practice	<u>Dept. of Public Works (DPW)</u> Responsible Dept./Person Name	<u>Number of Articles & Copies of Materials.</u> Specify Measurable Goal
<u>1B</u> BMP ID # Develop and Broadcast Stormwater Presentation on Local Cable Network Specify Best Management Practice	<u>DPW & Town Selectmen</u> Responsible Dept./Person Name	<u>Cable TV tapes of presentations. Show annually during permit term.</u> Specify Measurable Goal
<u>1C</u> BMP ID # Send out Stormwater Press Releases Specify Best Management Practice	<u>DPW</u> Responsible Dept./Person Name	<u>Copies of Articles.</u> Specify Measurable Goal

2. Public Participation:

<u>2A</u> BMP ID # Establish a Stormwater Telephone Hotline Specify Best Management Practice	<u>DPW</u> Responsible Dept./Person Name	<u>Record number of phone calls to hotline, copies of articles.</u> Specify Measurable Goal
<u>2B</u> BMP ID # Mark Storm Drains with Stencils During Cleaning Specify Best Management Practice	<u>DPW</u> Responsible Dept./Person Name	<u>10% of Storm Drains Marked by Year 1.</u> Specify Measurable Goal



BRP WM 08A NPDES Stormwater General Permit

Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

Facility ID (if known)

D. Stormwater Management Program Summary (Cont.)

2C

BMP ID #

Conduct River, Stream, and
Pond Cleanups

Specify Best Management Practice

DPW & Volunteers

Responsible Dept./Person Name

Cleaner streams as
documented by before and
after photographs.

Specify Measurable Goal

3. Illicit Discharge Detection and Elimination:

3A

BMP ID #

Make Annual Household
Hazardous Waste Collections
Available to Residents

Specify Best Management Practice

DPW & Board of Health
(BOH)

Responsible Dept./Person Name

Document Quantity of Tickets
Sold.

Specify Measurable Goal

3B

BMP ID #

Develop Primary Town Storm
Drain System Map

Specify Best Management Practice

DPW

Responsible Dept./Person Name

80 % of system mapped on
GIS.

Specify Measurable Goal

3C

BMP ID #

Identify Illicit Floor Drain
Connections at Businesses

Specify Best Management Practice

DPW

Responsible Dept./Person Name

26 illicit connections identified
and removed, 2 from the storm
drain system and/or
waterways in Millis.

Specify Measurable Goal

3D

BMP ID #

Complete Storm Drain Map

Specify Best Management Practice

DPW

Responsible Dept./Person Name

Map All Outfalls by Year 4

Specify Measurable Goal

3E

BMP ID #

Develop Illicit Discharge
Prohibition Ordinance

Specify Best Management Practice

DPW & BOH

Responsible Dept./Person Name

Bylaw at Town meeting by end
of year 2.

Specify Measurable Goal

3F

BMP ID #

Develop Illicit Discharge Detection
and Elimination Plan and
Implement Activities

Specify Best Management Practice

DPW, BOH, Consultant

Responsible Dept./Person Name

Plan – Yr 2, All outfalls
examined by year 4. Sources
traced and results
documented within one year of
discovery.

Specify Measurable Goal



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

W040942
Transmittal Number

BRP WM 08A NPDES Stormwater General Permit

Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

Facility ID (if known)

D. Stormwater Management Program Summary (Cont.)

3G

BMP ID #

Incorporate Information on Illicit
Discharges into Public Education
and Outreach Topics

Specify Best Management Practice

DPW & BOH

Responsible Dept./Person Name

Copies of Materials.

Specify Measurable Goal

3H

BMP ID #

Setup and Advertise a Hotline for
Illicit Discharges

Specify Best Management Practice

DPW & BOH

Responsible Dept./Person Name

Log of Complaints and Action
Taken.

Specify Measurable Goal

4. Construction Site Runoff Control:

4A

BMP ID #

Develop Erosion Control
Regulation

Specify Best Management Practice

Building Inspector (BI) &
DPW

Responsible Dept./Person Name

Bylaw at Town Meeting by
End of Yr 2.

Specify Measurable Goal

4B

BMP ID #

Establish a Procedure for the
Receipt of Information Submitted
by the Public

Specify Best Management Practice

BI & DPW

Responsible Dept./Person Name

Record number of phone calls
to hotline, copies of articles.

Specify Measurable Goal

4C

BMP ID #

Develop & Adopt Design
Standards Guidance for Erosion
Controls

Specify Best Management Practice

Planning Board (PB),
DPW, Conservation
Commission (Con. Com.) &
Consultant

Responsible Dept./Person Name

Inspection checklist and
documented inspections.

Specify Measurable Goal

5. Post Construction Runoff Control:

5A

BMP ID #

Develop BMP Regulation

Specify Best Management Practice

BI & DPW

Responsible Dept./Person Name

Bylaw at Town Meeting - Yr 2.

Specify Measurable Goal

5B

BMP ID #

Develop and Implement
Inspection Program

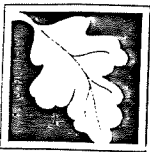
Specify Best Management Practice

BI & DPW

Responsible Dept./Person Name

Copies of maintenance reports
received annually, plus
records of inspections
completed and results.

Specify Measurable Goal



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

W040942
Transmittal Number

BRP WM 08A NPDES Stormwater General Permit
Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

Facility ID (if known)

D. Stormwater Management Program Summary (cont.)

5C

BMP ID #

Develop BMP Design Standards
Specify Best Management Practice

PB, DPW, Con. Com. &
Consultant

Responsible Dept./Person Name

Improved Bylaws - Yr 4
Specify Measurable Goal

6. Municipal Good Housekeeping:

6A

BMP ID #

Clean Catch Basins
Specify Best Management Practice

DPW

Responsible Dept./Person Name

Clean all Basins - Ongoing
Specify Measurable Goal

6B

BMP ID #

Sweep Streets in Town
Specify Best Management Practice

DPW

Responsible Dept./Person Name

Priority plan of sweeping
based on water quality impact.
Volume of sweepings
collected.
Specify Measurable Goal

6C

BMP ID #

Store Road Salt Under Cover and
Clean Loading Area
Specify Best Management Practice

DPW

Responsible Dept./Person Name

Minimize Stormwater Contact
with Salt.
Specify Measurable Goal

6D

BMP ID #

Calibrate Salt Spreading
Equipment
Specify Best Management Practice

DPW

Responsible Dept./Person Name

Prevent over-application of
salt as shown with calibration
records.
Specify Measurable Goal

6E

BMP ID #

Use Low Salt Applications at
Designated Areas
Specify Best Management Practice

DPW

Responsible Dept./Person Name

Use less salt at Norfolk county
line than at other roadways as
demonstrated with application
rate.
Specify Measurable Goal

6F

BMP ID #

Use IPM Practices for Application
of Pesticides in Town
Specify Best Management Practice

DPW

Responsible Dept./Person Name

Copy of IPM Plan.
Specify Measurable Goal

6G

BMP ID #

Use Licensed Applicators for
Fertilizers and Insecticides in
Town
Specify Best Management Practice

DPW

Responsible Dept./Person Name

Record quantities of fertilizers
and pesticides purchased
annually.
Specify Measurable Goal



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

W040942

Transmittal Number

BRP WM 08A NPDES Stormwater General Permit

Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

Facility ID (if known)

D. Stormwater Management Program Summary (cont.)

6H BMP ID # Ensure Compliance with SPCC Plan for the Highway Garage Specify Best Management Practice	DPW Responsible Dept./Person Name	Prevent releases of oil at the Highway Garage through weekly inspections, annual training, and annual plan evaluation. Specify Measurable Goal
6I BMP ID # Ensure Compliance for Snow Disposal in Town Specify Best Management Practice	DPW Responsible Dept./Person Name	Map of Acceptable Snow Disposal Areas. Specify Measurable Goal
6J BMP ID # Use Filter Socks for Excavation and Hydrant Waters Specify Best Management Practice	DPW Responsible Dept./Person Name	Prevent discharge of sediments during dewatering and hydrant flow testing activities. Specify Measurable Goal
6K BMP ID # Evaluate Pollution Prevention BMPs for the Fueling Station at the Highway Garage Specify Best Management Practice	DPW Responsible Dept./Person Name	As-built sketches or plans and photos. Specify Measurable Goal
6L BMP ID # Evaluate BMPs at the Highway Garage to Prevent Sedimentation to the Adjacent Waterway from Site Runoff and Road Material Storage Specify Best Management Practice	DPW Responsible Dept./Person Name	As-built sketches or plans and photos. Specify Measurable Goal
6M BMP ID # Develop an Inspection and Maintenance Plan Specify Best Management Practice	DPW Responsible Dept./Person Name	Written Policy – Yr 3, Records of inspections and maintenance. Specify Measurable Goal
6N BMP ID # Ensure Water Quality Improvements are Considered for Flood Projects Specify Best Management Practice	DPW Responsible Dept./Person Name	Records of Flood Control Projects. Specify Measurable Goal



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

W040942
Transmittal Number

BRP WM 08A NPDES Stormwater General Permit
Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

Facility ID (if known)

D. Stormwater Management Program Summary (cont.)

60

BMP ID #

Conduct Town Employee

Stormwater Training

Specify Best Management Practice

DPW

Responsible Dept./Person Name

Attendance Sheet & Copy of
Program

Specify Measurable Goal

7. BMPs for Meeting TMDL: N/A

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

E. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Charles Aspinwall

Printed Name

Signature

Date



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Watershed Management

BRP WM 08A NPDES Stormwater General Permit
Notice of Intent for Discharges from Small Municipal Separate
Storm Sewer Systems (MS4s)

W040942

Transmittal Number

Facility ID (if known)

D. Stormwater Management Program Summary (cont.)

60

BMP ID #

Conduct Town Employee
Stormwater Training

Specify Best Management Practice

DPW

Responsible Dept./Person Name

Attendance Sheet & Copy of
Program

Specify Measurable Goal

7. BMPs for Meeting TMDL: N/A

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

BMP ID #

Specify Best Management Practice

Responsible Dept./Person Name

Specify Measurable Goal

E. Certification

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Charles Aspinwall
Printed Name

Signature

Date

7/28/03



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Watershed Management

BRP WM 08A NPDES Stormwater General Permit Notice of Intent

for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)

F. Example Storm Water Management Program TIME FRAMES

Transmittal Number W040942

Facility ID (if known)

Page 1 of 1

BMP ID #	PERMIT YEAR ONE				PERMIT YEAR TWO				PERMIT YEAR THREE				PERMIT YEAR FOUR				PERMIT YEAR FIVE				Next Permit
	Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08	
1A			△		△		△		△		△		△		△		△		△		
1B	△		△		△		△		△		△		△		△		△		△		
1C			△		△		△		△		△		△		△		△		△		
2A				△																	
2B		←			←																
2C									←												
3A			△				△				△										
3B	△										△				△				△		
3C	Completed in 1991																				
3D					←																
3E							△									→					
3F				←																	
3G			△		△		△		△		△		△		△		△		△		
3H				△	←						△				△		△		△		
4A							△														
4B								△													
4C				△	←				←												
5A							△														
5B						△	←														
5C												←									
6A-6J	Ongoing Under Existing Operations															→					
6K							←				→										
6L							←				→										
6M									△	←											
6N					←																
6O							△				△					△			△		

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORM WATER DISCHARGES
FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Authorization to discharge under the National Pollutant Discharge Elimination System

In accordance with the provisions of the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq. (the Act)) operators of small municipal separate storm sewer systems, located in the areas specified in Parts I.A.2., 3., and 4 are authorized to discharge in accordance with the conditions and requirements set forth herein.

Only operators of storm water discharges from small municipal separate storm sewer systems in the general permit area who submit a Notice of Intent and a storm water management program in accordance with Part I.E. of this permit and obtain written authorization from EPA are authorized under this general permit.

This permit becomes effective on May 1, 2003.

This permit and authorization to discharge expire at midnight five years from the effective date.

Signed this 18 day of April 2003

Linda M. Murphy, Director
Office of Ecosystem Protection
United States Environmental Protection Agency
One Congress Street - Suite 1100
Boston, Massachusetts 02114

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORM WATER DISCHARGES
FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Authorization to discharge under the National Pollutant Discharge Elimination System

In accordance with the provisions of the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq. (the Act)) operators of small municipal separate storm sewer systems, located in the area specified in Part I.A.1, Commonwealth of Massachusetts, are authorized to discharge in accordance with the conditions and requirements set forth herein.

Only operators of storm water discharges from small municipal separate storm sewer systems in the general permit area who submit a Notice of Intent and a storm water management program in accordance with Part I.E. of this permit and obtain written authorization from EPA are authorized under this general permit.

This permit becomes effective on May 1, 2003.

This permit and authorization to discharge expire at midnight five years from the effective date.

Signed this 18 day of April 2003

Linda M. Murphy, Director
Office of Ecosystem Protection
United States Environmental Protection Agency
One Congress Street - Suite 1100
Boston, Massachusetts 02114

Glenn Haas, Director
Division of Watershed Management
Bureau of Resource Protection
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

PART I

- A. Area of Coverage: Small municipal separate storm sewer systems (MS4s) located within
1. Commonwealth of Massachusetts;
 2. State of New Hampshire;
 3. Indian Country lands within the States of Connecticut, Massachusetts, and Rhode Island; and
 4. Federal Facilities within the State of Vermont.
- B. Eligibility criteria:
1. This permit authorizes the discharge of storm water from small MS4s defined at 40 CFR §122.26(b)(16). This includes small MS4s designated under 40 CFR §122.32(a)(1) and 40 CFR §122.32(a)(2). The permittee is authorized to discharge under this permit if:
 - (a). The permittee is the operator of a small MS4 within the permit areas described in Part I.A;
 - (b). The permittee is not a large or medium MS4 defined in 40 CFR §§122.26(b)(4) or (7);
 - (c). The municipality is located fully or partially in an urbanized area as determined by the latest Decennial Census by the Bureau of Census; and
 - (d). The permittee submits a Notice of Intent in accordance with Part I.E. of this permit and obtains written authorization from EPA.

Small municipal separate storm sewer system means all separate storm sewers that are:

- (a) owned or operated by the United States, a State, city town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity and Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States.
 - (b) not defined as large or medium municipal separate storm sewer systems pursuant to 40 CFR §122.26(b)(4) and (b)(7) or designated under 40 CFR §122.26(a)(1)(v).
 - (c) This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospitals or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.
2. The following storm water discharges are not authorized by this permit:
- (a) Discharges that are mixed with sources of non-storm water unless such non-storm water discharges are:
 - i. In compliance with a separate NPDES permit, or
 - ii. Determined by EPA not to be a substantial contributor of pollutants to waters of the U.S.
 - (b) Storm water discharges associated with industrial activity as defined in 40 CFR§122.26(b)(14)(i)-(ix) and (xi).
 - (c) Storm water discharges associated with construction activity as defined in 40 CFR§122.26(b)(14)(x) or 40 CFR §122.26(b)(15).
 - (d) Storm water discharges currently covered under another permit, including discharges covered under other regionally issued general permits.
 - (e) Discharges or discharge related activities that may adversely affect any species that are listed as endangered or threatened under the Endangered Species Act (ESA) or result in the adverse modification or destruction of habitat that is designated as critical under the ESA.
- i. Coverage under this permit is available only if the storm water discharges, allowable non-storm

water discharges, and discharge related activities do not adversely affect any species that are listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat"). Submission of a signed NOI will be deemed to constitute certification of eligibility.

- ii. "Discharge related activities" include: activities which cause, contribute to, or result in storm water point source pollutant discharges; and measures to control storm water discharges, including the siting, construction and operation of best management practices (BMPs) to control, reduce or prevent storm water pollution.
- iii. In order to demonstrate eligibility, the permittee must use the guidance in Addendum A and the most recent Endangered and Threatened Species County-Species List available from EPA. Eligibility must be determined prior to submission of the NOI. The most current list is available at: <http://www.epa.gov/npdes/>. The permittee must meet one or more of the criteria described below for the entire term of the permit. The information used to determine eligibility must be maintained as part of the Storm Water Management Program.
 - Criterion A: No endangered or threatened species or critical habitat are in proximity to the MS4 or the points where authorized discharges reach the receiving waters; or
 - Criterion B: In the course of a separate federal action involving the MS4, formal or informal consultation with the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) under Section 7 of the ESA has been concluded and that consultation:
 - Addressed the effects of the MS4 storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat; and
 - The consultation resulted in either a no jeopardy opinion or a written concurrence by FWS and/or NMFS on a finding that the storm water discharges, allowable non-storm water discharges, and discharge related activities are not likely to adversely affect listed species or critical habitat; or
 - Criterion C: The activities are authorized under Section 10 of the ESA and that authorization addresses the effects of the storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat; or
 - Criterion D: Using the best scientific and commercial data available, the effects of the storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by the permittee and affirmed after review by EPA that the storm water discharges, allowable non-storm water discharges, and discharge related activities will not affect any federally threatened or endangered species or designated critical habitat.
 - Criterion E: The storm water discharges, allowable non-storm water discharges, and discharge related activities were already addressed in another operator's certification of eligibility which includes the MS4 activities. If certification is under this criteria, the permittee agrees to comply with any measures or controls upon which the other operator's certification was based.
- iv. The permitting authority may require any permittee or applicant to provide documentation of the determination of eligibility for this permit where the EPA or the FWS and/or NMFS determines that there is a potential impact on listed species or critical habitat.
- v. A discharge is not authorized if the discharge or discharge related activities cause a prohibited "take" of endangered or threatened species (as defined under Section 3 of the ESA and 50 CFR 17.3), unless such actions are authorized by FWS or NMFS under sections 7 or 10 of the ESA.
- vi. Discharges are not authorized where the discharge or discharge related activity are likely to jeopardize the continued existence of any species that are listed as endangered or threatened under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA.
- vii. Operators who conduct informal consultation to meet the eligibility requirements of Criterion

B are automatically designated as non-Federal representatives under this permit. See 50 CFR §402.08. Operators who choose to conduct informal consultation as a non-Federal representative must notify EPA and the appropriate service office in writing of that decision.

(f) Discharges whose direct or indirect impacts may adversely affect any Essential Fish Habitat.

(g) Discharges, or implementation of a storm water management program, which adversely effects properties listed or eligible to be listed on the National Register of Historic Places. The permittee must determine eligibility prior to submission of the Notice of Intent. The permittee should follow the guidance detailed in Addendum B. Discharges may be eligible for coverage under this permit if the permittee is in compliance with requirements of the National Historic Preservation Act and has coordinated any necessary activities to avoid or minimize impacts. These requirements must be coordinated with the State Historic Preservation Officer. Information used to determine eligibility must be maintained as part of the Storm Water Management Program.

(h) Discharges to territorial seas, the contiguous zone, and the oceans unless such discharges are in compliance with the ocean discharge criteria of 40 CFR 125 subpart M.

(i) Discharges prohibited under 40 CFR 122.4. This includes discharges not in compliance with the state's antidegradation policy.

(j) Discharges mixed with non-storm water except those discharges which are in compliance with another NPDES permit or are an allowable non-storm water discharge as discussed in Part I.F.

(k) Discharges that would cause or contribute to instream exceedance of water quality standards. The storm water management program must include a description of the BMPs that will be used to ensure that this will not occur. EPA, MA DEP, or NH DES may require corrective action or an application for an individual permit or alternative general permit if an MS4 is determined to cause an instream exceedance of water quality standards.

(l) Discharges of any pollutant into any water for which a Total Maximum Daily Load (TMDL) has been established or approved by the EPA unless the discharge is consistent with the TMDL. This eligibility condition applies at the time of submission of the NOI. If conditions change after submission of the NOI, coverage may continue provided the applicable requirements of Part 1.C. are met. In order to remain eligible for this permit, any limitations, conditions and requirements applicable to discharges authorized by this permit, must be incorporated into the storm water management program. This may include monitoring and reporting. Discharges not eligible for this permit, must apply for an individual or alternative NPDES general permit.

C. Discharges to Water Quality Impaired Waters

1. The permittee must determine whether storm water discharges from any part of the MS4 contribute, either directly or indirectly, to a 303(d) listed water body.

2. The storm water management program must include a section describing how the program will control the discharge of the pollutants of concern and ensure that the discharges will not cause an instream exceedance of the water quality standards. This discussion must specifically identify control measures and BMPs that will collectively control the discharge of the pollutant(s) of concern. Pollutant(s) of concern refer to the pollutant identified as causing the impairment.

D. Total Maximum Daily Load Allocations

If a TMDL has been approved for any water body into which the MS4 discharges, the permittee must:

1. Determine whether the approved TMDL is for a pollutant likely to be found in storm water discharges from the MS4.
2. Determine whether the TMDL includes a pollutant waste load allocation (WLA), BMP recommendations or other performance requirements for storm water discharges. This storm water WLA may be expressed in the TMDL as a gross allotment for the impaired water body. Or, provided no specific WLA for the MS4 exists, determine if a Performance Agreement or Memorandum of Understanding has been established between the MS4, EPA, and MA DEP or NH DES which modifies the BMPs or performance standards of the TMDL. Such Memoranda are posted on the TMDL websites. The Massachusetts site is: <http://www.state.ma.us/dep/brp/wm/tmdl.htm> The New Hampshire site is: <http://www.des.state.nh.us/wmb/TMDL>
3. If the MS4 is required to implement storm water waste load allocation provisions of the TMDL, the permittee must assess whether the WLA is being met through implementation of existing storm water control measures or if additional control measures are necessary. The permittee's assessment of whether the WLA is being met is expected to focus on the adequacy of the permittee's storm water controls (implementation and maintenance), not on the response of the receiving water.
4. Highlight in the storm water management program and annual reports all control measures currently being implemented or planned to be implemented to control pollutants of concern identified in approved TMDLs. Also include a schedule of implementation for all planned controls. Document the assessment which demonstrates that the WLA will be met including any calculations, maintenance log books, or other appropriate controls.

E. Obtaining Coverage

1. Small MS4s seeking coverage under this permit, must submit a Notice of Intent which contains the following information:

- (a). Name of person responsible for overall coordination of the storm water management program, mailing address and phone number
- (b). Name of municipality and state. For municipalities seeking coverage under Part V. of this permit, only identify the name of the agency, the city or town, and the state in which it is located.
- (c). Identify the legal status of the operator of the MS4 as either, Federal, State, Tribal, county, or other Public Entity. If the municipality is a city or town, indicate if there are other MS4s within its boundaries such as state highways, universities, prisons.
- (d). Identify the names of all known waters that receive a discharge from the MS4. If known, indicate the number of outfalls to each water.
- (e). Using the guidance in Addendum A, describe how the eligibility criteria for listed species and critical habitat have been met.
- (f). Using the guidance in Addendum B describe how the requirements to protect historic properties have been met.
- (g). Identify best management practices for each minimum control measure described in Part II B (1-6); Part III B(1-6); Part IV. B(1-6) or Part V.B(1-6)., depending upon the type of MS4.
- (h). Identify measurable goals for each best management practice described in paragraph (g) above including implementation time frames and contact person..
- (i). The NOI must be signed by an appropriate official (see Part VI. G. of this permit). The NOI must contain the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

information, including the possibility of fine and imprisonment for knowing violations.

Print the name of the appropriate official, followed by signature, and date.

Municipalities in Massachusetts must use the form designated by the Massachusetts Department of Environmental Protection (MA DEP). The form is available at <http://www.state.ma.us/dep/brp/stormwtr/stmfmns.htm> or by contacting MA DEP at 508/792-7470. The permit code for the form is BRP WM 08 A EPA does not require the use of this form, but will accept information submitted on this form. All signatures must be originals.

Municipalities in New Hampshire should use the form developed by the New Hampshire Department of Environmental Services. The form is available at: <http://www.des.state.nh.us/StormWater/>. EPA does not require the use of this form, but will accept information submitted on this form. All signatures must be originals.

2. The Notice of Intent must be submitted by March 10, 2003, if designated under 40 CFR 122.32(a)(1)-those MS4s located fully or partially in an urbanized area; or within 180 days of notice, if designated under 40 CFR 122.32(a)(2), unless granted a longer period of time by EPA;

3. Submission of Notice of Intent

(a) All permittees must submit the Notice of Intent to EPA-Region I at the following address:
United States Environmental Protection Agency
Municipal Assistance Unit (CMU)
One Congress Street – Suite 1100
Boston, Massachusetts 02114-2023

(b) MS4s located in Massachusetts, subject to Part II, Part IV, or Part V, except Indian lands, must also submit a copy of the NOI to the MA DEP at the following address:
Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608

The appropriate fee must accompany the submission to MA DEP. The application fee is \$60.00. A fee exemption applies to any Massachusetts city, town or state agency. The fee does apply to Massachusetts state authorities.

(c) MS4s located in New Hampshire subject to Part III, Part IV or Part V, must also submit a copy of the NOI to the New Hampshire Department of Environmental Services (NH DES) at the following address:
New Hampshire Department Environmental Services
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, New Hampshire 03302-0095

New Hampshire may also adopt this permit as a state permit pursuant to RSA 485-A:13,I.(a).

4. Effective date of coverage. The authorization to discharge begins on the date of receipt of EPA's written authorization. The initial written receipt will detail the completeness of the submission. The permittee may be contacted by either EPA or MA DEP/NHDES at a later date requesting additional or updated information concerning the storm water management program. The initial response will not provide detailed comments on the submission.

5. A municipality is not prohibited from submitting a Notice of Intent after the dates provided in paragraph E.2. However, if a late NOI is submitted, authorization is only for discharges that occur after permit coverage is granted. The permitting authority reserves the right to take appropriate enforcement actions for any unpermitted discharges.

F. Allowable Non-Storm Water Discharges

The following non-storm water discharges are authorized provided it has been determined by the permittee that they are not significant contributors of pollutants to the MS4. If these discharges are identified as significant contributors to the MS4, they must be addressed in the Illicit Discharge Detection and Elimination minimum control measure described in Parts II, III, IV and V.

1. water line flushing,
2. landscape irrigation,
3. diverted stream flows,
4. rising ground waters,
5. uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)),
6. uncontaminated pumped ground water,
7. discharge from potable water sources,
8. foundation drains,
9. air conditioning condensation,
10. irrigation water, springs,
11. water from crawl space pumps,
12. footing drains,
13. lawn watering,
14. individual resident car washing,
15. flows from riparian habitats and wetlands,
16. dechlorinated swimming pool discharges,
17. street wash water, and
18. Residential building wash waters, without detergents.

Discharges or flows from fire fighting activities occur during emergency situations. The permittee is not expected to evaluate fire fighting discharges with regard to pollutant contributions. Therefore, these discharges are authorized as allowable non-storm water discharges, unless identified, by EPA, as significant sources of pollutants to Waters of the U.S..

PART II
MASSACHUSETTS SMALL MS4 STORM WATER MANAGEMENT PROGRAM

A. Storm Water Management Program

The permittee must develop, implement and enforce a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable; protect water quality, and satisfy the water quality requirements of the Clean Water Act and Massachusetts Water Quality Standards.

1. The permittee must develop a storm water management program implementing the minimum measures described in Paragraph II.B.

2. All elements of the storm water management program must be implemented by the expiration date of this permit.

3. Implementation of one or more of the minimum measures may be shared with another entity, or the entity may fully implement the measure(s). When another entity fully implements a minimum control measure for the permittee, the following applies:

- (a.) the other entity, in fact, implements the control measure;
- (b.) the particular control measure, or component of that measure is at least as stringent as the corresponding permit requirement.
- (c.) The other entity agrees to implement the control measure on the permittee's behalf. A legally binding written acceptance of this obligation is expected. This obligation must be maintained as part of the storm water management program. If the other entity agrees to report on the minimum measure, the permittee must supply the other entity with the reporting requirements contained in this permit under Part II.E.
- (d) The permittee remains responsible for permit compliance and implementation of the minimum measure if the other entity fails to do it.

4. Permittee may use the following state program to implement some of the requirements of Part II.B.4 and Part II.B.5: The Massachusetts Department of Environmental Protection, Wetland Protection Act (MGL Chapter 131, Section 40) Storm Water Management Policy

(a) Standard 8 of the Policy may be used for the minimum control measure regarding construction site storm water runoff control, Part II.B.4(c). Standards 2, 3, 4, and 7 of the Policy may be used for the minimum control measure regarding post construction storm water management in development and redevelopment, Part II.B.5. The permittee may not apply this criterion outside of the jurisdiction of the Wetlands Protection Act unless the municipality has specifically provided for such in local by-laws.

(b) Additional information available at: <http://www.state.ma.us/dep/brp/stormwtr/stormpub.htm>

5. For each minimum measure, the permittee must:

- (a.) identify the person(s) or department responsible for the measure;
- (b.) identify all Best Management Practices (BMPs) for the measure;
- (c.) identify measurable goals for each BMP. Identify time lines and milestones for implementation.

6. EPA's BMP menu found at <http://www.epa.gov/npdes/menuofbmps/menu.htm> and EPA's guidance on measurable goals, found at <http://www.epa.gov/npdes/stormwater/measurablegoals/index.htm>, may be used in the development of the storm water management program.

B. Minimum Control Measures

1. Public education and outreach. The permittee must implement a public education program to distribute educational material to the community. The public education program must provide information concerning the impact of storm water discharges on water bodies. It must address steps and/or activities that the public can take to reduce the pollutants in storm water runoff.

The following should be included in the education and outreach efforts:

- (a.) information regarding both industrial and residential activities including illegal dumping into storm drains.
- (b.) coordination with local groups (i.e. watershed associations, or schools)
- (c.) materials for outreach/education may include, but are not limited to, pamphlets; fact sheets; brochures; public service announcements; storm drain stenciling and newspaper advertisements.
- (d.) topics may include, but are not limited to, litter disposal, pet waste, household hazardous waste disposal, proper use of fertilizer and pesticides, and effects of impervious areas on water bodies. (This list is intended to provide examples, the permittee is encouraged to use a variety of activities for public education.)

2. Public involvement and participation. All public involvement activities must comply with state public notice requirements at MGL Chapter 39 Section 23B and local public notice requirements.

- (a.) The permittee must provide opportunity for the public to participate in the implementation and review of the storm water management program.
- (b.) Activities may also include volunteer stream monitoring or formation of a storm water management committee. (These are examples of public involvement activities, the permittee is encouraged to use a wide range of activities to maximize public involvement.)

3. Illicit discharge detection and elimination. The permittee must develop, implement and enforce a program to detect and eliminate illicit discharges. An illicit discharge is any discharge to a municipal separate storm sewer that is not composed entirely of storm water. Exceptions are discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal sewer system), allowable non storm water discharges described at Part I.F. and discharges resulting from fire fighting activities.

(a.) If not already existing, the permittee must develop a storm sewer system map. At a minimum, the map must show the location of all outfalls and the names of all waters that receive discharges from those outfalls. Additional elements may be included on the map, such as, location of catch basins, location of manholes, and location of pipes within the system. Initial mapping should be based on all existing information available to the permittee including city records and drainage maps. Field surveys may be necessary to verify existing records and locate all outfalls.

(b.) To the extent allowable under state or local law, the permittee must effectively prohibit, through an ordinance or other regulatory mechanism, non storm water discharges into the system and implement appropriate enforcement procedures and actions. If a regulatory mechanism does not exist, development and adoption of such a mechanism must be included as part of the storm water management program.

(c.) The permittee must develop and implement a plan to detect and address non -storm water discharges, including illegal dumping, into the system.

The illicit discharge plan must contain the following elements:

- i. Procedures to identify priority areas. This includes areas suspected of having illicit discharges, for example: older areas of the city, areas of high public complaints and areas of high recreational value or high environmental value such as beaches and drinking water sources.
- ii. Procedures for locating illicit discharges (i.e. visual screening of outfalls for dry weather discharges, dye or smoke testing)
- iii. Procedures for locating the source of the discharge and procedures for the removal of the source.

iv. Procedures for documenting actions and evaluating impacts on the storm sewer system subsequent to the removal.

(d.) The permittee must inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper waste disposal.

(e.) The non-storm water discharges listed in Part I.F. must be addressed if they are identified as being significant contributors of pollutants to the small MS4.

4. Construction site storm water runoff control. The permittee must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The permittee must include disturbances less than one acre if part of a larger common plan.

The permittee does not need to apply its construction program provisions to projects that receive a waiver from EPA under the provisions of 40 CFR§122.26(b)(15)(i).

At a minimum, the program must include:

(a.) To the extent allowable under state or local law, an ordinance or other regulatory mechanism to require sediment and erosion control at construction sites. If such an ordinance does not exist, development and adoption of an ordinance must be part of the program.

(b.) Sanctions to ensure compliance with the program. To the extent allowable under state or local law sanctions may include both monetary or non-monetary penalties.

(c.) Requirements for construction site operators to implement a sediment and erosion control program which includes BMPs that are appropriate for the conditions at the construction site, including efforts to minimize the area of the land disturbance.

(d.) Requirements for the control of wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.

(e.) Procedures for site plan review including procedures which incorporate consideration of potential water quality impacts. The site plan review should include procedures for preconstruction review.

(f.) Procedures for receipt and consideration of information submitted by the public.

(g.) Procedures for inspections and enforcement of control measures at construction sites.

5. Post construction storm water management in new development and redevelopment.

The permittee must develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the municipal system.

The program must include projects less than one acre if the project is part of a larger common plan of development which disturbs greater than one acre.

The post construction program must include:

- (a.) To the extent allowable under state or local law, an ordinance or other regulatory mechanism to address post construction runoff from new development and redevelopment. If such an ordinance does not exist, development and adoption of an ordinance must be part of the program.
- (b.) Procedures to ensure adequate long term operation and maintenance of best management practices.
- (c.) Procedure to ensure that any controls that are put in place will prevent or minimize impacts to water quality.

6. Pollution prevention and good housekeeping in municipal operations.

The permittee must

- (a.) Develop and implement a program with a goal of preventing and/or reducing pollutant runoff from municipal operations. The program must include an employee training component.
- (b.) Include, at a minimum, maintenance activities for the following : parks and open space (areas such as public golf course and playing fields); fleet maintenance, building maintenance; new construction and land disturbance; and road way drainage system maintenance and storm water system maintenance.
- (c.) Develop schedules for municipal maintenance activities described in paragraph (b) above.
- (d.) Develop inspection procedures and schedules for long term structural controls.

7. Cooperation between interconnected municipal separate storm sewer systems is encouraged. The permittee should identify interconnections within the system. The permittee should attempt to work cooperatively with an interconnected municipality in instances of discharges impacting a system.

8. The permittee must evaluate physical conditions, site design, and best management practices to promote groundwater recharge and infiltration where feasible in the implementation of the control measures described above. During the implementation of the storm water management program, the permittee must address recharge and infiltration for the minimum control measures, as well as any reasons for electing not to implement recharge and infiltration. Loss of annual recharge to ground water should be minimized through the use of infiltration measures to the maximum extent practicable. Permittees in areas identified as "high" or "medium" in the most recent Massachusetts Water Resources Commission's *Stressed Basins in Massachusetts* report in effect at the time the permittee submits a Notice of Intent and accompanying storm water management program, must minimize the loss of annual recharge to ground water from new development and redevelopment, including but not limited to drainage improvements done in conjunction with road improvements, street drain improvement projects and flood mitigation projects, consistent with Standard 3 of the Storm Water Management Policy in areas both within and outside of the jurisdiction of the Massachusetts Wetlands Protection Act.

(See http://www.state.ma.us/dem/programs/intbasin/stressed_basin)

9. MS4s which discharge to coastal waters with public swimming beaches should consider these waters a priority in implementation of the storm water management program. Refer to Part IX , State 401 Certification Requirements, for additional requirements.

C. Public Drinking Water Supply Requirements

1. MS4s which discharge to public drinking water sources and their protection areas (Class A and B surface waters used for drinking water and wellhead protection areas) should consider these waters a priority in implementation of the storm water management program.
2. Discharges to public drinking water supply sources and their protection areas (Zones I, II, Wellhead Protection Areas, Zone A, B, and C as defined in 310 CMR 22.00) should provide pretreatment and spill control capabilities to the extent feasible.
3. Direct discharges to Class A waters and Zone I wellhead protection areas (as defined in 310 CMR 22.02) should be avoided to the extent feasible.

D. Program Evaluation

1. The permittee must annually evaluate the compliance of the storm water management program with the conditions of this permit.
2. The permittee must evaluate the appropriateness of the selected BMPs in efforts towards achieving the defined measurable goals. The storm water management program may be changed in accordance with the following provisions:
 - (a). Changes adding (but not subtracting or replacing) components, controls or requirements to the SWMP may be made at any time upon written notification to EPA and MA DEP
 - (b). Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP may be requested in writing to EPA and MA DEP at any time. Unless denied, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If the request is denied, EPA or MA DEP, as applicable, will send you a written explanation of the denial.
 - (c). Modification requests, must include the following information:
 - i. an analysis of why the BMP is ineffective or infeasible (including cost prohibitive)
 - ii. expectations on the effectiveness of the replacement BMP, and
 - iii. an analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.
 - iv. Change requests or notifications must be in writing and signed in accordance with the signatory requirements of Part VI.
3. EPA or MA DEP may require changes to the SWMP as needed to:
 - (a). Address impacts on receiving water quality caused or contributed to by discharges from the MS4;
 - (b). To include more stringent requirements necessary to comply with new Federal statutory or regulatory requirement; or
 - (c). To include such other conditions deemed necessary to comply with the goals and requirements of the CWA.
 - (d). Any changes requested by EPA or MA DEP will be in writing and will set forth the schedule for the permittee to develop the changes and offer the opportunity to propose alternative program changes to meet the objective of the requested modification.

E. Record Keeping

1. All records required by this permit must be kept for a period of at least five years. Records include information used in the development of the storm water management program, any monitoring, copies of reports, and all data used in the development of the notice of intent.
2. Records need to be submitted only when specifically requested by the permitting authority.
3. The permittee must make the records relating to this permit available to the public, including the storm water management program. The public may view the records during normal business hours. The permittee may charge a reasonable fee for copying requests.

F. Reporting

1. The permittee must submit an annual report. The initial report is due one year from the effective date of this permit and annually thereafter. The reports should contain information regarding activities of the previous calendar year. Reports should be submitted to both EPA and MA DEP at the following addresses:

United States Environmental Protection Agency
Water Technical Unit
P.O. Box 8127
Boston, MA 02114

and

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608

2. The following information must be contained in the annual report:
 - (a) A self assessment review of compliance with the permit conditions.
 - (b) An assessment of the appropriateness of the selected BMPs.
 - (c) An assessment of the progress towards achieving the measurable goals.
 - (d) A summary of results of any information that has been collected and analyzed. This includes any type of data.
 - (e) A discussion of activities for the next reporting cycle.
 - (f) A discussion of any changes in identified BMPs or measurable goals.
 - (g) Reference any reliance on another entity for achieving any measurable goal.

G. State Permit Conditions

This permit is issued jointly by the U.S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap. 21, §43 and under regulations found at 314 CMR 3.00. Regulations found at 314 CMR 3.19 (Standard Permit Conditions) are incorporated into this permit by reference.

To the extent allowable by their respective laws and regulations, each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of the state law such permit shall remain in force and effect under federal law as a NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

PART III
NEW HAMPSHIRE SMALL MS4
STORM WATER MANAGEMENT PROGRAM
(This part also applies to Indian Lands in MA, CT, and RI .)

A. Storm Water Management Program

The permittee must develop, implement and enforce a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable; protect water quality, and satisfy the water quality requirements of the Clean Water Act and state water quality standards

1. The permittee must develop a storm water management program implementing the minimum measures described in Paragraph III.B.
2. All elements of the storm water management program must be implemented by the expiration date of this permit.
3. Implementation of one or more of the minimum measures may be shared with another entity, or the entity may fully implement the measure. When another entity fully implements a minimum control measure for the permittee, the following applies:
 - (a.) the other entity, in fact, implements the control measure;
 - (b.) the particular control measure, or component of that measure is at least as stringent as the corresponding permit requirement.
 - (c.) The other entity agrees to implement the control measure on the permittee behalf. A legally binding written acceptance of this obligation is expected. This obligation must be maintained as part of the storm water management program. If the other entity agrees to report on the minimum measure, the permittee must supply the other entity with the reporting requirements contained in this permit under Part III.E.
 - (d) The permittee remains responsible for permit compliance and implementation of the minimum measure if the other entity fails to do it.
4. For each minimum measure, the permittee must:
 - (a.) identify the person(s) or department responsible for the measure;
 - (b.) identify Best Management Practices (BMPs) for the measure;
 - (c.) identify measurable goals for each BMP. Identify time lines and milestones for implementation.
5. EPA's BMP menu found at:
<http://www.epa.gov/npdes/menuofbmps/menu.htm> and EPA's guidance on measurable goals, found at:
<http://www.epa.gov/npdes/stormwater/measurablegoals/index.htm>, may be used in the development of the storm water management program.

B. Minimum Control Measures

1. Public education and outreach. The permittee must implement a public education program to distribute educational material to the community. The public education program must provide information concerning the impact of storm water discharges on water bodies. It must address steps and/or activities that the public can take to reduce the pollutants in storm water runoff.

The following should be included in education and outreach efforts:

- (a.) information regarding industrial, commercial, and residential activities including illegal dumping into storm drains.
- (b.) coordinate activities with local groups (i.e. watershed associations, or schools)

- (c.) materials for outreach/education may include, but are not limited to, pamphlets; fact sheets; brochures; public service announcements; storm drain stenciling and newspaper advertisements.
- (d.) topics may include, but are not limited to, litter disposal, pet waste, household hazardous waste disposal, proper use of fertilizer and pesticides. (This list is intended to provide examples of education topics, the permittee is encouraged to use a variety of methods for public education.)

2. Public Involvement and participation. All public involvement activities in the State of New Hampshire must comply with state public notice requirements, RSA-91A. Activities must also comply with local and Tribal requirements, as appropriate.

- (a.) The permittee must provide opportunity for the public to participate in the development, implementation and review of the storm water management program.
- (b) Activities may also include volunteer stream monitoring or formation of a storm water management committee. (These are examples of public involvement activities, the permittee is encouraged to use a wide range of activities to maximize public involvement.)

3. Illicit discharge detection and elimination. The permittee must develop, implement and enforce a program to detect and eliminate illicit discharges. An illicit discharge is any discharge to a municipal separate storm sewer that is not composed entirely of storm water. Exceptions are discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal sewer system), allowable non storm water discharges described at Part I.F. and discharges resulting from fire fighting activities.

- (a.) If not already existing, the permittee must develop a storm sewer system map. At a minimum, the map must show the location of all outfalls and the names of all waters that receive discharges from those outfalls. Additional elements may be included on the map, such as, location of catch basins, location of manholes, and location of pipes within the system. Initial mapping should be based on all existing information available to the permittee including city records and drainage maps. Field surveys may be necessary to verify existing records and locate all outfalls.
- (b.) To the extent allowable under state, Tribal or local law, the permittee must effectively prohibit, through an ordinance or other regulatory mechanism, non-storm water discharges into the system and implement appropriate enforcement procedures and actions. If a regulatory mechanism does not exist, development and adoption of such a mechanism must be included as part of the storm water management program.
- (c.) The permittee must develop and implement a plan to detect and address non storm water discharges, including illegal dumping, into the system.

The illicit discharge plan must contain the following elements:

- i. Procedures to identify priority areas. This includes areas suspected of having illicit discharges, for example: older areas of the city, areas of high public complaints and areas of high recreational value or high environmental value such as beaches and drinking water sources.
 - ii. Procedures for locating illicit discharges (i.e. visual screening of outfalls for dry weather discharges, dye or smoke testing)
 - iii. Procedures for locating the source of the discharge and procedures for the removal of the source.
 - iv. Procedures for documenting actions and evaluating impact on the storm sewer system subsequent to the removal.
- (d.) The permittee must inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper waste disposal.

(e.) The non-storm water discharges listed in Part I.F. must be addressed if they are identified as being significant contributors of pollutants to the MS4.

4. Construction site storm water runoff control. The permittee must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The permittee must include disturbances less than one acre if part of a larger common plan.

The permittee does not need to apply its construction program provisions to projects that receive a waiver from EPA under the provisions of 40 CFR§122.26(b)(15)(i).

At a minimum, the program must include:

(a.) To the extent allowable under state, Tribal or local law, an ordinance or other regulatory mechanism to require sediment and erosion control at construction sites. If such an ordinance does not exist, development and adoption of an ordinance must be part of the program.

(b.) Sanctions to ensure compliance with the program. To the extent allowable under state, Tribal or local laws, sanctions may include both monetary or non-monetary penalties.

(c.) Requirements for construction site operators to implement a sediment and erosion control program which includes BMPs that are appropriate for the conditions at the construction site.

(d.) Requirements for the control of wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.

(e.) Procedures for site plan review including procedures which incorporate consideration of potential water quality impacts. The site plan review should include procedures for preconstruction review.

(f.) Procedures for receipt and consideration of information submitted by the public.

(g.) Procedures for inspections and enforcement of control measures at construction sites.

5. Post construction storm water management in new development and redevelopment.

The permittee must develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the municipal system.

The program must include projects less than one acre if the project is part of a larger common plan of development.

The post construction program must include:

(a.) To the extent allowable under state, Tribal or local law, an ordinance or other regulatory mechanism to address post construction runoff from new development and redevelopment. If such an ordinance does not exist, development and adoption of an ordinance must be part of the program.

(b.) Procedures to ensure adequate long term operation and maintenance of best management practices.

(c.) Procedure to ensure that any controls that are in place will prevent or minimize impacts to

water quality.

6. Pollution prevention and good house keeping in municipal operations.

The permittee must

(a.) Develop and implement a program with a goal of preventing and/or reducing pollutant runoff from municipal operations. The program must include an employee training component.

(b.) Include, at a minimum, maintenance activities for the following : parks and open space (area such as public golf courses and athletic fields); fleet maintenance, building maintenance; new construction and land disturbance; roadway drainage system maintenance and storm water system maintenance.

(c.) Develop schedules for municipal maintenance activities described in paragraph (b) above.

(d) Develop inspection procedures and schedules for long term structural controls.

7. Cooperation between interconnected municipal separate storm sewer systems is encouraged. The permittee should identify interconnections within the system. The permittee should attempt to work cooperatively with an interconnected municipality in instances of discharges impacting a system.

8. MS4s which discharge to coastal waters with public swimming beaches should consider these waters a priority in implementation of the storm water management program.

9. The permittee must evaluate physical conditions, site design, and best management practices to promote groundwater recharge and infiltration where feasible in the implementation of the control measures described above. During the implementation of the storm water management program, the permittee must address recharge and infiltration for the minimum control measures, as well as any reasons for electing not to implement recharge and infiltration. Loss of annual recharge to ground water should be minimized through the use of infiltration measures to the maximum extent practicable.

C. Public Drinking Water Supply Requirements

1. MS4s which discharge to public drinking water sources and their protected areas (Class A and B surface waters used for drinking water and wellhead protection areas) should consider these waters a priority in implementation of the storm water management program.

2. Discharges to public drinking water supply sources and their protection areas (wellhead protection areas, Class A and B waters) should provide pretreatment and spill control capabilities to the extent feasible.

3. Direct discharges to Class A waters and the sanitary radius to supply wells (defined in EnV-Ws 378.06, EnV-Ws 372.13) should be avoided to the extent feasible.

D. Program Evaluation

1. The permittee must annually evaluate the compliance of the storm water management program with the conditions of this permit.

2. The permittee must evaluate the appropriateness of the selected Best Management Practices in efforts towards achieving the defined Measurable Goals. The SWMP may be changed in accordance with the following provisions:

- (a). Changes adding (but not subtracting or replacing) components, controls or requirements to the SWMP may be made at any time upon written notification to EPA.
- (b.) Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP may be requested at any time. Unless denied, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If the request is denied, EPA will send a written explanation of the denial.
- (c.) Modification requests, must include the following information:
 - i. an analysis of why the BMP is ineffective or infeasible (including cost prohibitive)
 - ii. expectations on the effectiveness of the replacement BMP, and
 - iii. an analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.
- iv. Change requests or notifications must be in writing and signed in accordance with the signatory requirements of Part VI.

3. EPA or NHDES may require changes to the SWMP as needed to:

- (a.) Address impacts on receiving water quality caused or contributed to by discharges from the MS4;
- (b.) To include more stringent requirements necessary to comply with new Federal statutory or regulatory requirement; or
- (c.) To include such other conditions deemed necessary to comply with the goals and requirements of the CWA.
- (d.) Any changes requested by EPA or NHDES will be in writing and will set forth the schedule for the permittee to develop the changes and offer the opportunity to propose alternative program changes to meet the objective of the requested modification.

E. Record Keeping

- 1. All records required by this permit must be kept for a period of at least five years. Records include information used in the development of the storm water management program, any monitoring, copies of reports, and all data used in the development of the notice of intent.
- 2. Records need to be submitted only when specifically requested by the permitting authority.
- 3. The permittee must make the records relating to this permit available to the public, including the storm water management program. The public may view the records during normal business hours. The permittee may charge a reasonable fee for copying requests.

F. Reporting

- 1. The permittee must submit an annual report. The initial report is due one year from the effective date of this permit and annually thereafter. The reports should contain information regarding activities of the previous calendar year. Reports must be submitted to EPA at the following address:

United States Environmental Protection Agency
Water Technical Unit
P.O. Box 8127
Boston, MA 02114

Municipalities located in the State of New Hampshire, must also submit reports to the New Hampshire Department of Environmental Services at the following address:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, New Hampshire 03302-0095

2. The following information must be contained in the annual report:

- (a) A self assessment review of compliance with the permit conditions.
- (b) An assessment of the appropriateness of the selected BMPs.
- (c) An assessment of the progress towards achieving the measurable goals.
- (d) A summary of results of any information that has been collected and analyzed. This includes any type of data.
- (e) A discussion of activities for the next reporting cycle.
- (f) A discussion of any changes in identified BMPs or measurable goals.
- (g) Reference any reliance on another entity for achieving any measurable goal.

PART IV

NON-TRADITIONAL SMALL MS4 -STORM WATER MANAGEMENT PROGRAM

(This covers federal, county, or state owned small MS4s located in any of the areas described in Part I.A. of this permit)

A. Storm Water Management Program

The permittee must develop, implement and enforce a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable; protect water quality, and satisfy the water quality requirements of the Clean Water Act and state water quality standards.

1. The permittee must develop a storm water management program implementing the minimum measures described in Paragraph IV.B.
2. All elements of the storm water management program must be implemented by the expiration date of this permit.
3. Implementation of one or more of the minimum measures may be shared with another entity, or the entity may fully implement the measure. When another entity fully implements a minimum measure for the permittee, the following applies:
 - (a.) the other entity, in fact, implements the control measure,
 - (b.) the particular control measure, or component of that measure is at least as stringent as the corresponding permit requirement.
 - (c.) The other entity agrees to implement the control measure on the permittee behalf. A legally binding written acceptance of this obligation is expected. This obligation must be maintained as part of the storm water management program. If the other entity agrees to report on the minimum measure, the permittee must supply the other entity with the reporting requirements contained in this permit under Part IV.E.
 - (d) The permittee remains responsible for permit compliance and implementation of the minimum measure if the other entity fails to do it.
4. For each minimum measure, the permittee must:
 - (a.) identify the person(s) or department responsible for the measure;
 - (b.) identify Best Management Practices (BMPs) for the measure;
 - (c.) identify measurable goals for the BMP. The permittee may also identify an overall goal for the measure. Time lines and milestones for implementation of BMPs should be identified.
5. The following EPA websites may be used in the development of BMPs and measurable goals. EPA's BMP menu: <http://www.epa.gov/npdes/menuofbmps/menu.htm> EPA's guidance on measurable goals: <http://www.epa.gov/npdes/stormwater/measurablegoals/index.htm>

B. Minimum Control Measures

1.. Public education and outreach. The permittee must implement a public education program to distribute educational material to the community. For the purposes of this permit, a community consists of the people who use the facility. For example, at a university it would be the faculty, other staff, students, and visitors. The public education program must provide information concerning the impact of storm water discharges on water bodies. It must address steps and/or activities that the community can take to reduce the pollutants in storm water runoff.

The following should be included in education and outreach efforts:

- (a.) information regarding activities that occur at the facility, including illegal dumping into storm drains,
- (b.) activities may be coordinated with local groups (i.e. watershed associations, or schools).

- (c.) materials for outreach/education may include, but are not limited to, pamphlets; fact sheets; brochures; public service announcements; storm drain stenciling and newspaper advertisements.
- (d.) encourage cooperative efforts with neighboring municipalities, watershed associations and others.

2. Public Involvement and participation. All public involvement activities must comply with state public notice requirement. In Massachusetts the public notice requirements are at MGL Chapter 39, Section 23B. In New Hampshire, the public notice requirements are at RSA 91A.

- (a.) The permittee must provide opportunity for the public to participate in the implementation and review of the storm water management program.

3. Illicit discharge detection and elimination. The permittee must develop, implement and enforce a program to detect and eliminate illicit discharges. An illicit discharge is any discharge to a municipal separate storm sewer that is not composed entirely of storm water. Exceptions are discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal sewer system), allowable non-storm water discharges described at Part I.F. and discharges resulting from fire fighting activities.

- (a.) If not already existing, the permittee must develop a storm sewer system map. At a minimum, the map must show the location of all outfalls and the names of all waters that receive discharges from those outfalls. Additional elements may be included on the map, such as, location of catch basins, location of manholes, and location of pipes within the system. Initial mapping should be based on all existing information available to the permittee including facility records, city records, and drainage maps. Field surveys may be necessary to verify existing records and locate all outfalls.

- (b.) To the extent allowable under state law, the permittee must effectively prohibit, through regulatory mechanisms available to the permittee, non storm water discharges into the system and implement appropriate enforcement procedures and actions. If a regulatory mechanism does not exist, development and adoption of such a mechanism must be included as part of the storm water management program. The permittee should evaluate existing procedures, policies, and authorities pertaining to connections to its separate storm sewer system. These may be used to assist in the development of the required regulatory mechanism.

If an illicit discharger fails to comply with procedures or policies established at the facility, the permittee may seek assistance from EPA or the state agency in enforcing this provision of the permit.

- (c.) The permittee must develop and implement a plan to detect and address non -storm water discharges, including illegal dumping, into the system.

The illicit discharge plan must contain the following elements:

- i. Procedures to identify priority areas. This includes areas suspected of having illicit discharges, for example: older areas of the city, areas of high public complaints and areas of high recreational value or high environmental value such as beaches and drinking water sources.
- ii. Procedures for locating illicit discharges (i.e. visual screening of outfalls for dry weather discharges, dye or smoke testing).
- iii. Procedures for locating the source of the discharge and procedures for the removal of the source.
- iv. Procedures for documenting actions and evaluating the impact on the storm sewer system subsequent to the removal.

(d.) The permittee must inform users of system and the general public of hazards associated with illegal discharges and improper waste disposal.

(e.) The non-storm water discharges listed in Part I.F. must be addressed if they are identified as being significant contributors of pollutants to the MS4.

4. Construction site storm water runoff control. The permittee must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The permittee must include disturbances less than one acre if part of a larger common plan.

The permittee does not need to apply its construction program provisions to projects that receive a waiver from EPA under the provisions of 40 CFR§122.26(b)(15)(i).

At a minimum, the program must include:

(a.) To the extent allowable under state law, a regulatory mechanism to require sediment and erosion control at construction sites. If such a mechanism does not exist, development and adoption of a mechanism must be part of the program. The permittee should evaluate existing procedures, policies, and authorities pertaining to activities occurring on its property, these may be used to assist in the development of the required regulatory mechanism. If attempts to enforce this part of their program are ineffective, the permittee may seek assistance from EPA or the state agency for enforcement of this provision .

(b.) Sanctions to ensure compliance with the program. To the extent allowable under state law sanctions may include both monetary or non-monetary penalties.

(c.) Requirements for construction site operators to implement a sediment and erosion control program which includes best management practices that are appropriate for the conditions at the construction site. The overall goal of a sediment and erosion control plan is to retain sediment on site, to the extent practicable. A sediment and erosion control plan should, at a minimum, include provisions to address maintenance and inspection of BMPs, and long and short term stabilization practices.

(d.) Require control of wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.

(e.) Procedures for site plan review including procedures which incorporate consideration of potential water quality impacts. The site plan review should include procedures for preconstruction review.

(f.) Procedures for receipt and consideration of information submitted by the public.

(g.) Procedures for inspections and enforcement of control measures at construction sites.

5. Post construction storm water management in new development and redevelopment.

The permittee must develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the MS4.

The program must include projects less than one acre if the project is part of a larger common plan of development.

The post construction program must include:

- (a.) To the extent allowable under state law, a regulatory mechanism to address post construction runoff from new development and redevelopment. If such a mechanism does not exist, development and adoption of a mechanism must be part of the program. The permittee should evaluate existing procedures and policies concerning activities occurring on its property. These may be used to assist in development of the required regulatory mechanism. If attempts to enforce this provision of the program are ineffective, the permittee may seek assistance from EPA or the state agency in enforcing this provision.
- (b.) Procedures to ensure adequate long term operation and maintenance of best management practices.
- (c.) Procedure to ensure that any controls that are put in place will prevent or minimize impacts to water quality.

6. Pollution prevention and good housekeeping in community/facility operations.

The permittee must

- (a.) Develop and implement a program with a goal of preventing and/or reducing pollutant runoff from community/facility operations. The program must include an employee training component.
- (b.) Include, at a minimum, maintenance activities for the following : parks and open space; fleet maintenance, building maintenance; new construction and land disturbance; road way drainage system maintenance, and storm water system maintenance.
- (c.) Develop schedules for maintenance activities described in paragraph (b) above.
- (d.) Develop inspection procedures and schedules for long term structural controls.

7. Cooperation with interconnected municipal separate storm sewer systems is encouraged. The permittee should identify interconnections within the system. These interconnections include both those leaving the system and those entering the system. The permittee should attempt to work cooperatively with an interconnected municipality in instances of discharges impacting either system.

8. MS4s which discharge to coastal waters with public swimming beaches should consider these waters a priority in implementation of the storm water management program.

9. The permittee should consider opportunities for ground water recharge and infiltration in implementation of the control measures described above.

The permittee must evaluate physical conditions, site design, and best management practices to promote groundwater recharge and infiltration where feasible in the implementation of the control measures described above. During the implementation of the storm water management program, the permittee must address recharge and infiltration for the minimum control measures as well as any reasons for electing not to implement recharge and infiltration. Loss of annual recharge to ground water should be minimized through the use of infiltration measures to the maximum extent practicable.

Massachusetts Only: Permittee in areas identified as "high" or "medium" in the most recent Massachusetts Water Resources Commission's *Stressed Basins in Massachusetts* report in effect at the time the permittee submits a Notice of Intent and accompanying storm water management program, must minimize the loss of annual recharge to ground water from new development and redevelopment, including but not limited to drainage improvements done in conjunction with road improvements, street drain improvement projects and flood mitigation projects, consistent with Standard 3 of the Storm Water Management Policy in areas both within and outside of the jurisdiction of the Massachusetts Wetlands Protection Act.

(See http://www.state.ma.us/dem/programs/intbasin/stressed_basin)

C. Public Drinking Water Supply Requirements

1. MS4s which discharge to public drinking water sources and their protection areas (Class A and B surface waters used for drinking water and wellhead protection areas) should consider these waters a priority in implementation of the storm water management program.
2. Discharges to public drinking water supply sources and their protection areas (wellhead protection areas, Class A and Class B waters) should provide pretreatment and spill control capabilities to the extent feasible.
3. Direct discharges to Class A waters and the sanitary radius to public supply wells should be avoided the extent feasible.

D. Program Evaluation

1. The permittee must annually evaluate the compliance of the storm water management program with the conditions of this permit.
2. The permittee must evaluate the appropriateness of the selected Best Management Practices in efforts towards achieving the defined Measurable Goals. The SWMP may be changed in accordance with the following provisions:
 - (a.) Changes adding (but not subtracting or replacing) components, controls or requirements to the SWMP may be made at any time upon written notification to EPA and MA DEP.
 - (b.) Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP may be requested in writing to EPA and MA DEP at any time. Unless denied, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If the request is denied, EPA or MA DEP, as applicable, will send you a written explanation of the denial.
 - (c.) Modification requests, must include the following information:
 - i. an analysis of why the BMP is ineffective or infeasible (including cost prohibitive)
 - ii. expectations on the effectiveness of the replacement BMP, and
 - iii. an analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.
 - iv. Change requests or notifications must be in writing and signed in accordance with the signatory requirements of Part VI.
3. EPA or the state agency may require changes to the SWMP as needed to:
 - (a.) Address impacts on receiving water quality caused or contributed to by discharges from the MS4,
 - (b.) To include more stringent requirements necessary to comply with a new Federal statutory or regulatory requirement; or
 - (c.) To include such other conditions deemed necessary to comply with the goals and requirements of the CWA.
 - (d.) Any changes requested by EPA or MA DEP/ NH DES will be in writing and will set forth the time schedule for the permittee to develop the changes and offer the opportunity to propose alternative program changes to meet the objective of the requested modification.

E. Record Keeping

1. All records required by this permit must be kept for a period of five years. Records include information used in the development of the storm water management program, any monitoring, copies of reports, and all data used in the development of the notice of intent.

2. Records need to be submitted only when specifically requested by the permitting authority.

3. The permittee must make the records relating to this permit available to the public, including the storm water management program. The public may view the records during normal business hours. The permittee may charge a reasonable fee for copying requests.

F. Reporting

1. The permittee must submit an annual report. The initial report is due one year from the effective date of this permit and annually thereafter. The reports should contain information regarding activities of the previous calendar year. Reports should be submitted to EPA. At the following address:

United States Environmental Protection Agency
Water Technical Unit
P.O. Box 8127
Boston, Massachusetts, 02114

Massachusetts MS4s must also submit reports to:

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608

New Hampshire MS4s must submit reports to:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, New Hampshire 03302-0095

2. The following information must be contained in the annual report:

- (a) A self assessment review of compliance with the permit conditions
- (b) An assessment of the appropriateness of the selected BMPs.
- (c) An assessment of the progress towards achieving the measurable goals
- (d) A summary of results of any information that has been collected and analyzed. This includes any type of data.
- (e) A discussion of activities for the next reporting cycle.
- (f) A discussion of any changes in identified BMPs or measurable goals.
- (g) Reference any reliance on another entity for achieving any measurable goal.

G. Massachusetts State Permit Conditions

This permit is issued jointly by the U.S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap. 21, §43 and under regulations found at 314 CMR 3.00. Regulations found at 314 CMR 3.19 (Standard Permit Conditions) are incorporated into this permit by reference.

To the extent allowable by their respective laws and regulations, each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of the state law such permit shall remain in force and effect under federal law as a NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts. Refer to Part IX for 401 Certification Requirements.

PART V

TRANSPORTATION MS4 - STORM WATER MANAGEMENT PROGRAM

(This part applies to state and county agencies who maintain roadways, highways and other thoroughfares in the state including but not limited to Massachusetts Highway Department and New Hampshire Department of Transportation)

A. Storm Water Management Program

The permittee must develop, implement and enforce a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable; protect water quality, and satisfy the water quality requirements of the Clean Water Act and state water quality standards

1. The permittee must develop a storm water management program implementing the minimum measures described in Paragraph V.B.
2. All elements of the storm water management program must be implemented by the expiration date of this permit.
3. Implementation of one or more of the minimum measures may be shared with another entity, or the entity may fully implement the measure. When another entity fully implements a minimum measure for the permittee, the following applies
 - (a.) the other entity, in fact, implements the control measure;
 - (b.) the particular control measure, or component of that measure is at least as stringent as the corresponding permit requirement.
 - (c.) The other entity agrees to implement the control measure on the permittee behalf. A legally binding written acceptance of this obligation is expected. This obligation must be maintained as part of the storm water management program. If the other entity agrees to report on the minimum measure, the permittee must supply the other entity with the reporting requirements contained in this permit under Paragraph V.E.
 - (d) The permittee remains responsible for permit compliance and implementation of the minimum measure if the other entity fails to do it.
4. For each minimum measure, the permittee must:
 - (a.) identify the person(s) or department responsible for the measure;
 - (b.) identify Best Management Practices (BMPs) for the measure;
 - (c.) identify measurable goals for each best management practice. The permittee may also identify an overall goal for each measure. Time lines and milestones for implementation of BMPs should be identified.
5. The following EPA websites may be used in the development of BMPs and measurable goals. EPA's BMP menu: <http://www.epa.gov/npdes/menuofbmps/menu.htm> EPA's guidance on Measurable goals: <http://www.epa.gov/npdes/stormwater/measurablegoals/index.htm>

Minimum Control Measures

1. Public education and outreach. The permittee must implement a public education program to distribute educational material to the community. For the purposes of this permit, a community consists of the people who use the facility. For a transportation agency, this would include employees, contractors, and general public. The public education program must provide information concerning the impact of storm water discharges on water bodies. It must address steps and/or activities that the community can take to reduce the pollutants in storm water runoff.

The following should be included in education and outreach efforts:

- (a.) information regarding activities that occur within the facility, including illegal dumping into storm drains.
- (b.) coordinate activities with local groups (i.e. watershed associations, or schools)
- (c.) materials for outreach/education may include, but are not limited to, pamphlets; fact sheets; brochures; public service announcements; storm drain stenciling and newspaper advertisements.
- (d.) encourage cooperative efforts with neighboring municipalities, watershed associations and others.

2. Public involvement and participation. All public involvement activities must comply with state public notice requirement.

- (a.) The permittee must provide opportunity for the public to participate in the development, implementation and review of the storm water management program. In Massachusetts, the public notice requirements are at Chapter 39, Section 23B. In New Hampshire, the public notice requirements are at RSA-91A.

3. Illicit discharge detection and elimination. The permittee must develop, implement and enforce a program to detect and eliminate illicit discharges. An illicit discharge is any discharge to a municipal separate storm sewer that is not composed entirely of storm water. Exceptions are discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal sewer system), allowable non-storm water discharges described at Part I.F. and discharges resulting from fire fighting activities.

- (a.) If not already existing, the permittee must develop a storm sewer system map. At a minimum, the map must show the location of all outfalls and the names of all waters that receive discharges from those outfalls. Due to the magnitude of a transportation agency's drainage system, identification of outfalls may be done on a district basis, and as part of construction and redevelopment projects.

Additional elements may be included on the map, such as, location of catch basins, location of manholes, and location of pipes within the system. Initial mapping should be based on all existing information available to the permittee including project plans, agency records, city records and drainage maps. Field surveys may be necessary to verify existing records and locate all outfalls.

- (b.) To the extent allowable under state law, the permittee must effectively prohibit, through a regulatory mechanism, non storm water discharges into the system and implement appropriate enforcement procedures and actions. If a regulatory mechanism does not exist, development and adoption of such a mechanism must be included as part of the storm water management program. The permittee should evaluate existing procedures, policies and authorities pertaining to connections to its separate storm sewer system.

If an illicit discharger fails to comply with procedures or policies established by the agency, the permittee seek assistance from EPA or the state environmental agency in enforcing this provision of the permit.

- (c.) The permittee must develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, into the system.

The illicit discharge plan must contain the following elements:

- i. Procedures to identify priority areas. This includes areas suspected of having illicit discharges, for example: older areas of a city, areas of high public complaints, and areas of high recreational value or high environmental value such as beaches and drinking water sources.
- ii. Procedures for locating illicit discharges (i.e. visual screening of outfalls for dry weather discharges, dye or smoke testing).

iii. Procedures for locating the source of the discharge and procedures for the removal of the source.

iv. Procedures for documenting actions and evaluating the impact on the storm sewer system subsequent to the removal.

(d.) The permittee must inform users of the system and the general public of hazards associated with illegal discharges and improper waste disposal. The permittee must train field inspectors to recognize illicit discharges.

(e.) The non storm water discharges listed in Part I.F. must be addressed if they are identified as being significant contributors of pollutants.

4. Construction site storm water runoff control. The permittee must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The permittee must include disturbances less than one acre if part of a larger common plan.

The permittee does not need to apply its construction program provisions to projects that receive a waiver from EPA under the provisions of 40 CFR§122.26(b)(15)(i).

At a minimum, the program must include:

(a.) To the extent allowable under state law, a regulatory mechanism to require sediment and erosion control at construction sites. If such a mechanism does not exist, development and adoption of a mechanism must be part of the program. If attempts to enforce this part of their program are ineffective, the permittee may seek assistance from EPA or the state agency for enforcement of this provision.

(b.) Sanctions to ensure compliance with the program. To the extent allowable under state law, sanctions may include both monetary or non-monetary penalties. The transportation agency can consider with-holding payment to contractors who fail to implement appropriate sediment and erosion control plans.

(c.) Requirements for construction site operators to implement a sediment and erosion control program which includes best management practices that are appropriate for the conditions at the construction site. The Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas may be used as a tool to implement this provision. The New Hampshire Department of Transportation may use the Storm Water Management Sediment and Erosion Control Handbook as a tool to implement this provision.

(d.) Require control of wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes.

(e.) Procedures for site plan review including procedures which incorporate consideration of potential water quality impacts. The site plan review should include procedures for preconstruction review.

(f.) Procedures for receipt and consideration of information submitted by the public. This may include the opportunities for public comment during the project development process.

(g.) Procedures for inspections and enforcement of control measures at construction sites.

5. Post construction storm water management in new development and redevelopment.

The permittee must develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the MS4.

The program must include projects less than one acre if the project is part of a larger common plan of development.

The post construction program must include:

(a.) To the extent allowable under state law, a regulatory mechanism to address post construction runoff from new development and redevelopment. If such a mechanism does not exist, development and adoption of a mechanism must be part of the program. If attempts to enforce this provision of the program are ineffective, the permittee may seek assistance from EPA of the state agency in enforcing this provision.

(b.) Procedures to ensure adequate long term operation and maintenance of best management practices.

(c.) Procedure to ensure that any controls that are in place will prevent or minimize impacts to water quality.

(d) The Massachusetts Highway Department may use the approved Storm Water Management Handbook as a tool to implement this provision.

6. Pollution prevention and good housekeeping in community/facility operations.

The permittee must

(a.) Develop and implement a program with a goal of preventing and/or reducing pollutant runoff from transportation facility operations. The program must include an employee training component.

(b.) Include, at a minimum, maintenance activities for the following : rest areas along interstates; weigh stations; material storage yards; new construction and land disturbance; roadway drainage system maintenance, and storm water system maintenance.

(c.) Develop schedules for maintenance activities described in paragraph (b) above.

(d) Develop inspection procedures and schedules for long term structural controls.

7. Cooperation between interconnected municipal separate storm sewer systems is encouraged. The permittee should identify interconnections within the system. These interconnections include both those leaving the system and those entering the system. The permittee should attempt to work cooperatively with an interconnected municipality in instances of discharges impacting either system.

8. MS4s which discharge to coastal waters with public swimming beaches should consider these waters a priority in implementation of the storm water management program.

9. The permittee should consider opportunities for ground water recharge and infiltration in the implementation of the minimum measures described above.

The permittee must evaluate physical conditions, site design, and best management practices to promote groundwater recharge and infiltration where feasible in the implementation of the control measures described above. During the implementation of the storm water management program, the permittee must address recharge and infiltration for the minimum control measures as well as any reasons for electing not to implement recharge and infiltration. Loss of annual recharge to ground water should be minimized through the use of infiltration measures to the maximum extent practicable.

Massachusetts Only: Permittees in areas identified as “high” or “medium” in the most recent Massachusetts Water Resources Commission’s *Stressed Basins in Massachusetts* report in effect at the time the permittee submits a Notice of Intent and accompanying storm water management program, must minimize the loss of annual recharge to ground water from new development and redevelopment, including but not limited to drainage improvements done in conjunction with road improvements, street drain

improvement projects and flood mitigation projects, consistent with Standard 3 of the Storm Water Management Policy in areas both within and outside of the jurisdiction of the Massachusetts Wetlands Protection Act.

(See http://www.state.ma.us/dem/programs/intbasin/stressed_basin)

C. Public Drinking Water Supply Requirements

1. MS4s which discharge to public drinking water sources and their protection areas (Class A and B surface waters used for drinking water and well head protection areas) should consider these waters a priority in implementation of the storm water management program.
2. Discharges to public drinking water supply sources and their protection areas (wellhead protection areas, Class A and Class B waters) should provide pretreatment and spill control capabilities to the extent practicable.
3. Discharges to Class A waters, Zone 1 wellhead protection areas, and the sanitary radius to supply wells should be avoided to the extent feasible.

D. Program Evaluation

1. The permittee must annually evaluate the compliance of the storm water management program with the conditions of this permit.
2. The permittee must evaluate the appropriateness of the selected Best Management Practices in efforts towards achieving the defined Measurable Goals. The SWMP may be changed in accordance with the following provisions:
 - (a.) Changes adding (but not subtracting or replacing) components, controls or requirements to the SWMP may be made at any time upon written notification to EPA and MADEP.
 - (b.) Changes replacing an ineffective or unfeasible BMP specifically identified in the SWMP with an alternative BMP may be requested in writing to EPA and MA DEP at any time. Unless denied, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If the request is denied, EPA or MA DEP, as applicable, will send a written explanation of the denial.
 - (c.) Modification requests, must include the following information:
 - i. an analysis of why the BMP is ineffective or infeasible (including cost prohibitive)
 - ii. expectations on the effectiveness of the replacement BMP, and
 - iii. an analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.
 - iv. Change requests or notifications must be in writing and signed in accordance with the signatory requirements of Part VI.
3. EPA or MADEP/NHDES may require changes to the SWMP as needed to:
 - (a.) Address impacts on receiving water quality caused or contributed to by discharges from the MS4;
 - (b.) To include more stringent requirements necessary to comply with a new Federal statutory or regulatory requirement; or
 - (c.) To include such other conditions deemed necessary to comply with the goals and requirements of the CWA.
 - (d.) Any changes requested by EPA or MADEP/NHDES will be in writing and will set forth the time schedule for the permittee to develop the changes and offer the opportunity to propose alternative program changes to meet the objective of the requested modification

E. Record Keeping

1. All records required by this permit must be kept for a period of at least five years. Records include information used in the development of the storm water management program, any monitoring, copies of reports, and all data used in the development of the notice of intent.
2. Records need to be submitted only when specifically requested by the permitting authority.
3. The permittee should make the records relating to this permit available to the public, including the storm water management program. The public may view the records during normal business hours. The permittee may charge a reasonable fee for copying requests.

F. Reporting

1. The permittee must submit an annual report. The initial report is due one year from the effective date of this permit and annually thereafter. The reports should contain information regarding activities of the previous calendar year. Reports should be submitted to EPA. At the following address:

United States Environmental Protection Agency
Water Technical Unit
P.O. Box 8127
Boston, MA 02114

Massachusetts transportation MS4s must also submit reports to:

Department of Environmental Protection
Division of Watershed Management
627 Main Street
Worcester, Massachusetts 01608

New Hampshire transportation MS4s must also submit reports to:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
P.O. Box 95
Concord, NH 03302-0095

2. The following information must be contained in the annual report:
 - (a) A self assessment review of compliance with the permit conditions.
 - (b) An assessment of the appropriateness of the selected BMPs.
 - (c) An assessment of the progress towards achieving the measurable goals.
 - (d) A summary of results of any information that has been collected and analyzed. This includes any type of data.
 - (e) A discussion of activities for the next reporting cycle.
 - (f) A discussion of any changes in identified BMPs or measurable goals.
 - (g) Reference any reliance on another entity for achieving any measurable goal.

G. Massachusetts State Permit Conditions

This permit is issued jointly by the U.S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MA DEP pursuant to M.G.L. Chap. 21, §43 and under regulations found at 314 CMR 3.00. Regulations found at 314 CMR 3.19 (Standard Permit Conditions) are incorporated into this permit by reference.

To the extent allowable by their respective laws and regulations, each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of the state law such permit shall remain in force and effect under federal law as a NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts. Refer to Part IX for 401 Certification Requirements.

PART VI - STANDARD PERMIT CONDITIONS

H. Duty to Comply

1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance or modification or for denial of a permit application.

2. Penalties for Violations of Permit Conditions

The Director will adjust the civil and administrative penalties listed below in accordance with Civil Monetary Penalty Inflation Adjustment Rule (Federal Register: December 31, 1996, Volume 61, Number 252, pages 69359-69366, as corrected, March 20, 1997, Volume 62, Number 54, pages 13514-13517) as mandated by the Debt Collection Improvement Act of 1996 for inflation on a periodic basis. This rule allows EPA's penalties to keep pace with inflation. The Agency is required to review its penalties at least once every four years thereafter and to adjust them as necessary for inflation according to a specialized formula. The civil and administrative penalties listed below were adjusted for inflation starting in 1996

(a) Criminal

- i. Negligent Violations. The CWA provides that any person who negligently violates permit conditions implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation or by imprisonment for not more than 1 year or both.
- ii. Knowing Violations. The CWA provides that any person who knowingly violates permit conditions implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than \$ 5,000 not more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both.
- iii. Knowing Endangerment. The CWA provides that any person who knowingly violates permit conditions implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than \$250,000 or by imprisonment for not more than 15 years, or both.
- iv. False statement. The CWA provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine or not more than \$10,000 or by imprisonment for not more than two years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four years, or by both.

b. Civil penalties- The CWA provides that any person who violates a permit condition implementing sections 301, 302, 306, 307, 318 or 405 of the Act is subject to a civil penalty not to exceed \$ 27,500 per day for each violation.

c. Administrative Penalties

The CWA provides that any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

- i. Class I penalty. Not to exceed \$11,000 per violation nor shall the maximum amount exceed \$ 27,500.
- ii. Class II penalty. Not to exceed \$11,000 per day for each day during which the violation continues nor shall the maximum amount exceed \$137,500.

B. Continuation of the Expired General Permit

If this permit is not reissued prior to the expiration date, it will be administratively continued in accordance with the Administrative Procedures Act and remain in force and in effect as to any particular permittee as long as the permittee submits a new Notice of Intent two (2) months prior to the expiration of this permit. However, once this permit expires, EPA cannot provide written notification of coverage under this general permit to any permittee who submits a Notice of Intent to EPA after the permit's expiration date. Any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of :

- (1) Reissuance of this permit, at which time the permittee must comply with the Notice of Intent conditions of the new permit to maintain authorization to discharge; or
- (2) The permittee's submittal of a Notice of Termination; or
- (3) Issuance of an individual permit for the permittee's discharges; or
- (4) A formal permit decision by the Director not to reissue this general permit, at which time the permittee must seek coverage under an alternative general permit or an individual permit.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The permittee must furnish to the Director or an authorized representative of the Director any information which is requested to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

G. Signatory Requirement

- i. All applications, reports, or information submitted to the Director shall be signed and certified. (See 40 CFR 122.22)
- ii. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation or both.

H. Oil and Hazardous Substance Liability

Nothing in this permit shall be constructed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the CWA or section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to the circumstances, and the remainder of this permit shall not be affected thereby.

K. Requiring an Individual Permit or an Alternative General Permit

- i. The Director may require any person authorized by this permit to apply for and/or obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Director to take action under this paragraph. Where the Director requires the permittee to apply for an individual NPDES permit, the Director will notify the permittee in writing that a permit application is required. This notification shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the permittee to file the application, and a statement that on the effective date of issuance or denial of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. Applications must be submitted to the Regional Office. The Director may grant additional time to submit the application upon request of the applicant. If the permittee fails to submit in a timely manner an individual NPDES permit application as required by the Director under this paragraph, then the applicability of this permit to the permittee is automatically terminated at the end of the day specified by the Director for application submittal.
- ii. Any discharger authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. In such cases, the permittee must submit an individual application in accordance with the requirements of 40 CFR 122.26(c)(1)(ii), with reasons supporting the request, to the Director at the following address: Office of Ecosystem Protection, United States Environmental Protection Agency, One Congress Street- Suite 1100, Boston, Massachusetts 02114. The request may be granted by issuance of any individual permit or an alternative general permit if the reasons cited by the permittee are adequate to support the request.
- iii. When an individual NPDES permit is issued to a discharger otherwise subject to this permit, or the discharger is authorized to discharge under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual NPDES permit is denied to an operator otherwise subject to this permit, or the operator is denied for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the date of such denial, unless otherwise specified by the Director.

L. State/Tribal Environmental Laws

- i. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State/Tribal law or regulation under authority preserved by section 510 of the Act.
- ii. No condition of this permit releases the permittee from any responsibility or requirements under other environmental statutes or regulations.

M. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls

and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

N. Inspection and Entry

The permittee must allow the Director or an authorized representative of EPA or the State/Tribe, upon the presentation of credentials and other documents as may be required by law, to:

- i Enter the permittee premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
- ii Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and
- iii Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

PART VII - DEFINITIONS

Best Management Practices (BMPs) - means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal or drainage from raw material storage.

Commencement of Construction means the initial disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

Control Measure as used in this permit, refers to any BMP or other method, used to prevent or reduce the discharge of pollutants to waters of the United States.

CWA means the Clean Water Act, or the Federal Water Pollution Control Act, 33 U.S.C 1251 *et seq.*

Director means the Regional Administrator of the Environmental Protection Agency or an authorized representative.

Discharge when used without qualification means the "discharge of a pollutant."

Discharge of Storm Water Associated with Construction Activity as used in this permit, refers to a discharge of pollutants in storm water runoff from areas where soil disturbing activities (e.g. clearing, grading, or excavation), construction materials or equipment storage or maintenance (e.g. fill piles, borrow areas, concrete truck washout, fueling) or other industrial storm water directly related to the construction process are located. (See 40 CFR 122.26(b)(14)(x) and 40 CFR 122.26(b)(15) for the two regulatory definition of storm water associated with construction sites).

Discharge of Storm Water Associated with Industrial Activity is defined at 40 CFR 122.26(b)(14).

EPA means the United States Environmental Protection Agency

Facility or Activity means any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program.

General Permit means an NPDES permit issued under §122.28 authorizing a category of discharges under the CWA within a geographical area.

Indian Country, as defined in 18 U.S.C. 1151, means : (a) All lands within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservation; (b) all dependent Indian communities with the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state; and (c) all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. This definition includes all land held in trust for an Indian tribe.

Industrial Activity as used in this permit refers to the eleven categories of industrial activities included in the definition of discharges of storm water associated with industrial activity.

Industrial Storm Water as used in this permit refers to storm water runoff associated with the definition of discharges of storm water associated with industrial activity.

Large municipal separate storm sewer system means all municipal separate storm sewer systems that are either: (i) Located in an incorporated place with a population of 250,000 or more as determined by the 1990 Decennial Census by the Bureau of the Census; or (ii.) Located in counties listed in Appendix H of 40 CFR 122, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties; or (iii.) Owned or operated by a municipality other than those described in paragraph (b)(4)(i) or (ii) of this section and that are designated by the Director as part of the large or medium municipal separate storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from

municipal separate storm sewers described under paragraph (b)(4)(i) or (ii) of this section.(Complete definition found at 40 CFR 122.26(b)(4) and incorporated here by reference).

MADEP means Massachusetts Department of Environmental Protection.

Municipality means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA.

Medium Municipal Separate Storm Sewer System means all municipal separate storm sewers that are either: (i) Located in an incorporated place with a population of 100,000 or more but less than 250,000, as determined by the 1990 Decennial Census by the Bureau of the Census (Appendix G of this part); or (ii.) Located in the counties listed in Appendix I, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties; or (iii.) Owned or operated by a municipality other than those described in paragraph (b)(4)(i) or (ii) of this section and that are designated by the Director as part of the large or medium municipal separate storm sewer system due to the interrelationship between the discharges of the designated storm sewer and the discharges from municipal separate storm sewers described under paragraph (b)(7)(i) or (ii) of this section.(Complete definition found at 40 CFR 122.26(b)(7) and incorporated here by reference).

Municipal Separate Storm Sewer System means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains); (i.) Owned or operated by a State, city, town, borough, county, parish, district, association or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district, or drainage district, or similar entity or an Indian tribe or an authorized tribal organization or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designated or used for collecting or conveying storm water; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318 and 405 of the CWA. The term includes an "approved program."

NHDES means New Hampshire Department of Environmental Services.

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

Pollutant is defined at 40 CFR 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial or municipal waste.

Runoff Coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe meeting the requirements of 40 CFR 123.31.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm Water Associated with Industrial Activity refers to storm water, that if allowed to discharge, would constitute a "discharge of storm water associated with industrial activity" as defined at 40 CFR 122.26(b)(14) and incorporated here by reference.

Waters of the United States means:

1. All waters which are currently used, were used in the past or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. All interstate waters, including interstate wetlands;
3. All other waters such as interstate lakes, rivers, streams, (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds the use, designation or destruction of which would affect or could affect interstate or foreign commerce including any such waters;
 - a. Which are or could be used by interstate or foreign travelers for recreational or other purposes.
 - b. From which fish or shell fish are or could be taken and sold in interstate or foreign or;
 - c. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs (1) through (4) of this definition;
6. The territorial sea; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1 through 6 of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal areas in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by other federal agency for the purposes of the Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

PART VIII - REOPENER

If there is evidence indicating that the storm water discharges authorized by this permit cause, have the reasonable potential to cause, or contribute to a violation of a water quality standard, the permittee may be required to obtain an individual permit or an alternative general permit in accordance with Part VI.K of this permit, or the permit may be modified to include different limitations and/or requirements.

Permit modification or revocation will be conducted according to 40 CFR 122.62, 122.63, 122.64 and 124.5.

PART IX - 401 WATER QUALITY CERTIFICATION REQUIREMENTS

Massachusetts:

The Massachusetts Department of Environmental Protection in accordance with the provisions of MGL Ch. 21, s. 26-53, 314 CMR 4.00, 314 CMR 3.00, 314 CMR 9.00 and Section 401 of the Federal Clean Water Act (Public Law 92-500 as amended) issues this Section 401 Water Quality Certification for the *General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems* in Massachusetts. The Department has determined that compliance with the conditions of this permit will result in compliance with applicable water quality standards, as required by the Massachusetts Surface Water Quality Standards regulations (314 CMR 4.00) and with 314 CMR 9.04 and that the permittee will be in compliance with Sections 301, 302, 303, 306 and 307 of the Federal Clean Water Act. The Department issues this Water Quality Certification subject to the following conditions, which are to be added to the final permit as state water quality certification requirements. The conditions outlined below will be presented in the following order:

- A. state statutes and regulations relating to water quality and surface water discharges;
- B. adherence to the Massachusetts Storm Water Management Policy, March 1997;
- C. other state laws, regulations, and policies
- D. environmental priority resource areas designated for protection;
- E. other Department Directives, and
- F. permit compliance

A. State Water Quality Statutes, Regulations and Policies:

1. The permittee shall comply with the Massachusetts Clean Waters Act (Ch. 21 s. 26-53).
2. The permittee shall comply with the conditions in 314 CMR 4.00- Surface Water Quality Standards.
3. The permittee shall comply with the conditions in 314 CMR 3.00- Surface Water Discharge Permit Program.
4. The permittee shall comply with the Wetlands Protection Act, Ch. 131 s. 40 and its regulations, 310 CMR 10.00 and any Order of Conditions issued by a Conservation Commission or Superseding Order of Conditions issued by the Massachusetts Department of Environmental Protection.

B. Department of Environmental Protection Storm Water Management Policy:

1. The permittee shall comply with the Massachusetts Storm Water Management Policy, March 1997 and applicable Storm Water Performance Standards, as prescribed by state regulations promulgated under the authority of the Massachusetts Clean Waters Act, MGL c. 21, ss 23-56 and the Wetlands Protection Act, MGL c. 131 s. 40.

C. Other State Environmental Laws, Regulations, Policies:

1. The permittee shall comply with the Massachusetts Endangered Species Act (MESA)(MGL c. 131A and regulations at 321 CMR 10.00) and any actions undertaken to comply with this storm water permit, shall not result in non-compliance with the MESA.
2. The permittee shall not conduct activities under this permit that will interfere with implementation of mosquito control work conducted in accordance with Chapter 252 including, s. 5A thereunder and DEP Guideline Number BRP G01-02, West Nile Virus Application of Pesticides to Wetland Resource Areas and Buffer Zones, and Public Water Systems.

D. Resource Areas Required for priority consideration in Storm Water Management Program

1. The permittee shall identify discharges to the following resource areas as a priority and indicate in their storm water management program how storm water controls will be implemented. Identified priority areas include:
 - a. public water supplies

- b. public swimming beaches
- c. Outstanding Resource Waters (as designated in 314 CMR 4.00)
- d. shell fishing areas (open versus closed areas)
- e. rivers, ponds, lakes and coastal waters which are on the Department's 303d list of impaired waters
- f. cold water fishery river segments as identified in 314 CMR 4.00

E. Other Department Directives:

1. The Department may require the permittee to perform water quality monitoring during the permit term if monitoring is necessary for the protection of public health or the environment as designated under the authority at 314 CMR 3.00.
2. The Department may require one or more permittees covered under this general permit to provide measurable verification of the effectiveness of BMPs and other control measures in the permittee's management program, including water quality monitoring.
3. The Department has determined that compliance with this permit does not protect the permittee from enforcement actions deemed necessary by the Department under its associated regulations to address an imminent threat to the public health, or a significant adverse environmental impact which results in a violation of the Massachusetts Clean Waters Act. Ch. 21 ss 26-53.
4. The Department reserves the right to modify this 401 Water Quality Certification if any changes, modifications or deletions are made to the general permit. In addition, the Department reserves the right to add and/or alter the terms and conditions of its Section 401 Water Quality Certification to carry out its responsibilities during the term of this permit with respect to water quality.

F. Permit Compliance:

1. Should any violation of the Massachusetts Surface Water Quality Standards (314 CMR 4.00) or the conditions of this certification occur, the Department will direct the permittee to correct the violation(s). The Department has the right to take any action as authorized by the General Laws of the Commonwealth to address the violation of this permit or the MA Clean Waters Act and the regulations promulgated thereunder. Substantial civil and criminal penalties are authorized under MGL Ch. 21, Section 42 for discharging into Massachusetts's waters in violation of an order or permit issued by this Department. This certification does not relieve the permittee of the duty to comply with other applicable Massachusetts statutes and regulations.

New Hampshire

No additional conditions added.

Addendum A Endangered Species Guidance

A. Background

In order to meet its obligations under the Clean Water Act and the Endangered Species Act (ESA), and to promote the goals of those Acts, the Environmental Protection Agency (EPA) is seeking to ensure the activities regulated by this small MS4 general permit do not adversely affect endangered and threatened species and critical habitat. Small MS4 operators applying for permit coverage must assess the impacts of their storm water discharges, allowable non-storm water discharges, and discharge-related activities on Federally listed endangered and threatened species ("listed species") and designated critical habitat ("critical habitat"), to ensure that those goals are met. Prior to obtaining general permit coverage, applicants must meet the ESA eligibility provisions of this permit. EPA strongly recommends that applicants follow the guidance in this addendum at the earliest possible stage to ensure that measures to protect listed species and critical habitat are incorporated early in the storm water management program development.

Applicants also have an independent ESA obligation to ensure that their activities do not result in any prohibited "takes" of listed species¹. Many of the measures required in this general permit and in these instructions to protect species may also assist in ensuring that the applicants activities do not result in a prohibited take of species in violation of section 9 of the ESA. If the MS4 operator has plans or activities in areas where endangered and threatened species are located, they may wish to ensure that they are protected from potential takings liability under ESA section 9 by obtaining an ESA section 10 permit or by requesting formal consultation under ESA section 7. Applicants that are unsure whether to pursue a section 10 permit or a section 7 consultation for takings protection, should confer with the appropriate U.S. Fish and Wildlife Service (FWS)² office or the National Marine Fisheries Service (NMFS).

The FWS and NMFS have identified two species of concern, the short nosed sturgeon and the dwarf wedge mussel. These species are found in the Merrimack River and the Connecticut River. Specifically, the sturgeon is in the Connecticut River (main stem) down stream of Turners Falls, Massachusetts. It is in the Merrimack River (main stem) below the Lawrence Dam.

The dwarf wedge mussel is located in the following areas:

1. The Connecticut River, North from Nothumberland, NH south to Dalton, NH
2. Historic location in North Thetford, NH
3. Connecticut River, south and Black River: 16 -18 miles along the CT river form North Hartland, NH to Aschutney, VT as well as 1 mile along the Black River, from the river mouth to Springfield, VT
4. Ashuelot River form below Surry Mt. Dam, 6 -7 miles south to Keane, NH
5. South Branch of Ashuelot River, 0.5 miles in East Swanzey, NH
6. Mill River; approximately 5 miles in Whatley, MA and Hatfield, MA as well as 1-2 miles along Mill River Diversion in Northampton, MA
7. Farmington River, Muddy Brook, Philo Brook and Podunk River; Philo Brook and Muddy Brook in Suffield, CT; Farmington River in North Bloomfield, CT and the Podunk River in South Windsor, CT

¹ Section 9 of the ESA prohibits any person from "taking" a listed species (e.g., harassing or harming it) unless: (1) the taking is authorized through a "incidental take statement" as part of completion of formal consultation according to ESA section 7; (2) where an incidental take permit is obtained under ESA section 10 (which requires the development of a habitat conservation plan); or (3) where otherwise authorized or exempted under the ESA. This prohibition applies to all entities including private individuals, businesses, and governments.

² Discharges to marine waters may require consultation with the National Marine Fisheries Service instead.

Any small MS4 which discharges to these rivers must consult with the Services. EPA may designate the applicants as non-Federal representatives for the small MS4 general permit for the purpose of carrying out informal consultation with NMFS and FWS. By terms of this MS4 permit, EPA has automatically designated operators as non-Federal representatives for the purpose of conducting informal consultations. (See 50 CFR §402.08 and §402.13 and Part I.B.2.(e) of the permit) Permit coverage is only available if the applicant contacts the Services to determine that discharges are not likely to adversely affect listed species or critical habitat and informal consultation with the Services has been concluded and results in a written concurrence by the Services that the discharge is not likely to adversely affect an endangered or threatened species.

B. The ESA Eligibility Process

Before submitting a notice of intent (NOI) for coverage by this permit, applicants must determine whether they meet the ESA eligibility criteria by following the steps in Section "D" of this Addendum. Applicants that cannot meet any of the eligibility criteria, must apply for an individual permit.

C. The ESA Eligibility Criteria

The ESA eligibility requirements of this permit, may be satisfied by documenting that one or more of the following criteria has been met. Upon notification, EPA may direct an applicant to pursue eligibility under Criterion B.

- Criterion A: No endangered or threatened species or critical habitat are in proximity to the MS4 or the points where authorized discharges reach the receiving waters.
- Criterion B: In the course of a separate federal action involving the MS4, formal or informal consultation with the Fish and Wildlife Service and/or the National Marine Fisheries Service under Section 7 of the ESA has been concluded and that consultation - Addressed the effects of the MS4 storm water discharges, allowable non-storm water discharges and discharge related activities on listed species and critical habitat; and The consultation resulted in either a no jeopardy opinion or a written concurrence by FWS and/or NMFS on a finding that the storm water discharges, allowable non-storm water discharges, and discharge related activities are not likely to adversely affect listed species or critical habitat.
- Criterion C: The activities are authorized under Section 10 of the ESA and that authorization addresses the effects of the storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat. (Eligibility under this criterion is not likely. This criterion involves an MS4s activities being authorized through the issuance of a permit under section 10 of the ESA and that authorization addresses the effect of the MS4's storm water discharges and discharge related activities on listed species and designated critical habitat. MS4s must follow FWS and/or NMFS procedures when applying for an ESA Section 10 permit (see 50 CFR §17.22(b)(1) for FWS and §222.22 for NMFS). Application instructions for section 10 permits can be obtained by assessing the appropriate websites (www.fws.gov and www.nmfs.noaa.gov) or by contacting the appropriate regional office.)
- Criterion D: Using the best scientific and commercial data available, the effects of the storm water discharges, allowable non-storm water discharges, and discharge related activities on listed species and critical habitat have been evaluated. Based on those evaluations, a determination is made by the permittee and affirmed after review by EPA that the storm water discharges, allowable non-storm water discharges, and discharge related activity will not affect any federally threatened or endangered species or designated critical habitat.
- Criterion E: The storm water discharges, allowable non-storm water discharges, and discharge related

activities where already addressed in another operator's certification of eligibility which includes the MS4 activities.

D. The Steps To Determine if the ESA Eligibility Criteria Can Be Met

To determine eligibility, you must assess (or have previously assessed) the potential effects of your known storm water discharges, allowable non-storm water discharges and discharge-related activities on listed species and critical habitat, PRIOR to completing and submitting a Notice of Intent (NOI). You must follow the steps outlined below and document the results of your eligibility determination.

Step1. Determine if You Can Meet Eligibility Criterion "A"

Criterion A. You can certify eligibility, according to Criterion A, for coverage by this permit if you can answer "No" to all of the following questions:

- Are there any Endangered Species in your county? Are there any Critical Habitats in your county?
- Are there any Endangered Species or Critical Habitat in proximity to your MS4 or discharge locations?

Use the guidance below to answer these questions, and to: "*Check for Listed Endangered Species in Your County*," "*Check for Critical Habitat in Your County*," and "*Check for Proximity to Your MS4 or MS4 Discharge Locations*."

If you answered "No" to the questions above, you have met ESA eligibility Criterion A. Skip to Step 4.

If you answered "Yes" to either of the questions above, Go to Step 2.

Check for Listed Endangered Species in Your County.

Look at the latest county species list to see if any listed species are found in your county. If you are located close to the border of a county or your MS4 is located in one county and your discharge points are located in another, you must look under both counties. Since species are listed and de-listed periodically, you will need the most current list at the time you are conducting your endangered species assessment.

Check for Critical Habitat in Your County.

Some (but not all) listed species have designated critical habitat. Exact locations of such habitat is provided in the endangered species regulations at 50 CFR part 17 and part 226. To determine if MS4 or discharge locations are within designated critical habitat, you should either:

- Review those regulations (50 CFR Parts 17 and 226) that specific critical habitat. These regulations can be found in many larger libraries or via the Government Printing Office website, www.access.gpo.gov ; or
- Contact the nearest Fish and Wildlife Service (FWS) office or National Marine Fisheries Service (NMFS) office. A list of FWS and NMFS offices for the areas of permit coverage is found in sections "F" and "G", respectively, of this Addendum; or
- Contact the Natural Heritage Program for your state. Heritage programs gather, manage, and distribute detailed information about the biological diversity found within their jurisdictions. They frequently have the most current information on listed species and critical habitat. Contact information for the Heritage program is provided in section "H" of this Addendum.

Check for Proximity to Your MS4 or MS4 Discharge Locations.

You must determine whether listed species or critical habitat are in proximity to your MS4 storm water discharges or allowable non-storm water discharges. Listed species and critical habitat are in proximity when they are:

- Located in the path or immediate area through which or over which point source storm water or allowable non-storm water flows to the point of discharge into the receiving water. This may also include areas where storm water from your MS4 enters groundwater that has a direct hydrological connection to a receiving water (e.g., groundwater infiltrates at your MS4 and re-emerges to enter a surface waterbody within a short period of time.)
- Located in the immediate vicinity of, or nearby, the point of discharge into receiving waters.
- Located in the area of an MS4 where storm water BMPs are planned or are to be constructed.

The area in proximity to be searched/surveyed for listed species will vary with the size of the MS4, the nature and quantity of the storm water discharges, and the type of receiving waters. You should use the method(s) which allow you to determine, to the best of your knowledge, whether listed species are in proximity to your particular MS4. These methods may include:

- Conducting visual inspections. This method may be particularly suitable for MS4s that are smaller in size or MS4s located in non-natural settings such as highly urbanized areas where there is little or no natural habitat. For other MS4s, a visual survey may not be sufficient to determine whether listed species are in proximity.
- Contacting the nearest State Wildlife Agency or U.S. FWS offices. Many endangered and threatened species are found in well-defined areas or habitats. That information is frequently known to state or federal wildlife agencies.
- Contacting local/regional conservation groups such as natural heritage programs (see section H below). These groups inventory species and their locations and maintain lists of sightings and habitats.
- Conducting a formal biological survey. MS4s with extensive storm water discharges may choose to conduct biological surveys as the most effective way to assess whether listed species are located in proximity and whether there are likely adverse effects.

Step 2. Determine If You Can Meet Eligibility Criteria “B”, “C”, or “E”

Criterion B. You can certify eligibility, according to Criterion B, for coverage by this permit if you can answer “Yes” to all of the following questions:

- Has consultation, under ESA Section 7, already been completed for discharges from your MS4³?
- Did the previously completed ESA Section 7 consultation consider all currently listed species and critical habitat and address your storm water, allowable non-storm water, and discharge-related activities?

³ A formal or informal ESA Section 7 consultation on this or another federal action (e.g., New source review under NEPA, application for a dredge and fill permit under CWA Sec. 404, application for an individual NPDES permit, etc.) addressed the effects of your MS4 discharges and discharge-related activities on listed species and critical habitat. (See 50 CFR 402.13).

- Did the ESA Section 7 consultation result in either a “no jeopardy” opinion by the Service (for formal consultations) or a concurrence by the Service that your activities would be “unlikely to adversely affect” listed species or critical habitat?

- Do you agree to implement all measures upon which the consultation was conditioned?

If you answered “Yes” to all four questions above, you have met ESA eligibility Criteria B. Skip to Step 4.

If you answered “No” to any of the four questions above, check to see if you can meet Criteria C or E, or Go to Step 3.

Criterion C. You can certify eligibility, according to Criterion C, for coverage by this permit if you can answer “Yes” to all of the following questions:

- Has an ESA Section 10 permit already been issued for discharges from your MS4⁴?
- Does your ESA Section 10 Permit consider all currently listed species and critical habitat, and address your storm water, allowable non-storm water, and discharge related activities, for discharges from your MS4?

If you answered “Yes” to the two questions above, you have met ESA eligibility Criterion

C. Skip to Step 4.

If you answered “No” to either of the two questions above, check to see if you can meet Criterion E, or Go to Step 3.

Criterion E. You can certify eligibility, according to Criterion E, for coverage by this permit if you can answer “Yes” to all of the following questions:

- Did another MS4 operator previously certify ESA eligibility for your MS4 area⁵?
- Did the other operator's certification of eligibility consider all currently listed species and critical habitat and address your storm water, allowable non-storm water, and discharge related activities?
- Do you agree to implement all measures upon which the other operator's certification was based?

Before you rely on another operator's certification, you should carefully review that certification along with any supporting information. You also need to confirm that no additional species have been listed or critical habitat designated in the area of your MS4 since the other operator's endangered species assessment was done. If you do not believe that the other operator's certification provides adequate coverage for your MS4, you should provide your own independent endangered species assessment and certification.

⁴ You have a permit under section 10 of the ESA and that authorization addresses the effects of your storm water discharges and discharge-related activities on listed species and critical habitat. You must follow FWS procedures when applying for an ESA section 10 permit (see 50 CFR 17.22(b)(1)).

⁵ In order to meet the permit eligibility requirements by relying on another operator's certification of eligibility, the other operator's certification must apply to the location of your MS4 and must address the effects from your storm water discharges, allowable non-storm water discharges, and discharge-related activities on listed species and critical habitat.

If you answered "Yes" to all three questions above, you have met ESA eligibility Criteria

E. Skip to Step 4.

If you answered "No" to any of the three questions above, Go to Step 3.

Step 3. Determine If You Can Meet Eligibility Criterion "D"

Criterion D. You can certify eligibility, according to Criterion D, for coverage by this permit if you can answer "Yes" to all of the following questions:

- Have you determined that your MS4's storm water discharges, allowable non-storm water discharges, and discharge-related activities are "not likely to adversely affect" listed species or critical habitat, and/or have you reached agreement with the U.S. FWS or NMFS on measures to avoid, eliminate, or minimize adverse affects?
- Do you agree to implement all measures upon which the determination was conditioned?

Use the guidance below to understand adverse effect determinations, and to answer these questions.

If you answered "Yes" to the both questions above, you have met ESA eligibility Criterion D. Go to Step 4.

If you answered "No" to either of the questions above you are not eligible for coverage by this permit. You must submit an individual application for your discharges to EPA. (See 40 CFR 122.33(b)(2))

If you are unable to certify eligibility under Criterion A, B, C, or E, you must assess whether your storm water discharges, allowable non-storm water discharges, and discharge-related activities are likely to adversely affect listed species or critical habitat. "Storm water discharge-related activities" include: activities which cause, contribute to, or result in point source storm water pollutant discharges; and measures to control storm water discharges and allowable non-storm water discharges including the siting, construction, operation of best management practices (BMPs) to control, reduce or prevent water pollution. Please be aware that no protection from incidental takings liability is provided under this criterion.

The scope of effects to consider will vary with each MS4. If you are having difficulty in determining whether your MS4 is likely to cause adverse effects to a listed species or critical habitat, you should contact the appropriate office of the FWS, NMFS, or Natural Heritage Program for assistance. In order to complete the determination of effects it may be necessary to follow the consultation procedures in section 7 of the ESA. (See Criterion B information above, and section 7 consultation web link in section F below).

Upon completion of your assessment, document the results of your effects determination. If adverse effects are not likely, you are eligible under criterion "D" - proceed to Step 4 of this Addendum. Your determination may be based on measures that you implement to avoid, eliminate, or minimize adverse affects.

If the determination is "May Adversely Affect." You must contact the FWS and/or NMFS to discuss your findings and measures you could implement to avoid, eliminate, or minimize adverse affects. If you and the Service(s) reach agreement on measures to avoid adverse effects, you are eligible under criteria "D". Any terms and/or conditions to protect listed species and critical habitat that you relied on in order to complete an adverse effects determination, must be incorporated into your Storm Water Management Program (required by the permit) and implemented in order to maintain permit eligibility.

If endangered species issues cannot be resolved. If you cannot reach agreement with the Services on measures to avoid, eliminate, or reduce adverse effects, and the likely adverse effects cannot be otherwise addressed through meeting the other criteria, then you are not eligible for coverage under this general permit. You must seek coverage under an individual permit.

Effects from storm water discharges, allowable non-storm water discharges, and discharge-related activities which could pose an adverse effect include:

- *Hydrological.* Storm water discharges may cause siltation, sedimentation or induce other changes in receiving waters such as temperature, salinity or pH. These effects will vary with the amount of storm water discharged and the volume and condition of the receiving water. Where a discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely.
- *Habitat.* Excavation, site development, grading, and other surface disturbance activities, including the installation or placement of storm water ponds or BMPs, may adversely affect listed species or their habitat. Storm water associated with MS4 operation may drain or inundate listed species habitat.
- *Toxicity.* In some cases, pollutants in storm water may have toxic effects on listed species.

Step 4. Submit Notice of Intent and Document Results of the Eligibility Determination.

Once the ESA eligibility requirements have been met, and you have determined NHPA eligibility (see Addendum B), you may submit the Notice of Intent (NOI). Signature and submittal of the NOI constitutes your certification, under penalty of law, of your eligibility for permit coverage.

You must include documentation of ESA eligibility in the storm water management program required for the MS4. Documentation required for the various ESA eligibility criteria are as follows:

Criterion A: A copy of the most current county species list pages for the county(ies) where your MS4 and discharges are located. You must also include a statement on how you determined that no listed species or critical habitat are in proximity to your MS4 or MS4 discharge locations.

Criterion B: A copy of the Service's biological opinion or concurrence on a finding of "unlikely to adversely effect" regarding the ESA Section 7 consultation.

Criterion C: A copy of the Service's letter transmitting the ESA Section 10 authorization.

Criterion D: Documentation on how you determined adverse effects on listed species and critical habitat were unlikely.

Criterion E: A copy of the documents originally used by the other operator of your MS4 (or area including your MS4) to satisfy the documentation requirement of Criteria A, B, C or D.

E. Duty To Implement Terms and Conditions Upon Which Eligibility Was Determined

You must comply with any terms and conditions imposed under the ESA eligibility requirements to ensure that your storm water discharges, allowable non-storm water discharges, and discharge-related activities do not pose adverse effects or jeopardy to listed species and/or critical habitat. You must incorporate such terms and conditions into your MS4's Storm Water Management Program as required by the permit. If the ESA eligibility requirements of Part I.E cannot be met, then you may not receive coverage under this permit, and must apply for an individual permit.

F. U.S. Fish and Wildlife Service Offices

National Websites For Endangered Species Information.

Endangered Species Home page: <http://endangered.fws.gov/>

ESA Section 7 Consultations: <http://endangered.fws.gov/consultations/index.html>

U.S. FWS Region 5
Division Chief, Endangered Species
U.S. Fish and Wildlife Service
ARD Ecological Services
300 Westgate Center Drive
Hadley, MA 01035-9589

Regional, State, Field and Project Offices
Project Leader, USFWS
Rhode Island Field Office
Shoreline Plaza, Rt 1A
P.O. Box 307
Charlestown, RI 02813

Project Leader, USFWS
Maine Field Office
1033 South Main Street
Old Town, ME 04468

Project Leader, USFWS
New England Field Office
22 Bridge Street, Unit #1
Concord, NH 03301-4986

Project Leader, USFWS
Vermont Field Office
11 Lincoln Street
Winston Prouty Federal Building
Essex Junction, VT 05452

G. National Marine Fisheries Services

Website: <http://www.nmfs.gov>

Regional Office
Protected Resource Program
National Marine Fisheries Service
Northeast Region
One Blackburn Drive
Gloucester, MA 01930

Field Offices
Milford Field Office
National Marine Fisheries Service
212 Rogers Avenue
Milford, CT 06460

Protected Species Branch
NMFS
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543

H. Natural Heritage Network

The Natural Heritage Network comprises 75 independent heritage program organizations located in all 50 states, 10 Canadian provinces, and 12 countries and territories located throughout Latin America and the Caribbean. These programs gather, manage, and distribute detailed information about the biological diversity found within their jurisdictions. Developers, businesses, and public agencies use natural heritage information to comply with environmental laws and to improve the environmental sensitivity of economic development projects. Local governments use the information to aid in land use planning.

The Natural Heritage Network is overseen by NatureServe, the Network's parent organization, and is accessible online at: http://www.natureserve.org/nhp/us_programs.htm, which provides website and other access to a large number of specific biodiversity centers.

Connecticut Natural Diversity Database
Natural Resources Center
Department of Environmental Protection

79 Elm Street, Store Level
Hartford, CT 06106

Maine Natural Areas Program
Department of Conservation
93 State House Station
Augusta, ME 04333
<http://www.state.me.us/doc/mnap/home.htm>

Massachusetts Natural Heritage & Endangered Species Program
Division of Fisheries and Wildlife
Route 135
Westborough, MA 01581
508/792-7270

New Hampshire Natural Heritage Inventory
Department of Resources & Economic Development
172 Pembroke Street, P.O. Box 30370
Concord, NH 03302
603/271-3623

Rhode Island Natural Heritage Program
Department of Environmental Management
Division of Planning & Development
83 Park Street
Providence, RI 02903
401/277-2776

Vermont Non-game & Natural Heritage Program
Vermont Fish & Wildlife Department
103 South Main Street, 10 South
Waterbury, VT 05671-0501
802/241-3700

Addendum B **Historic Properties Guidance**

Applicants must determine whether their MS4's storm water discharges, allowable non-storm water discharges, or construction of best management practices (BMPs) to control such discharges, has potential to affect a property that is either listed or eligible for listing on the National Register of Historic Places.

For existing dischargers who do not need to construct BMPs for permit coverage, a simple visual inspection may be sufficient to determine whether historic properties are affected. However, for MS4s which are new storm water dischargers and for existing MS4s which are planning to construct BMPs for permit eligibility, applicants should conduct further inquiry to determine whether historic properties may be affected by the storm water discharge or BMPs to control the discharge. In such instances, applicants should first determine whether there are any historic properties or places listed on the National Register or if any are eligible for listing on the register (e.g., they are "eligible for listing").

EPA suggests that applicants first access the "National Register of Historic Places" information listed on the National Park Service's web page: <http://www.cr.nps.gov/nr>. The addresses for State Historic Preservation Officers are listed in Part II of this addendum. Applicants may also contact city, county or other local historical societies for assistance, especially when determining if a place or property is eligible for listing on the register.

The following three scenarios describe how applicants can meet the permit eligibility criteria for protection

of historic properties under this permit:

(1) If historic properties are not identified in the path of an MS4's storm water and allowable non-storm water discharges or where construction activities are planned to install BMPs to control such discharges (e.g., diversion channels or retention ponds), then the applicant has met the NHPA eligibility criteria of this permit.

(2) If historic properties are identified but it is determined that they will not be affected by the discharges or construction of BMPs to control the discharge, the applicant has met the NHPA eligibility criteria of this permit.

(3) If historic properties are identified in the path of an MS4's storm water and/or allowable non-storm water discharges or where construction activities are planned to install BMPs to control such discharges, and it is determined that there is the potential to adversely affect the property, the applicant can still meet the NHPA eligibility criteria under of this permit, if he/she obtains and complies with a written agreement with the appropriate State or Tribal Historic Preservation Officer which outlines measures the applicant will follow to mitigate or prevent those adverse effects. The contents of such a written agreement must be included in the MS4's Storm Water Management Program.

In situations where an agreement cannot be reached between an applicant and the State Historic Preservation Officer, applicants should contact the Advisory Council on Historic Preservation listed in Part III of this Addendum for assistance.

The term "adverse effects" includes but is not limited to damage, deterioration, alteration or destruction of the historic property or place. EPA encourages applicants to contact the appropriate State or Tribal Historic Preservation Officer as soon as possible in the event of a potential adverse effect to a historic property. Applicants are reminded that they must comply with applicable State, Tribal and local laws concerning the protection of historic properties and places.

A. Internet Information on the National Register of Historic Places

The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.

An electronic listing of the "National Register of Historic Places," as maintained by the National Park Service, can be accessed on the Internet at: <http://www.cr.nps.gov/nr>

B. State Historic Preservation Officers (SHPO)

Connecticut Historical Commission
59 South Prospect Street
Hartford, CT 06106
860/566-3005

Maine Historic Preservation Commission
55 Capital Street, Station 65
Augusta, ME 04333
207/287-2132

Massachusetts Historical Commission
220 Morrissey Boulevard

Boston, MA 02125
617/727-8470
TTD: 1-800-392-6090

New Hampshire Division of Historic Resources
P.O. Box 2043
Concord, NH 03302-2043
603/271-6435
TDD: 1-800-735-2964
Rhode Island Historic Preservation & Heritage Commission
Old State House
150 Benefit Street
Providence, RI 02903
401/222-2678

Vermont Division for Historic Preservation
National Life Building, Drawer 20
Montpelier, VT 05620-0501
802/828-3211

C. Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation (ACHP) is an independent Federal agency that promotes the preservation, enhancement, and productive use of our Nation's historic resources, and advises the President and Congress on national historic preservation policy.

The goal of the National Historic Preservation Act (NHPA), which established ACHP in 1966, is to have Federal agencies act as responsible stewards of our Nation's resources when their actions affect historic properties. ACHP is the only entity with the legal responsibility to encourage Federal agencies to factor historic preservation into Federal project requirements.

As directed by NHPA, ACHP serves as the primary Federal policy advisor to the President and Congress; recommends administrative and legislative improvements for protecting our Nation's heritage; advocates full consideration of historic values in Federal decision making; and reviews Federal programs and policies to promote effectiveness, coordination, and consistency with national preservation policies.

Main Office

Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW, Suite 809
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Phone: (202) 606-8503
Fax: (202) 606-8647/8672
E-mail: achp@achp.gov
Internet: <http://www.achp.gov/>

KEY PROGRAM COMPONENTS

Elements of a good preventive maintenance program should include the following:

- ☐ Identification of equipment or systems that may malfunction and cause spills or leaks, or may otherwise contaminate storm water runoff. Typical equipment to be inspected includes pipes, pumps, storage tanks and bins, pressure vessels, pressure release valves, process and material handling equipment, and storm water management devices.
- ☐ Establishment of schedules and procedures for routine inspections.
- ☐ Periodic testing of plant equipment for structural soundness.
- ☐ Prompt repair or replacement of defective equipment found during inspection and testing.
- ☐ Maintenance of a supply of spare parts for equipment that needs frequent repairs.
- ☐ Use of an organized record-keeping system to schedule tests and document inspections.
- ☐ Commitment to ensure that records are complete and detailed, and that they record test results and follow-up actions. Preventive maintenance inspection records should be kept with other visual inspection records.

IMPLEMENTATION

The key to properly implementing and tracking a preventive maintenance program is through the continual updating of maintenance records. Update records immediately after performing preventive maintenance or repairing an item and review them annually to evaluate the overall effectiveness of the program. Then refine the preventive maintenance procedures as necessary.

No quantitative data on the effectiveness of preventive maintenance as a BMP is available. However, it is intuitively clear that an effective preventive maintenance program will result in improved storm water discharge quality.

COSTS

The major cost of implementing a preventive maintenance program on storm water quality is the staff time required to administer the program. Typically, this is a small incremental increase if a preventive maintenance program already exists at the facility.

REFERENCES

1. U.S. EPA, June, 1981. *NPDES Best Management Practice Guidance Document*.
2. U.S. EPA, Pre-print, July 1992. *Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*. EPA 832-R-92-006.
3. Washington State Department of Ecology, February 1992. *Storm Water Management Manual for Puget Sound*.

ADDITIONAL INFORMATION

Center for Watershed Protection
Tom Schueler
8391 Main Street
Ellicott City, MD 21043

Northern Virginia Planning District Commission
David Bulova
7535 Little River Turnpike, Suite 100
Annandale, VA 22003

Oklahoma Department of Environmental Quality
Don Mooney
Water Quality Division, Storm Water Unit
P.O. Box 1677
Oklahoma City, OK 73101-1677

Feb 07
WALT Bill Insert

Safe Use of Pesticides and Fertilizers

Healthy lawns, trees, and shrubs add to the beauty and value of a home. They also keep our rivers, lakes, and streams clean by allowing rainwater to filter into the soil rather than running into storm drains. Maintaining healthy lawns and landscape plants, however often requires the use of fertilizers and pesticides; and improper use can cause water pollution and destroy beneficial insects. In short, applying unneeded pesticides and nutrients in a generic, multi-step fertilizer program can be expensive for the homeowner and harmful to the environment.

Fertilizers

Many fertilizer materials, including leave and grass clippings, contain nitrogen and phosphorus. When these nutrients are carried into streams and waterways they:

- Promote unsightly algae blooms and aquatic weed growth.
 - Lower dissolved oxygen levels in the water.
 - May release ammonia - which is toxic to fish.
- A. It All Adds Up - Fertilizer carelessly applied on one lawn can be a waste of the homeowner's money, and the wasted dollars may seem insignificant. On hundreds or thousands of lawns, however, careless applications can waste hundreds of dollars and add up to a major problem for our local streams and the Charles River.
- B. Fertilizer Selection – The label on a fertilizer bag has three numbers that show the percentage (by weight) of the three nutrients most essential to healthy lawns. Nitrogen (N) is always listed first; followed by phosphate (P₂O₅), which supplies phosphorus; and potash (K₂O), which supplies potassium. Therefore, a 25 lb. bag of 25-4-5 fertilizer contains 25 percent (6.25 pounds) nitrogen, 4 percent (1 pound) phosphate, and 5 percent (1.24 pounds) potash. The remainder is made of other ingredients, such as sand or ground limestone.

Plants do not distinguish between nutrients supplied by liquid, granular, or organic fertilizers. However, most organic fertilizers release nutrients more slowly and contain relatively low concentrations of plant nutrients as compared to synthetic fertilizers.

Slow-release fertilizers provide lower concentration of nutrients over a longer period of time. Fast-release fertilizers do the opposite. Thus, the right selection of fertilizer type(s), concentrations, and frequency of application is necessary for balancing both plant needs and environmental risks. On heavy (clay) or compacted soils, fast-release fertilizers are better than slow-release fertilizers. The longer a fertilizer granule remains undissolved, the greater the chance of it being washed into waterways. On sandy soils, however, nitrogen can leach through the soil into the groundwater. On these soils, slow release nitrogen is preferred.

- C. Soil Tests – A fertilizer program should begin with a soil test. Soil tests provide specific fertilizer recommendations for your lawn and garden and can help you avoid applying more fertilizer than is needed.
- D. Fertilizer/Pesticide Combinations – Many homeowners and lawn care companies routinely combine fertilizer and pesticides in a series of applications throughout the spring, summer, and fall. These multi-step programs are promoted as the sure and easy path to the perfect lawn. The pressure to

have the perfect lawn, however, has clouded a number of issues and a number of ingredients have been mixed that should have been kept separate.

Most commercial fertilizers contain phosphorus, a major water pollutant. Yet many soils already contain enough phosphorus to grow a healthy lawn. That underscores the need for a soil test before applying fertilizers. Low-phosphorus or phosphorus-free fertilizers can provide necessary nutrients while avoiding the threat to water quality.

- E. Lawn Fertilizers – A lawn fertilizer program should begin in early October, rather than early May. Spring applications can actually harm lawns by promoting more top (leaf) growth than root growth. Shallow root systems are unable to sustain lawns through a drought or harsh winter. Fall fertilizer applications, however, promote deep, healthy root systems and hardy lawns.
- F. Gardens, Trees, and Shrubs – Start with a soil test. The nutrient requirements for garden plans vary. In general, nitrogen promotes leafy green top growth; phosphorus is used for root development; and potassium is necessary for winter hardiness, disease resistance, and general plant durability.

Healthy trees and shrubs in well-drained, fertile soils do not require annual fertilizer applications. If they appear unhealthy, the problem may be caused by insects, disease, or the weather. Fertilizers should be applied when trees and shrubs are growing poorly and the problem cannot be traced to other causes. If plants do not respond to fertilization, the problem may be soil related.

In general, trees, and shrubs should be fertilized when they are dormant, in late or early spring. Fertilizing in early fall stimulates plant growth that might kill the plant in winter, which could provide an entrance for insects and disease. Similarly, fertilizing in late spring stimulates growth that depletes stored food supplies and weakens the plant. (However, if trees and shrubs are stressed by environmental conditions, fertilizer should be applied in June.)

When planting gardens, trees, or shrubs, cover the bare soil with mulch to prevent erosion and sweep (don't wash) soil off paved areas. Phosphorus is often attached to soil particles. When these particles are washed into our waterways, the phosphorus stimulates excess weed and algae growth. You also save water by sweeping rather than spraying.

Pesticides

- A. Weeds are not the cause of an unhealthy lawn, they are the result. The best defense against weeds is a thick, healthy lawn and lawn root system that comes from proper watering, fertilizing, and mowing. Routine herbicide applications are unnecessary and their effects can be misleading.
- B. Insecticides should rarely be part of a lawn care program. Most insects found on a lawn are beneficial. Insecticides can harm these beneficial insects, as well as birds, pets, and people.
- C. Pre-mixed, hand-held sprays for broadleaf weed control products are available at some local garden outlets for homeowners who want to "spot treat" weeds in their lawns. When the weeds die, scatter some fresh grass seed in the bare spot. When buying the pre-mixed spray, talk to the garden center's resource person to ensure you buy an herbicide that will not kill the grass. For example, "Roundup" will kill both the weed and the adjacent grass. "Dicamba" will kill broadleaf plants, but not grass.

FOR FURTHER INFORMATION PLEASE CALL THE SELECTMEN'S OFFICE AT 508-376-7040

Charles Aspinwall

From: <myusna@millis.net>
To: <caspinwall@millis.net>
Sent: Wednesday, February 28, 2007 10:31 AM
Subject: RE: stormwater broadcast

Here are the dates for 2007 so far:

Jan. 19th. 9:15 p.m.
Mar. 4th. 2 p.m.
Mar. 10 5 p.m.
Mar. 11 8 p.m.
Mar. 25th. 8 p.m.

-Madeline

Original Message:

From: Charles Aspinwall caspinwall@millis.net
Date: Tue, 27 Feb 2007 14:19:24 -0500
To: MYusna@millis.net
Subject: stormwater broadcast

Madeline - do you know when we last broadcast the video on stormwater?

mail2web - Check your email from the web at
<http://link.mail2web.com/mail2web>

2/28/2007

Charles Aspinwall

From: "Charles Aspinwall" <caspinwall@millis.net>
To: "Charlie Russo" <charlierusso@gmail.com>; <mmorton@cnc.com>
Cc: "Alyssa Rusiecki" <Health@millis.net>; "Vickie Philben" <vphilben@millis.net>
Sent: Wednesday, February 28, 2007 11:43 AM
Attach: PRESS RELEASE Feb 07.doc
Subject: press release

Attached is a press release regarding the household hazardous waste program in Millis. It would be great if you could run an information spot on this.

2/28/2007

PRESS RELEASE

TOWN OF MILLIS DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT EDUCATION PLAN

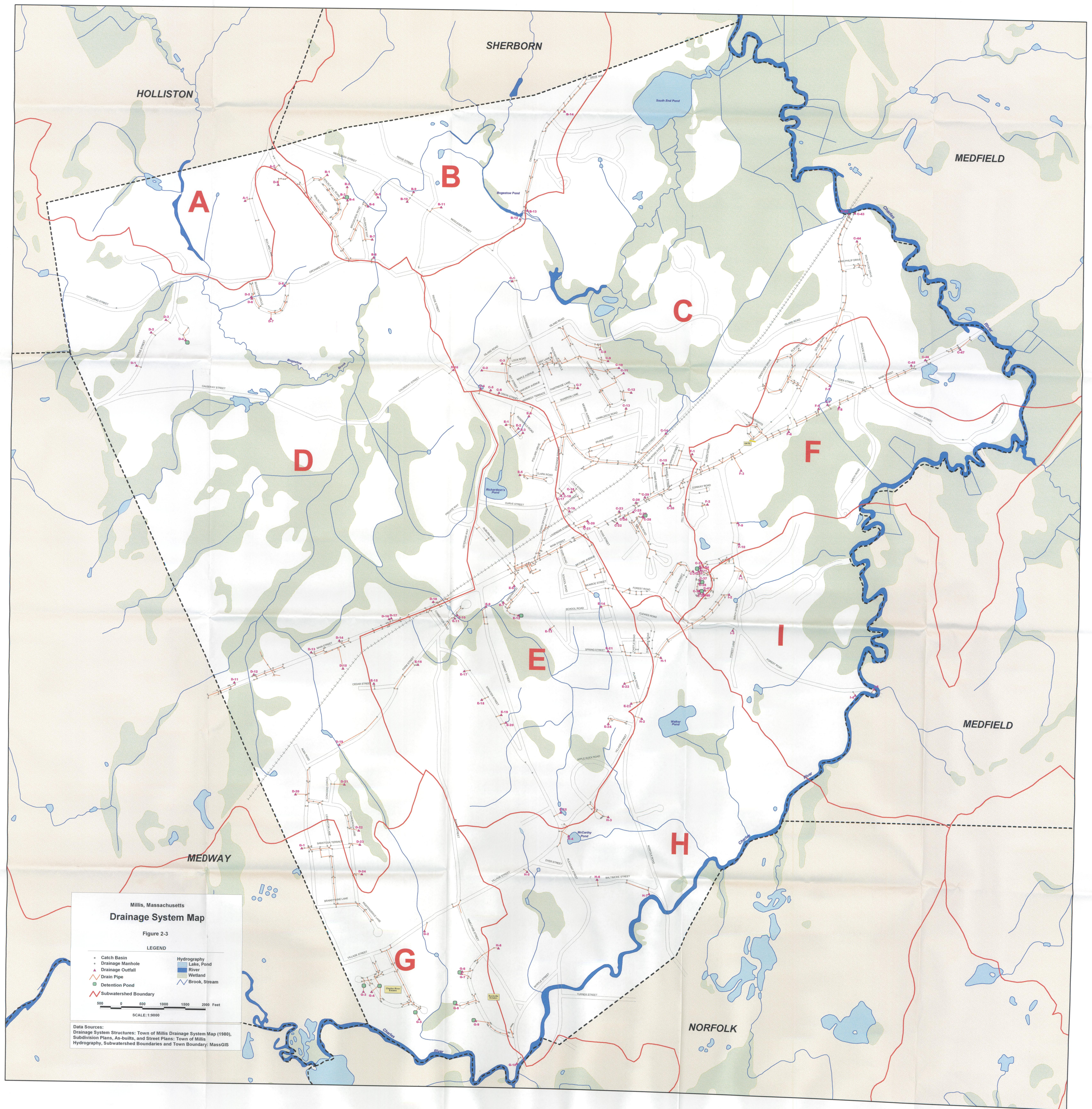
The Millis DPW would like to remind Millis residents that the Town participates in the Charles River Household Hazardous Waste Collaborative. Because we are part of this collaborative, Millis residents may dispose of household hazardous waste at the Town of Norfolk Transfer Station on 33 Medway Branch in Norfolk, for a fee, on Wednesdays from 11:30 AM to 6:00 PM, beginning this season on April 1, 2007 through September 30, 2007.

The proper disposal of hazardous waste is critical in preserving groundwater and surface water quality. Cleaning products like aerosols, bathroom cleaners and drain cleaners, and car supplies like waxes, starting fluids and repair products are all considered household hazardous wastes. Many ingredients in these products are corrosive or reactive, and if they aren't disposed of properly, they can harm people and the environment. Chemicals in them can actually contaminate our rivers, lakes and drinking water.

For more information please see Millis's web site, www.Millis.net, under Government, Public Works, News & Announcements. You may also call the Board of Health at 508-376-7043.

2/28/2007

For information on this press release please call Charles J. Aspinwall, Millis Town Administrator @ 508-376-7040.



Millis, Massachusetts
Drainage System Map

Figure 2-3

LEGEND

- | | |
|-------------------------|---------------|
| • Catch Basin | Hydrography |
| • Drainage Manhole | Lake, Pond |
| ▲ Drainage Outfall | River |
| — Drain Pipe | Wetland |
| ○ Detention Pond | Brook, Stream |
| — Subwatershed Boundary | |

500 0 500 1000 1500 2000 Feet
SCALE: 1:9000

Data Sources:
Drainage System Structures: Town of Millis Drainage System Map (1980),
Subdivision Plans, As-Builts, and Street Plans: Town of Millis
Hydrography, Subwatershed Boundaries and Town Boundary: MassGIS



HOLLISTON

MEDWAY

Millis, Massachusetts

Drainage System Map

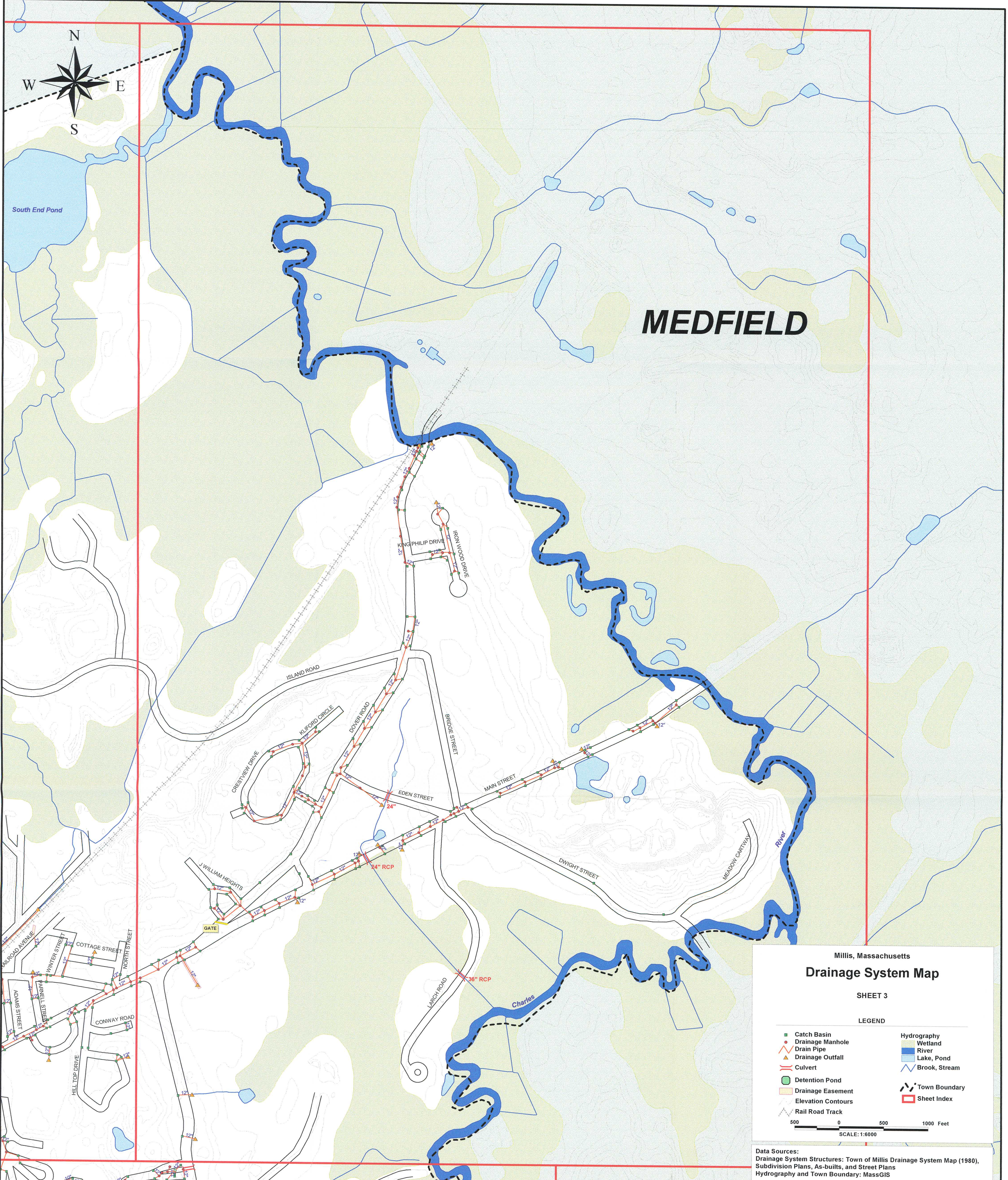
SHEET 1

LEGEND

- | | |
|--------------------|---------------|
| Catch Basin | Hydrography |
| Drainage Manhole | Wetland |
| Drain Pipe | River |
| Drainage Outfall | Lake, Pond |
| Culvert | Brook, Stream |
| Detention Pond | Town Boundary |
| Drainage Easement | Sheet Index |
| Elevation Contours | |
| Rail Road Track | |

500 0 500 1000 Feet
SCALE: 1:6000

Data Sources:
Drainage System Structures: Town of Millis Drainage System Map (1980),
Subdivision Plans, As-builts, and Street Plans
Hydrography and Town Boundary: MassGIS



MEDFIELD

Millis, Massachusetts Drainage System Map

SHEET 3

LEGEND

- | | |
|--|---|
| <ul style="list-style-type: none">Catch BasinDrainage ManholeDrain PipeDrainage OutfallCulvertDetention PondDrainage EasementElevation ContoursRail Road Track | <ul style="list-style-type: none">Hydrography<ul style="list-style-type: none">WetlandRiverLake, PondBrook, StreamTown BoundarySheet Index |
|--|---|

500 0 500 1000 Feet
SCALE: 1:6000

Data Sources:
Drainage System Structures: Town of Millis Drainage System Map (1980),
Subdivision Plans, As-builts, and Street Plans
Hydrography and Town Boundary: MassGIS



MEDWAY

Drainage System Map

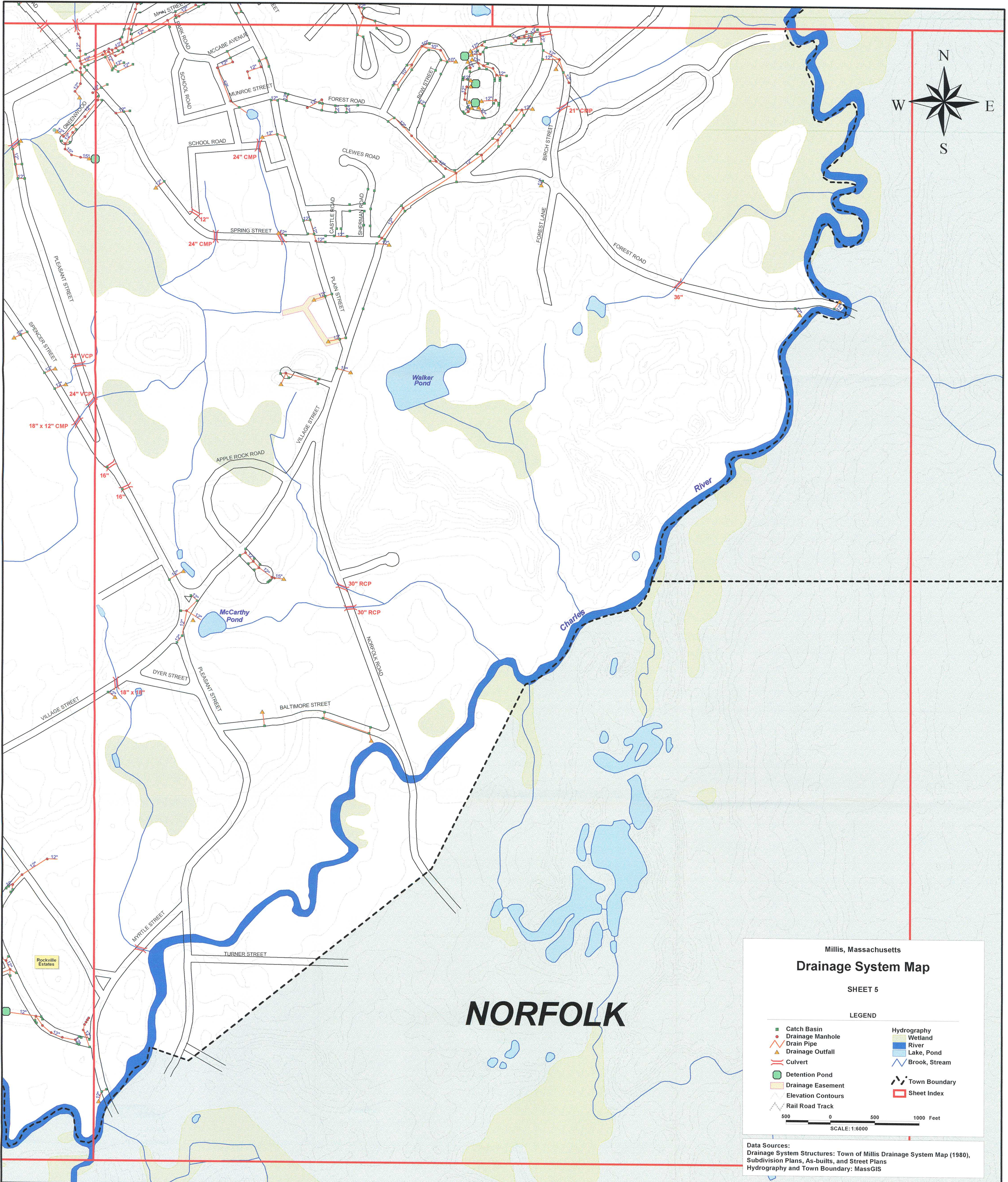
SHEET 4

LEGEND

- | | |
|--------------------|---------------|
| Catch Basin | Hydrography |
| Drainage Manhole | Wetland |
| Drain Pipe | River |
| Drainage Outfall | Lake, Pond |
| Culvert | Brook, Stream |
| Detention Pond | Town Boundary |
| Drainage Easement | Sheet Index |
| Elevation Contours | |
| Rail Road Track | |

500 0 500 1000 Feet
SCALE: 1:6000

Data Sources:
Drainage System Structures: Town of Millis Drainage System Map (1980),
Subdivision Plans, As-builts, and Street Plans
Hydrography and Town Boundary: MassGIS



Millis, Massachusetts

Drainage System Map

SHEET 5

LEGEND

Catch Basin	Hydrography
Drainage Manhole	Wetland
Drain Pipe	River
Drainage Outfall	Lake, Pond
Culvert	Brook, Stream
Detention Pond	Town Boundary
Drainage Easement	Sheet Index
Elevation Contours	
Rail Road Track	

500 0 500 1000 Feet

SCALE: 1:6000

Data Sources:
Drainage System Structures: Town of Millis Drainage System Map (1980),
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