TOWN OF GRAFTON
GRAFTON MEMORIAL MUNICIPAL CENTER
30 PROVIDENCE ROAD
GRAFTON, MASSACHUSETTS 01519
(508) 839-5335 ext 124 • FAX: (508) 839-4602
www.grafton-ma.gov

DEPARTMENT OF PUBLIC WORKS

April 27, 2012

Glenda Veldez - CIP
United States Environmental Protection Agency
5 Post Office Square – OEP06-01
Boston, MA 02109-3912

Re: NPDES Phase II Small MS4 General Permit Annual Report

Dear Madam:

The Town of Grafton, Massachusetts is pleased to submit the NPDES Phase II Small MS4 General Permit Annual Report, with a copy also submitted to the Massachusetts Department of Environmental Protection (DEP). This submittal is in accordance with the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) Stormwater Phase II Regulations and the Massachusetts DEP requirements.

The enclosed report is signed and certified in accordance with 40 CFR 122.22 and documents the status of the Town of Grafton Stormwater Management Program (SWMP) with information including: The text portion of the original 2003 NPDES Phase II Small MS4 Five-Year Municipal Stormwater Management Plan (without Appendices) and the annual report form that includes the following:

- a self-assessment review of compliance with the permit conditions;
- an assessment of the appropriateness of the selected BMPs;
- an assessment of the progress towards achieving the measurable goals;
- a summary of results of any information that has been collected and analyzed;
- documentation of activities for the next reporting cycle;
- documentation of any changes in identified BMPs or measurable goals; and
- reference to any reliance on another entity for achieving any measurable goal.

If you have any questions or comments, please contact me at 508-839-5335 x 124. Thank you.

Very truly yours,

Brian Szczurko
Assistant Engineer, Department of Public Works

cc: MA Department of Environmental Protection - Office of Watershed Management
John Bechard, VHB
Bethany Eisenberg, VHB

Municipality/Organization: Town of Grafton, Massachusetts

EPA NPDES Permit Number: MARO041119

MassDEP Transmittal Number: (Form BRP WM 08A, 2003, W-035459)

Annual Report Number & Reporting Period: **Year 9** **May 1, 2011 – April 30, 2012**

NPDES PII Small MS4 General Permit Annual Report (Due: May 1, 2012)

Part I. General Information: ***Transmittal Number W 035459***

Contact Person: Brian Szczurko Title: Assistant Engineer

Telephone #: 508.839.5335 x 124 Email: szczurkob@grafton-ma.gov

Mailing Address: 30 Providence Road, Grafton, MA 01519

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, 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.

Signature: 

Printed Name: Timothy P. McInerney

Title: Town Administrator

Date: 4/27/2012

Part II. Self-Assessment

The Town of Grafton has made significant progress towards meeting the requirements of the MS4 permit. In 2009, the Town of Grafton adopted a stormwater bylaw and an illicit discharge bylaw. The Town Conservation Commission (Con Com) and the Department of Public Works (DPW), respectively, have successfully integrated the bylaws and implementation into their operations.

Since 2003, the Town of Grafton has performed several significant activities to reduce pollution from municipal sources including: connecting the DPW garage to the Town sewer, moving vehicle washing activities indoors, reducing pesticide applications and controlling fertilizer applications. The roof of the salt/sand storage shed was repaired; currently, the materials are stored under cover. In 2012 the underground fuel storage tank will be removed and replaced with an above ground storage tank that will meet the requirements of the Spill Prevention and Control Countermeasure regulations.

The Town has continued the street-sweeping program. During the spring, the Town sweeps the entire town concentrating on industrial/commercial areas first and then moving out to the remaining roadways. The Town performs catch basin cleaning as needed, with a focus on infrastructure adjacent to Flint Pond.

The Town continues to support public education and outreach activities described herein. The DPW reached out to the Sudbury Assabet Concord (SuAsCo) Community Council's Water Quality/Water Quantity Sub-committee to provide some services. This year the Town purchased a suite of educational materials for distribution and display for residents, businesses, and students. The DPW has reached out to the school district to begin the process of reinstating the integration of stormwater related curriculum into the elementary and high schools following the retirement of the supporting faculty member. The DPW has compiled educational reference materials and expanded the content of the Town Website.

Watershed groups continue to be active in organizing public events including town-wide clean-up days. On Earth Day weekend, April 21-22, 2012, the Grafton Land Trust and Garden Club sponsored community clean-up events. The DPW supported clean-up activities by providing trash bags and removal services. On Arbor Day, the Highway Department sponsored a tree-planting program involving children's groups. The Town is reviewing a proposal to purchase land on Creeper Hill Road, adjacent to TMDL- impaired Flint Pond, as part of a conservation program.

However, the Town still has some work to do to meet some significant obligations of the original MS4 permit. The Town has not yet completed mapping the outfalls in urbanized areas; the Town estimates that outfall mapping is approximately 80% complete. Because the outfall mapping is not yet complete, other tasks have not been completed including (1) counting the number of direct discharges to waterbodies listed in the original MS4 permit application and consulting with (2) the U.S. Fish and Wildlife and (3) the National Register of Historic Places to determine if outfalls impact special resource areas. In this annual report, the Town proposes a schedule to complete these activities prior to the end of November 2012.

The Town has not implemented a systematic program to inspect outfalls and identify illicit discharges. The Town will pursue resources to support conducting the required activities. Despite the lack of a systematic supported program to inspect outfalls in general, outfalls to the impaired TMDL waterbody, Flint Pond, were identified, inspected, and cleaned in March 2012. No illicit discharges were detected.

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities
1A	Stormwater Flyer Residents	DPW & SuAsCo	Year 1: distribute flyer to 75% of Town residents.	Purchased 2012 SuAsCo educational materials. Older flyers continued to be available on a self-service basis at the Town offices. Links to the materials are also available on the Town website.	Include the 2012 SuAsCo flyer in the August real-estate tax bill mailing. Add a link to the SuAsCo flyer to the Town website by June 30. (Attachment)
Revised			Ongoing program. one mailing per year Provide links to materials on the Town website.		
1B	Lesson Plan for 5th Grade	DPW & SuAsCo	Year 2: Develop, distribute, and teach lessons at one or more 5th grade classrooms in the community.	Initiated contact with the school district superintendent to re-instate this program following the retirement of the sponsoring faculty member. A copy of the lesson plan is available at the DPW office.	Re-instate this program during the 2012-2013 school year.
Revised					
1C	Stormwater Flyer Businesses	DPW & SuAsCo	Year 3: Distribute flyer to 50% of Town businesses.	Purchased 2012 SuAsCo educational materials. Older flyers continued to be available on a self-service basis at the Town offices. Links to the materials are also available on the Town website.	Include the 2012 SuAsCo flyer in the August real-estate tax bill mailing. Add a link to the SuAsCo flyer to the Town website by June 30.
Revised			Ongoing program, one mailing per year. Provide links to materials on the Town website.		
1D	Stormwater Media Campaign	DPW & SuAsCo	Year 4 requirement Met goal.	Met one-time goal.	Publish one informational article in the local newspaper when the new permit is issued by the EPA.
Revised					
1E	Stormwater Video	DPW & SuAsCo	Year 5 requirement Met goal.	Met one-time goal. The educational PowerPoint presentation remains on file in the DPW office.	
Revised	*09/05 – Powerpoint Presentation*	DPW & SuAsCo			

1F	Grafton-Specific Stormwater Flyers	DPW	Year 1, 3: Distribute Grafton-specific brochure along with SuAsCo brochures.	Purchased 2012 SuAsCo educational materials specific to Grafton's needs. Older flyers continued to be available on a self-service basis at the Town offices. Links to the materials are also available on the Town website.	Add a link to the SuAsCo flyer to the Town website by June 30.
Revised			Ongoing program, one mailing per year. Provide links to materials on the Town website.		
1G	Coordinate with Businesses and Landscapers	DPW	Coordinate education and the use and sale of slow-release fertilizers.	The Town offices contain self-service educational materials for businesses and landscapers who enter the town offices pursuing support or permits. Links to educational materials developed by others are also available on the Town website.	Continue to provide self-service materials at the Town offices.
Revised					
1H	Stormwater Flyer for Agriculture	DPW	Year 3: Distribute flyers to agricultural owners/properties	Links to the educational materials are available on the Town website. (Attachment)	Coordinate with the Agricultural Commission to add stormwater education to their agenda.
Revised			Provide links to educational materials on the Town website.		
1I	Newspaper Articles	DPW	At least 1 article per year.	No activity this year.	Publish an educational article on pet waste in the local newspaper by June 1. (Attachment)
Revised					
1J	Stormwater Info on Town Website	DPW	Ongoing Program to distribute educational materials via the web.	The stormwater and illicit discharge bylaws and other assorted educational materials are available on the Town website.	Continue to update and expand the site with current educational materials as they become available. http://www.grafton-ma.gov/Public_Documents/GraftonMA_dpw/index_DPW
Revised					

1K	Trees and their use in stormwater management	DPW/Tree Warden	Ongoing Program	Grafton continues to participate in the Tree City program. The program includes purchasing trees and recruiting schoolchildren to plant them as part of Arbor Day activities. (April 27, 2012).	Continue to seek funding to expand this program.
Revised					

1a. Additions

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities
2A	Stormwater Traveling Display	DPW & SuAsCo	Year 1-5: Stormwater display circulates around the community for a minimum of 3 months; Stormwater display is posted at a minimum of 3 different public locations in the community; Stormwater display is also used in future permit years for posting in public places or at stormwater events	Continued to display the older poster and flyers at the kiosk at the Town Offices. Purchased 2012 materials from SuAsCo.	Continue to display the older educational materials at the Town Offices. Display the 2012 materials at the Town Offices. Present the new materials to the public at the Annual and any Special Town Meetings.
Revised					
2B	Poster Contest for 5th Graders	DPW & SuAsCo	Year 2: Poster contest held and entries received, judged, and displayed.	Initiated contact with the school district to re-instate this program following the retirement of the sponsoring faculty member.	Re-instate the program during the 2012/2013 school year.
Revised					
2C	Photo Contest for High Schoolers	DPW & SuAsCo	Year 3: Photo contest is held and entries are received, judged, and displayed.	Initiated contact with the school district to re-instate this program.	Re-instate the program during the 2012/2013 school year .
Revised					

2D	Stormwater Summit Event	DPW & SuAsCo	Year 4 requirement. Met.	One-time event in 2006.	None.
Revised					
2E	Stormwater Super Summit Event	DPW & SuAsCo	Year 5 requirement. Met.	One-time event in 2007.	None.
Revised					
2F	Annual Stormwater Public Meeting	DPW	Hold public hearing by February every year.	Not held in February 2012 because there were no significant changes in the plan or program.	Present the requirements of the new permit at the Selectmen's meeting once the EPA has finalized the terms.
Revised					
2G	Watershed Group Involvement	DPW & Local Groups	Continue ongoing activities of local watershed groups such as cleanup and monitoring.	Grafton Land Trust held a cleanup event on April 21, 2012 (Earth Day). DPW provided trash bags and pickup services.	Continue the program to support activities with various watershed groups.
Revised					
2H	Involve Local Children's Groups	DPW	Children's groups help distribute or display educational information once per year.	See public outreach item 1K, 2G including Arbor Day activities and Earth Day activities.	Continue the program for coordinated activities with children's groups.
Revised					
2I	Purchase Land for Conservation	DPW, various Town Agencies	Ongoing Program	Town pursues purchasing Chapter 61A land as availability and funding dictate. No purchases this year.	Continue with the program. Review proposal to buy 104 Creeper Hill Road on Flint Pond. http://www.thedailygrafton.com/news/grafton-may-buy-flint-pond-property
Revised					

2a. Additions

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities
3A	Illicit Discharge Bylaw	DPW	Develop/Implement Bylaw. Met Goal.	Article 37 adopted May 2009.	Continue to implement bylaw. (Attachment)
Revised					
3B	Storm Sewer Map	DPW	Map 100% of Outfalls in Urbanized Areas by Permit Year 5	Requested and received a proposed scope of work and cost estimate to complete this task. Funding is available to locate the outfalls and to plot the points in GIS format.	Complete the outfall mapping by September 30, 2012. Calculate number of outfalls discharging to waterbodies listed in the original permit application by October 31, 2012. Initiate consultation with U.S. Fish and Wildlife to determine if the outfalls impact endangered species by November 30, 2012. Initiate consultation with the National Register of Historic Places to determine if the outfalls impact archaeological resources or Historic Properties of National Significance November 30, 2012.
Revised					
3C	Detection & Elimination Plan	DPW	Year 1: Determine priority areas and discuss plan. Year 1-5: Visually screen 20% of outfalls. Year 4-5: Trace sources of illicit discharges (50% each year). Year 4-5: Remove all sources of illicit discharges (50% each year)	There has been no systematic activity to screen outfalls for illicit discharges. However, during normal operations, suspect observations are recorded and kept by the DPW. To date, no illicit discharges have been identified.	Pursue resources to support conducting the required activities. Continue to inspect outfalls during the course of normal operations and document and investigate suspect observations.
Revised					

3D	Education for Public & Businesses	DPW	Year 1, 3: Include illicit discharge education in the community business and Grafton-specific flyers.	Older flyers continued to be available on a self-service basis at the Town offices. Links to IDDE fact-sheet materials are available on the Town website. (Attachment)	Add a link to the 2012 SuAsCo flyer to the Town website by June 30.
Revised			Provide links to materials on Town website.		
3E	Education for Municipal Employees	DPW	Year 2-5: Include illicit discharge education.	All current DPW employees are trained to identify illicit discharges.	Train new staff as necessary.
Revised					
Revised					

3a. Additions

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities
4A	Construction Site Runoff Bylaw	DPW, Planning, & Con Com	Develop & Implement Bylaw. Goal Met.	Article 36, adopted May 2009.	Continue to implement bylaw.
Revised					
4B	Erosion, Sediment, & Waste Controls	DPW, Planning, & Con Com	Develop & Implement Bylaw	Article 36, adopted May 2009. Refers to MassDEP Stormwater Management Standards and Guidance Documents.	Continue to implement bylaw.
Revised					
4C	Site Plan Review Procedures	DPW, Planning, & Con Com	Develop & Implement Bylaw	Article 36, adopted May 2009. Refers to MassDEP Stormwater Management Standards and Guidance Documents.	Continue to implement bylaw. The Planning Board will finalize the draft checklist.
Revised					
4D	Site Inspection & Enforcement	DPW, Planning, & Con Com	Develop & Implement Bylaw	Greater than 50 sites inspected in 2011. Greater than 5 sites cited with enforcement actions.	Continue to implement bylaw.
Revised					
4E	Stormwater Hotline	DPW, Planning, & Con Com	Receipt of complaints at DPW	Residents call town emergency services, the Highway Department, and the DPW. Reports are referred to the DPW. Hundreds of calls are received and responded to annually.	Continue the program.
Revised					
Revised					

4a. Additions

5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities
5A	Post-Construction Site Runoff Bylaw	DPW, Planning, & Con Com	Develop & Implement Bylaw	Article 36, adopted May 2009.	Continue to implement bylaw.
Revised					
5B	Structural & Non-Structural BMPs	DPW, Planning, & Con Com	Develop & Implement Bylaw	Article 36, adopted May 2009. Refers to MassDEP Stormwater Management Standards and Guidance Documents for BMP list.	Continue to implement stormwater BMP requirements for projects in the Town.
Revised					
5C	Long-Term O&M	DPW, Planning, & Con Com	Develop & Implement Bylaw	Article 36, adopted May 2009. Refers to MassDEP Stormwater Management Standards and Guidance Documents.	Continue to implement bylaw.
Revised					
5D	Structural BMP Implementation Procedures	DPW, Planning, & Con Com	Develop & Implement Bylaw	Article 36, adopted May 2009. Refers to MassDEP Stormwater Management Standards and Guidance Documents.	Continue to implement bylaw.
Revised					
Revised					
Revised					

5a. Additions

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6A	Municipal Employee Training	DPW	Develop a comprehensive Municipal Operations and Maintenance Plan to include training protocols.	All DPW staff is currently trained in stormwater management.	Train new staff as needed.
Revised					
6B	Maintenance & Inspection Procedures	DPW	Develop a comprehensive Municipal Operations and Maintenance Plan to include activities, schedules and procedures.	Annual programs are in place to clean catch basins and sweep streets. The streets are swept in the spring and fall. Catch basins are cleaned at least once per year starting in the spring. Known problem areas are addressed more often. Records for these activities are kept with the Highway Superintendent.	Continue with the program.
Revised					
blank					

6C	Municipal Pollutant Source Reduction	DPW	Develop a comprehensive Municipal Operations and Maintenance Plan to include BMPs to reduce municipal pollution sources	In 2003, Grafton hired a consultant to assess the Municipal Operations in the Town with respect to Stormwater. The assessment recommended: - Connecting the DPW garage to the sewer. This task was accomplished in 2010. - Performing vehicle washing indoors. As of 2010, this is routine procedure. - BMPs for the sand/salt piles. The storage shed was rehabilitated; the materials are now completely covered. - Assess pesticide and fertilizer operations. As of 2012, pesticide applications were limited to treatment of catch basin sump water. Fertilizer applications (where necessary) are limited to 10/10/10 organic applied at a rate of 3 pounds per 1000 SF.	- Implementing BMPs at the fueling area at the DPW Yard. During the summer of 2012, the underground fuel storage tank will be removed and replaced with an aboveground tank that meets the requirements of the SPCC program. - Encouraging "Do not Dump" catch basin castings and drain covers. The Town has materials to and will continue to mark catch basins with a "Do Not Dump" message
Revised					
6D	Waste Disposal Procedures	DPW	Develop a comprehensive Municipal Operations and Maintenance Plan to include BMPs to reduce municipal pollution sources	Materials are collected and properly disposed of by a licensed 3rd party.	Continue with the program.
Revised					
Revised					
Revised					

6a. Additions

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) *<<if applicable>>*

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities
7A	Residential and Commercial Education	DPW	Provide links to materials on the Town website.	Met goal, refer to items 1A, 1C.	Expand educational materials on Town website as they become available.
Revised					
7B	Outfall Inspection and Testing	DPW		Outfalls inspected in accordance with the municipal schedule and cleaned as-needed. No testing conducted. The one municipal outfall identified at Flint Pond was inspected and contributing structures were cleaned out in March 2012.	Continue to monitor the outfall to Flint Pond and the contributing infrastructure.
Revised					
7C	Illicit Discharge Elimination	DPW		No illicit discharges identified.	Continue to monitor the outfall to Flint Pond outfall and the contributing infrastructure.
Revised					
7D	Municipal Operations Prioritized	DPW		Street sweeping and catch basin cleaning activities conducted according to municipal schedule. The schedule is kept at the Highway Superintendent's Office.	Continue ongoing maintenance activities.
Revised					
Revised					
Revised					

7a. Additions

7b. WLA Assessment

The TMDL for Flint Pond indicates that the pond is impaired for turbidity as a result of excess phosphorus loading. The TMDL indicates that stormwater contributions of phosphorus must be reduced by 52 % to meet the waste load allocation (WLA) of the TMDL.

Regular street sweeping and catch basin cleaning provide a reduction in phosphorus loading. In 2012, the Town will evaluate the total phosphorus reduction from existing BMPs and discuss potential improvements to meet the WLA allocation.

Part IV. Summary of Information Collected and Analyzed

No information collected and/or analyzed.

Part V. Program Outputs & Accomplishments (OPTIONAL)
(Since beginning of permit coverage unless specified otherwise by a **, which indicates response is for period covering May 1, 2011 through April 30, 2012)

Programmatic

	(Preferred Units)	Response
Stormwater management position created/staffed	(y/n)	No
Annual program budget/expenditures **	($)	$10,000+/-
Total program expenditures since beginning of permit coverage	($)	$155,000+/-
Funding mechanism(s) (General Fund, Enterprise, Utility, etc)		General Fund

Education, Involvement, and Training

Estimated number of property owners reached by education program(s)	(# or %)	50%
Stormwater management committee established	(y/n)	No
Stream teams established or supported	(# or y/n)	No
Shoreline clean-up participation or quantity of shoreline miles cleaned **	(y/n or mi.)	Yes
Shoreline cleaned since beginning of permit coverage	(mi.)	1.0
Household Hazardous Waste Collection Days		
▪ days sponsored **	(#)	1
▪ community participation **	(# or %)	10%
▪ material collected **	(tons or gal)	10 Tons (est.)
School curricula implemented	(y/n)	Re-instatement in progress

Legal/Regulatory

	In Place Prior to Phase II	Reviewing Existing Authorities	Drafted	Draft in Review	Adopted
Regulatory Mechanism Status (indicate with "**X**")					
▪ Illicit Discharge Detection & Elimination					X
▪ Erosion & Sediment Control					X
▪ Post-Development Stormwater Management					X
Accompanying Regulation Status (indicate with "**X**")					
▪ Illicit Discharge Detection & Elimination					X
▪ Erosion & Sediment Control					X
▪ Post-Development Stormwater Management					X

Mapping and Illicit Discharges

	(Preferred Units)	Response
Outfall mapping complete	(%)	70%
Estimated or actual number of outfalls	(#)	500
System-Wide mapping complete (complete storm sewer infrastructure)	(%)	80%
Mapping method(s)		
▪ Paper/Mylar	(%)	0%
▪ CADD	(%)	15%
▪ GIS	(%)	85%
Outfalls inspected/screened **	(# or %)	0
Outfalls inspected/screened (Since beginning of permit coverage)	(# or %)	0
Illicit discharges identified **	(#)	0
Illicit discharges identified (Since beginning of permit coverage)	(#)	0
Illicit connections removed **	(#); and (est. gpd)	0
Illicit connections removed (Since beginning of permit coverage)	(#); and (est. gpd)	0
% of population on sewer	(%)	60%
% of population on septic systems	(%)	40%

Construction

	(Preferred Units)	Response
Number of construction starts (>1-acre) **	(#)	~ 50
Estimated percentage of construction starts adequately regulated for erosion and sediment control **	(%)	95%
Site inspections completed **	(# or %)	>50
Tickets/Stop work orders issued **	(# or %)	5+/-
Fines collected **	(# and $)	0
Complaints/concerns received from public **	(#)	100's

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	100%
Site inspections (for proper BMP installation & operation) completed **	(# or %)	3
BMP maintenance required through covenants, escrow, deed restrictions, etc.	(y/n)	No
Low-impact development (LID) practices permitted and encouraged	(y/n)	Yes

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets) **	(times/yr)	1/yr
Average frequency of catch basin cleaning (commercial/arterial or other critical streets) **	(times/yr)	1-2/yr
Qty of structures cleaned **	(#)	2400+/-
Qty. of storm drain cleaned **	(%, LF or mi.)	100 LF
Qty. of screenings/debris removed from storm sewer infrastructure **	(lbs. or tons)	200 Tons
Disposal or use of screenings (landfill, POTW, compost, beneficial use, etc.) **	(location)	Landfill

Basin Cleaning Costs		
• Annual budget/expenditure (labor & equipment)**	($)	see hourly rate
• Hourly or per basin contract rate **	($/hr or $ per basin)	~ $23/hr
• Disposal cost**	($)	~ $7/ton ~ 200 tons every 2 or 3 years.
Cleaning Equipment		
• Clam shell truck(s) owned/leased	(#)	1
• Vacuum truck(s) owned/leased	(#)	0
• Vacuum trucks specified in contracts	(y/n)	No
• % Structures cleaned with clam shells **	(%)	100%
• % Structures cleaned with vactor **	(%)	0%

	(Preferred Units)	Response
Average frequency of street sweeping (non-commercial/non-arterial streets) **	(times/yr)	1/yr
Average frequency of street sweeping (commercial/arterial or other critical streets) **	(times/yr)	1/yr
Qty. of sand/debris collected by sweeping **	(lbs. or tons)	700 Tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.) **	(location)	Landfill
Annual Sweeping Costs		
• Annual budget/expenditure (labor & equipment)**	($)	see hourly rate
• Hourly or lane mile contract rate **	($/hr. or ln mi.)	~$23/hr
• Disposal cost**	($)	0
Sweeping Equipment		
• Rotary brush street sweepers owned/leased	(#)	1
• Vacuum street sweepers owned/leased	(#)	0
• Vacuum street sweepers specified in contracts	(y/n)	No
• % Roads swept with rotary brush sweepers **	%	100%
• % Roads swept with vacuum sweepers **	%	0%

Reduction (since beginning of permit coverage) in application on public land of: ("N/A" = never used; "100%" = elimination)		
▪ Fertilizers	(lbs. or %)	70%
▪ Herbicides	(lbs. or %)	N/A
▪ Pesticides	(lbs. or %)	90%
Integrated Pest Management (IPM) Practices Implemented	(y/n)	No

	(Preferred Units)	Response
Average Ratio of Anti-/De-Icing products used ** (also identify chemicals and ratios used in specific areas, e.g., water supply protection areas)	% NaCl % $CaCl_2$ % $MgCl_2$ % CMA % Kac % KCl % Sand	80% 20%
Pre-wetting techniques utilized **	(y/n or %)	Yes
Manual control spreaders used **	(y/n or %)	No
Zero-velocity spreaders used **	(y/n or %)	No
Estimated net reduction or increase in typical year salt/chemical application rate	(±lbs/ln mi. or %)	0% change
Estimated net reduction or increase in typical year sand application rate **	(±lbs/ln mi. or %)	No sand used
% of salt/chemical pile(s) covered in storage shed(s)	(%)	100%
Storage shed(s) in design or under construction	(y/n or #)	Construction complete
100% of salt/chemical pile(s) covered in storage shed(s) by May 2008	(y/n)	No

Water Supply Protection

Storm water outfalls to public water supplies eliminated or relocated	# or y/n	No
Installed or planned treatment BMPs for public drinking water supplies and their protection areas	# or y/n	No
• Treatment units induce infiltration within 500-feet of a wellhead protection area	# or y/n	No

Attachment A:
2003 Stormwater Management Plan
(no Appendices)

Final Report

NPDES Phase II Five-Year Municipal Stormwater Management Plan

Grafton, Massachusetts

Prepared for **Town of Grafton**
Department of Public Works
30 Providence Road
Grafton, MA 01519
(508) 839-5335

Prepared by ***VHB*/Vanasse Hangen Brustlin, Inc.**
Transportation, Land Development, Environmental Services
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P.O. Box 9151
Watertown, Massachusetts 02471-9151
617 924 1770

March 2003

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NPDES Phase II Stormwater Management Plan

Introduction

The Town of Grafton, Massachusetts has contracted Vanasse Hangen Brustlin, Inc. (VHB) to assist in the preparation of a Stormwater Management Plan (SWMP) to achieve compliance with the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NDPES) Stormwater Phase II regulations. These regulations are designed to reduce and eliminate potential stormwater pollutants from small Municipal Separate Storm Sewer Systems (MS4s). A municipal separate storm sewer is defined as a conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains.

Grafton is a growing suburban town six miles southeast of Worcester and 30 miles west of Boston, with a population of approximately 15,000. Grafton has diverse land uses ranging from farming, forest, residential to commercial. It is bordered by Upton and Westborough to the east and northeast, Shrewsbury to the north, Worcester to the northwest, Millbury to the west, Sutton to the southwest, and Northbridge to the south. See Figure 1 for a site location map. Grafton has been designated by the EPA as a regulated municipality due its portions of urbanized areas as defined by 2000 U.S. Census data. See Figure 2 for the urbanized area map.

Grafton covers about 23 square miles in southeastern Worcester County. Two major watersheds lie within town. The Blackstone River basin drains most of the town, with a small portion in the Northeast Corner draining to the Assabet River. The Town's major bodies of water are listed in Table 1.

Table 1: Major Bodies of Water in Grafton

Name	Location	Basin
Cider Mill Pond	Grafton	Blackstone
Fisherville Pond	Grafton	Blackstone
Flint Pond	Shrewsbury,Grafton, Worcester	Blackstone
Hayes Pond	Grafton	Blackstone
Hovey Pond	Grafton	Blackstone
Lake Ripple	Grafton	Blackstone
Pratts Pond	Grafton	Blackstone
Silver Lake	Grafton	Blackstone
Windle Pond	Grafton, Shrewsbury	Blackstone
Blackstone River	Grafton	Blackstone
Quinsigamond River	Grafton	Blackstone

Lake Ripple, the Blackstone River and Hayes Pond are listed as Category 5 impaired waters by the State, and will continue to be the focus of the Town's water resource restoration efforts. These ponds all suffer to some degree from the effects of urbanization. Further discussion of these three waterbodies is included in the "Discharges to Water Quality Impaired Waters" section later in this report.

Flint Pond, connected with Lake Quinsigamond in Worcester and Shrewsbury, currently has an approved Total Maximum Daily Load (TMDL) allocation. Flint Pond will be another focus of the Town's continued water resource restoration efforts. The TMDL study, along with measures to meet the loading criteria, is also discussed later in this report.

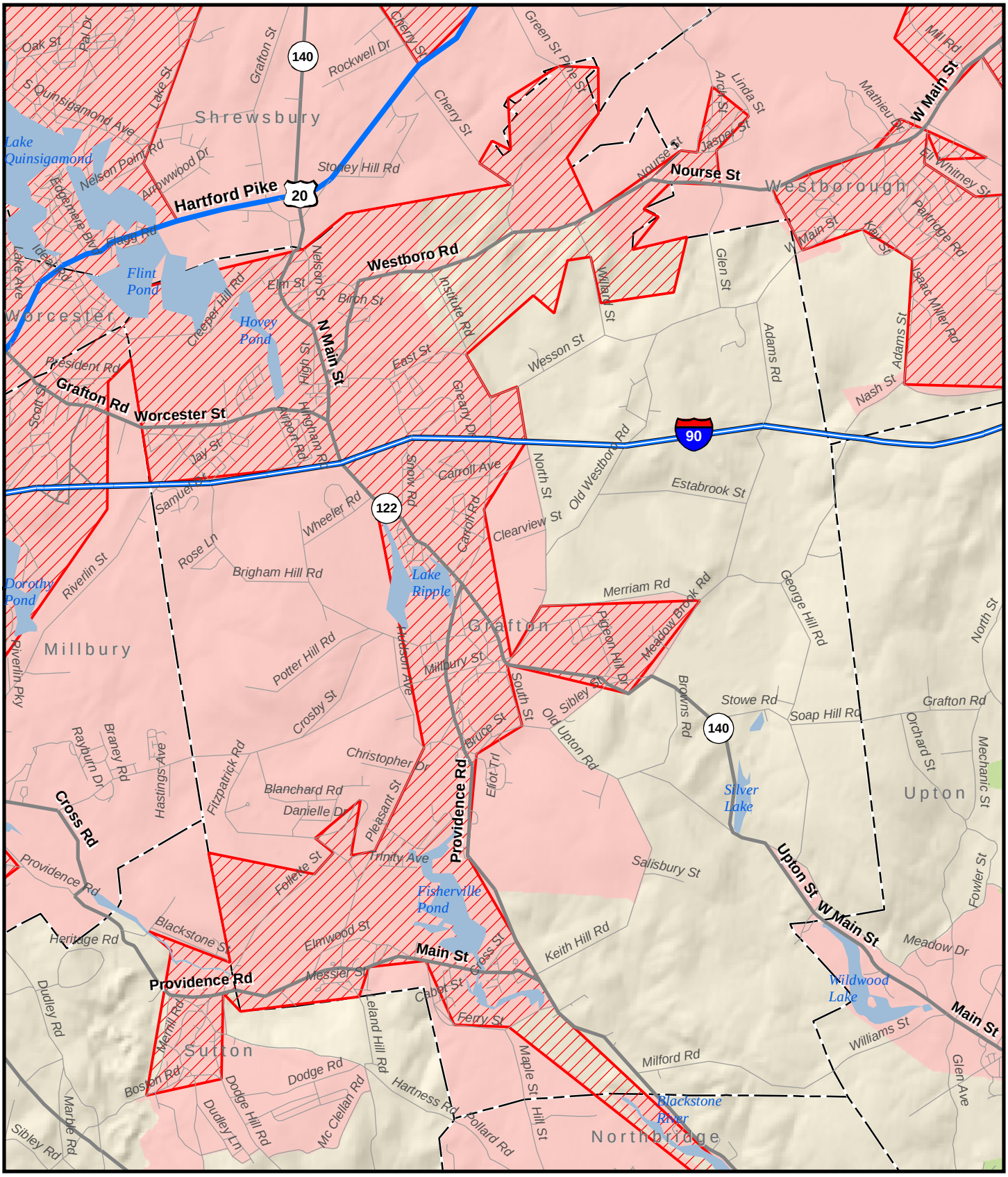
Stormwater from the Town's drainage systems is discharged to all waterbodies listed in Table 1. In addition to discharges from the municipal system, discharges from Massachusetts Highway Department Roads also enter the Town's receiving waters or drainage systems.

Grafton's sewage is disposed via septic systems for half of the Town and via piped sewer systems to a municipal wastewater treatment plant for the remainder.

Grafton has two water districts that operate independently of each other – the Grafton Water District (GWD) and the South Grafton Water District (SGWD). The Town receives its drinking water mainly from wells within the Town.

Grafton is a growing suburb facing rapid rates of residential and commercial development. The stormwater management improvements outlined in the report will coincide with the goals of the Town as stated in the 2001 Comprehensive Plan. The Town is committed to preserving and enhancing Grafton's water resources, land resources, recreation and conservation areas.

FIGURE 1: SITE LOCATION MAP



Urbanized Area

MA - Grafton

Legend

1990 Urban Area
Source: ESRI, U.S. Census 1990

2000 Urban Area \ Urban Cluster
Source: U.S. Census 2000

Nov. 15, 2002

Miles
0 0.25 0.5

EPA NPDES Stormwater Phase II Regulations

In 1999, the EPA promulgated the NPDES Stormwater Phase II regulations (Final Rule 40 CFR Parts 122, 123, 124 December 8, 1999). Under these regulations, municipal separate storm sewer systems (MS4s) in urbanized areas, as determined by US census data, must develop a stormwater management program that will, to the "maximum extent practicable," prevent harmful pollutants from entering receiving water bodies. These regulations require municipalities to prepare and implement Stormwater Management Programs that comply with six minimum control measures defined by the EPA. The six minimum control measures that each community must implement are:

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control
6. Pollution Prevention/Good Housekeeping for Municipal Operations

The NPDES Phase II regulations require a schedule for implementing each of these six minimum measures over the initial five-year term of the permit. The plan must also identify measurable goals for each BMP, in the form of a narrative or numeric standard. The program is to be described in a Stormwater Management Plan (SWMP) that the municipality can implement along with public support. According to the 1999 Rule, municipalities must submit their plan to the EPA by March 10, 2003.

Project Overview

The first step in the development of the SWMP was to educate the responsible parties in the municipality. VHB developed and provided to Grafton a NPDES Stormwater Phase II reference binder, which included a variety of training and resource materials such as: EPA Phase II Fact Sheets; March 2000 EPA Stormwater Phase II Compliance Assistance Guide; Printouts of slide presentations for each of the six minimum control measures presented during meetings; Stormwater BMP Menu information; List of valuable internet sites for reference material; and VHB-designed matrices for developing the framework for a 5-year compliance plan. Town of Grafton representatives met with VHB to discuss existing practices and determine what new practices would be required to achieve compliance. The resulting SWMP outline (included in Appendix A) is shown in a matrix detailing each measure, program and party responsible for implementation, and schedule. The Town's existing programs are also included in this outline. Table 2 summarizes the major categories of programs Grafton will implement. Some of these programs will be further broken down into more specific Best Management Practices to be determined during the planning process of the five-year permit cycle.

Table 2: Program Summary

Measure	Program
1. Public Education	a) Stormwater Flyer for Community Residents
	b) Stormwater Lesson Plan for Fifth Grade Students
	c) Stormwater Flyer for Community Businesses
	d) Stormwater Media Campaign
	e) Stormwater Video
	f) Grafton-Specific Stormwater Flyers
	g) Business Education: Coordinate with Local Businesses and Landscapers
	h) Agricultural Education: Flyer for Good Stormwater Practices in Agriculture
	i) Education via the Media: Newspaper Articles
	j) Education via the Internet: Stormwater Information on Town's Website
2. Public Involvement	a) Stormwater Traveling Display
	b) Stormwater Poster Contest for Fifth Grade Students
	c) Stormwater Photo Contest for High School Students
	d) Stormwater Summit Special Event
	e) Stormwater Super Summit and Evaluate/Assess Public Awareness of Stormwater
	f) Annual Public Meeting/Hearing Regarding Plan Status and Reports to EPA
	g) Watershed Group Involvement
	h) Involve Grafton Children's Groups (such as 4H, Scouts)
3. Illicit Discharge Detection	a) Illicit Discharge Bylaw / Regulatory Mechanism
	b) Storm Drain Map
	c) Illicit Discharge Detection and Elimination Plan
	d) Illicit Discharge Education for General Public & Businesses
	e) Illicit Discharge Education for Municipal Employees
4. Construction Site Runoff Controls	a) Construction Site Runoff Bylaw / Regulatory Mechanism
	b) BMPs for Construction Site Erosion, Sediment, and Waste Controls
	c) Construction Site Plan Review Procedures
	d) Construction Site Inspection and Enforcement Procedures
	e) Response to Public - "Stormwater Hotline"
5. Post-Construction Runoff Controls	a) Post-Construction Site Runoff Bylaw / Regulatory Mechanism
	b) Choose Structural and Non-Structural BMPs
	c) Long-Term BMP Operation and Maintenance Procedures
	d) Structural BMP Implementation Procedures
6. Good Housekeeping	a) Employee Training to Prevent/Reduce Stormwater Pollution
	b) Maintenance/Inspection of Storm Sewers and Structural/Non-Structural Controls
	c) Pollutant Source Reduction/Elimination from Municipal Facilities & Activities
	d) Waste Disposal Procedures from Storm Drains & Municipal Facilities/Activities

Measure 1: Public Education and Outreach

The intent of Measure 1 is to educate residents and businesses about stormwater pollution prevention. Municipalities must, at a minimum, implement a public education and outreach program to distribute educational materials to the community. The program will provide information concerning the impact of storm water discharges on water bodies. The program will also address steps and/or activities that the public can take to reduce the pollutants in storm water runoff.

The Town of Grafton has signed on with the SuAsCo Watershed Community Council to assist in compliance with the Public Education measure. Although Grafton is only partly within the watershed, the programs will be tailored for the entire Town. The Town will implement the following practices to meet the requirements of Measure 1:

A) Stormwater Flyer for Community Residents

Responsible Party: SuAsCo & Public Works Department
Status: New Program
Description: The stormwater flyer will cover topics such as pesticide and herbicide use in lawns and gardens, water conservation practices, pet waste management, trash management, car washing, and proper disposal of household hazardous wastes including motor oil. The flyer will include a storm water awareness survey that citizens can tear-off and submit to the municipality for compilation.
Measurable Goals: *Year 1: Flyer distributed to a minimum of 75% of residents; Compile and consider municipal and multi-watershed-wide "survey" results*

B) Stormwater Lesson Plan for Fifth Grade Students

Responsible Party: SuAsCo & Public Works Department
Status: New Program
Description: The lesson plan will be a self-explanatory, easy to teach, stand-alone lesson plan that can be readily fit into the curriculum, consisting of a few simple teaching exercises and worksheets. It will cover: what is a watershed, what is storm water, why storm water is a concern, what students can do to lessen their impacts on storm water, and a reminder of the poster contest.
Measurable Goals: *Year 2: Develop and distribute lesson plan to implement at grade 5 level; Lesson plan is taught in one or more grade 5 classrooms in the community*

C) Storm water Flyer for Community Businesses

Responsible Party: SuAsCo & Public Works Department
Status: New Program
Description: The storm water flyer will explain what storm water is and will frame storm water concerns from a watershed perspective. The flyer will discuss potential impacts by businesses on storm water quality and flow. The flyer will include a self-test for businesses to grade their own storm water "compliance". Businesses that deem themselves "storm water aware and participatory", will be given a decal sticker of the storm water logo to display.
Measurable Goals: *Year 3: Flyer distributed to a minimum of 50% of businesses in municipality; Number of Stormwater Logos displayed by businesses reported*

D) Stormwater Media Campaign

Responsible Party: SuAsCo & Public Works Department
Status: New Program
Description: The Storm Water Media Campaign will engage local news media (newspapers, radio stations, and cable stations) in raising public awareness about storm water. Media information packets and periodic press releases will be developed for use in the "campaign". The media information packet will explain general storm water issues and impacts, the NPDES Storm Water Phase II program, and the municipality's and the SuAsCo WCC's role in storm water management.
Measurable Goals: *Year 4: Media Information Packet Delivered to the Local Media; 4 press releases generated and issued to local media and major media outlets*

E) Stormwater Video

Responsible Party: SuAsCo & Public Works Department
Status: New Program
Description: A high-quality video about storm water will be shown to the general public at local meetings and through local cable stations. In a user-friendly and engaging manner, the video will explain what storm water is and will address how citizens can help improve storm water quality and flow.
Measurable Goals: *Year 5: Show stormwater video at a minimum of one public meeting; Air stormwater video at least once on local cable station*

F) Grafton-Specific Stormwater Flyers

Responsible Party: Water Department
Status: Expanded Program
Description: Building upon existing available educational material, the Town will distribute flyers with information specific to stormwater and watershed management in Grafton. These flyers will address residents and businesses, and will target pollutants that are harming local waterbodies (such as nutrients). The topics may include fertilizer, proper lawn and garden care, car washing and pesticides.
Measurable Goals: *Year 1,3: Distribute Grafton-Specific Brochure along with SuAsCo Brochures*

G) Business Education: Coordinate with Local Businesses and Landscapers

Responsible Party: Public Works Department
Status: New Program
Description: The Town will coordinate with local businesses and landscape contractors to target fertilizer use and other gardening practices. The Town will work with landscapers to use lower nutrient fertilizer, and will work with businesses to carry these products.
Measurable Goals: *Year 3-5: Coordinate education, and the use and selling of slow-release fertilizers*

H) Agricultural Education: Flyer for Good Stormwater Practices in Agriculture

Responsible Party: Public Works Department
Status: New Program
Description: The Town will develop and distribute an educational flyer to on proper stormwater practices for agricultural operations.
Measurable Goals: *Year 3: Distribute Flyers to Agricultural Owners/Properties*

I) Education via the Media: Newspaper Articles

Responsible Party: Public Works Department
Status: New Program
Description: The Town will coordinate the writing of articles in the local paper, focusing on stormwater management issues.
Measurable Goals: *Year 2-5: Write At Least One Article in the Newspaper per year*

J) Education via the Internet: Stormwater Information on Town's Website

Responsible Party: Public Works Department
Status: New Program
Description: The Town will provide stormwater links and Grafton-specific stormwater information on the web.
Measurable Goals: *Year 2-4: Provide Links by Year 2; Provide more Grafton-Specific Information by Year 4*

Measure 2: Public Participation and Involvement

Measure 2 is similar to Measure 1 and serves to both involve the public and to encourage them to participate in stormwater management activities. The Town will provide opportunity for the public to participate in the development, implementation and review of the stormwater management program.

The Town of Grafton has signed on with the SuAsCo Watershed Community Council to assist in compliance with the Public Participation measure. Although Grafton is only partly within the watershed, the programs will be tailored for the entire Town. Grafton will implement the following practices to achieve compliance with Measure 2:

A) Stormwater Traveling Display

Responsible Party: SuAsCo & Public Works Department

Status: New Program

Description: The Storm Water Traveling Display will be conveniently placed on a table in a visible and central location frequented by the general public. Extra storm water flyers will be posted with the display along with a collection box for the citizen storm water survey. The display will present practical ideas for how citizens can manage housekeeping practices so as to have a positive impact on storm water. Such practices may include pesticide and herbicide use on lawns and gardens, water conservation, pet waste management, trash management, car washing, and proper disposal of household hazardous wastes including motor oil.

Measurable Goals: *Year 1-5: Stormwater display circulates around the community for a minimum of 3 months; Stormwater display is posted at a minimum of 3 different public locations in the community; Stormwater display is also used in future permit years for posting in public places or stormwater events*

B) Stormwater Poster Contest for Fifth Grade Students

Responsible Party: SuAsCo & Public Works Department

Status: New Program

Description: The Storm Water Poster Contest will engage fifth grade students in understanding storm water and creatively depicting their knowledge through a poster medium. The general public will also be involved in the poster contest through parent interaction with the students, the creation of a panel of judges, and display of the posters in public locations.

Measurable Goals: *Year 2: Poster contest is held and entries are received, judged and displayed*

C) Stormwater Photo Contest for High School Students

Responsible Party: SuAsCo & Public Works Department
Status: New Program
Description: The Storm Water Photo Contest will engage high school students in understanding storm water, its effect on water quality, and good storm water management strategies. The photo contest will challenge high school students to creatively depict their knowledge through a photographic medium. The general public will also be involved in the photo contest through parent interaction with the students, the creation of a panel of judges, and display of the photographs in a public location.
Measurable Goals: *Year 3: Photo contest is held and entries are received, judged and displayed*

D) Stormwater Summit Special Event

Responsible Party: SuAsCo & Public Works Department
Status: New Program
Description: A "Storm Water Summit" will be held as a special event for the general public (residents and community businesses). The Storm Water Summit will show case the municipality's storm water program and progress. The agenda will include guest speakers on topics such as the municipality's storm water program and good housekeeping practices that citizens and businesses can employ to reduce the pollutants in and volume of storm water. The summit may also be used as a forum to seek input on new or proposed bylaws that address pre- and post-construction site runoff. The summit will also provide citizens with an opportunity to raise concerns about storm water situations in their own neighborhoods. The poster contest and photo contest entries, as well as the traveling display, may be exhibited at the summit.
Measurable Goals: *Year 4: Hold local or multi-community Stormwater Summit; Advertise to encourage Stormwater Summit community attendance*

E) SuAsCo Stormwater Super Summit, Evaluate/Assess Public Awareness of Stormwater

Responsible Party: SuAsCo & Public Works Department
Status: New Program

Description: The SuAsCo "Watershed-Wide Super Summit" will be held as part of the River Visions 2007 Forum. It will include speakers from agencies, businesses, and municipalities, providing a unique opportunity for communities to share information and exchange experiences about their storm water programs. The Evaluation and Assessment will provide municipal citizens with a storm water "self-test" through which they can "grade" their own storm water knowledge. The purpose of the self-test will be to see how widely received the storm water program activities have been over the past four years and to gauge the public's familiarity with storm water concepts.

Measurable Goals: *Year 5: Municipal participation in the Stormwater Super Summit; Stormwater Self Test distributed to a minimum of 75% of residents; Compile and consider municipal and multi-watershed-wide "self test" results*

F) Hold Annual Public Meeting/Hearing Regarding Plan Status and Reports to EPA

Responsible Party: Public Works Department

Status: New Program

Description: The Town will hold a public hearing/meeting every year prior to submission of the annual report to EPA, to inform the public of the Town's stormwater management programs and to allow input from all interested citizens, businesses, and government entities.

Measurable Goals: *Year 1-5: Hold Public Hearing by February of each year*

G) Watershed Group Involvement

Responsible Party: Public Works Department & Local Groups

Status: Existing Program

Description: Watershed groups within Grafton and the region, such as the Blackstone River Watershed Association, the Blackstone Headwaters Team and the Grafton High school Environmental Science class, are very active and regularly coordinate events such as cleanups and monitoring.

Measurable Goals: *Year 1-5: Continue the ongoing activities of local watershed groups, such as cleanups and monitoring*

H) Involve Grafton Children's Groups (such as 4H, Scouts)

Responsible Party: Public Works Department

Status: New Program

Description: The Town will coordinate with local children's groups to involve them with volunteer events, or to help the Town distribute or display stormwater educational materials.

Measurable Goals: *Year 2-5: Children's Groups at least once per year help distribute or display educational information*

Measure 3: Illicit Discharge Detection and Elimination

Measure 3 requires municipalities to 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 stormwater. The municipality will address the following categories of non-storm water discharges or flows only if they are identified as significant contributors of pollutants: water line flushing, 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, and street wash water. Discharges or flows from fire fighting activities are generally allowed and need only be addressed where they are identified as significant sources of pollutants. Grafton will implement the following practices to meet the requirements of Measure 3:

A) Illicit Discharge Bylaw / Regulatory Mechanism

Responsible Party: Public Works Department

Status: Expanded Program

Description: The Town will prohibit through a bylaw, or other regulatory mechanism, non-storm water discharges into the storm sewer system, including implementing appropriate enforcement procedures and actions.

Measurable Goals: *Year 1: Initial discussions; Review current local/state regulations; Review proposed samples.*
Year 2: Develop draft bylaw; Involve & educate public, municipal officials, developers, contractors.
Year 3: Float new bylaw as Guidance; One year of comment period.
Year 4: Public Hearing on Bylaw; Attempt to pass bylaw; Revise bylaw if it does not pass.
Year 5: Final attempt to pass bylaw.

B) Storm Drain Map

Responsible Party: Public Works Department

Status: Expanded Program

Description: The town will develop a storm drain system map, showing the location of outfalls and the names and location of waters that receive discharges from those outfalls.

Measurable Goals: *Year 1: Compile existing record plans and surveyed data*
Year 1-5: Find, GPS survey, and map outfalls and waterbodies in urbanized area(at least 20% each year)

C) Illicit Discharge Detection and Elimination Plan

Responsible Party:	Public Works Department
Status:	Expanded Program
Description:	The Town will develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, to the municipal system. In addressing priority areas, the Town will consider older areas of the Town, areas of high public complaints, areas of high recreational value or high environmental value such as beaches and drinking water sources, and areas listed as impaired.
New Programs to Consider:	Address detecting and eliminating septic system failures;
Measurable Goals:	*Year 1: Determine Priority Areas and Discuss Plan* *Year 1-5: Visually Screen Outfalls During Dry Weather (at least 20% each year)* *Year 4-5: Trace the Source of the Illicit Discharge (50% by year 4, and 100% by 5)* *Year 4-5: Remove the Source of the Illicit Discharge (50% by year 4, and 100% by 5)*

D) Illicit Discharge Education for General Public & Businesses

Responsible Party:	Public Works Department
Status:	Expanded Program
Description:	The Town will inform businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.
New Programs to Consider:	Homeowner education on septic system monitoring, repair, maintenance; Encourage "do not dump" catch basin castings for all new and redevelopment
Measurable Goals:	*Year 1,3: Include illicit discharge education in the community, business, and Grafton-specific flyers*

E) Illicit Discharge Education for Municipal Employees

Responsible Party:	Public Works Department
Status:	Expanded Program
Description:	The Town will inform public employees of hazards associated with illegal discharges and improper disposal of waste.
Measurable Goals:	*Year 2-5: Include Illicit Discharge Education under Training under Measure 6*

Measure 4: Construction Site Runoff Control

Measure 4 requires that municipalities develop, implement, and enforce a program to reduce pollutants in any stormwater runoff from construction activities that result in a land disturbance of greater than or equal to one acre. The municipality must also include disturbances less than once acre if part of a larger common plan. Grafton will implement the following practices to achieve compliance with Measure 4:

A) Construction Site Runoff Bylaw / Regulatory Mechanism

Responsible Party: Public Works & Planning Departments
Status: Expanded Program
Description: The Town will develop and implement a bylaw or other regulatory mechanism to require erosion and sediment controls at construction sites, as well as sanctions to ensure compliance.
Measurable Goals: *Year 1: Initial discussions; Review current local/state regulations; Review proposed samples.*
Year 2: Develop draft bylaw; Involve & educate public, municipal officials, developers, contractors.
Year 3: Float new bylaw as Guidance; One year of comment period.
Year 4: Public Hearing on Bylaw; Attempt to pass bylaw; Revise bylaw if it does not pass.
Year 5: Final attempt to pass bylaw.

B) BMPS for Construction Site Erosion, Sediment, and Waste Controls

Responsible Party: Public Works & Planning Departments
Status: Expanded Program
Description: The Town will develop and implement 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 land disturbance. The Town will also develop and implement requirements to control wastes, including but not limited to discarded building materials, concrete truck washout, chemicals, litter, and sanitary wastes.
Measurable Goals: *Year 1: Assess existing and brainstorm proposed*
Year 2: Prepare draft, to include in draft bylaw
Year 3-5: Final, to include in bylaw. Revise as necessary.

C) Construction Site Plan Review Procedures

Responsible Party: Public Works & Planning Departments
Status: Expanded Program
Description: The Town will develop and implement procedures for site plan review including procedures which incorporate consideration of potential water quality impacts. The site plan review will include procedures for preconstruction review.
New Programs to Consider: Address disturbance amount, earth removal, triggers, and waivers for review process and requirements; Phased construction to limit amount of disturbance; Assess Long-term funding options for site plan reviews and inspections; Checklist for developers with requirements and recommendations;
Measurable Goals: *Year 1: Assess existing and brainstorm proposed*
Year 2: Prepare draft, to include in draft bylaw
Year 3-5: Final, to include in bylaw. Revise as necessary.

D) Construction Site Inspection and Enforcement Procedures

Responsible Party: Public Works & Planning Departments
Status: Expanded Program
Description: The Town will develop and implement procedures for inspections and enforcement of control measures at construction sites.
Measurable Goals: *Year 1: Assess existing and brainstorm proposed*
Year 2: Prepare draft, to include in draft bylaw
Year 3-5: Final, to include in bylaw. Revise as necessary.

E) Response to Public – "Stormwater Hotline"

Responsible Party: Public Works Department
Status: New Program
Description: The Town will develop and implement procedures for receipt and consideration of information submitted by the public. The Town will develop and implement a "Stormwater Hotline" for the public to call to report pollution such as erosion or illicit discharges, and to have questions answered regarding general stormwater management practices.
Measurable Goals: *Year 1: Assess and brainstorm procedures for "stormwater hotline"*
Year 2: Advertise and test hotline
Year 3-5: Hotline fully implemented, with ongoing advertising

Measure 5: Post-Construction Runoff Control

Measure 5 requires that municipalities develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre and discharge into the municipal system. The program must include projects of less than one acre if the project is part of a larger common plan of development. Grafton will implement the following practices to achieve compliance with Measure 5:

A) Post-Construction Site Runoff Bylaw / Regulatory Mechanism

Responsible Party: Public Works & Planning Departments

Status: Expanded Program

Description: The Town will develop and implement a bylaw or other regulatory mechanism to address post- construction runoff from new development and redevelopment.

Measurable Goals: *Year 1: Initial discussions; Review current local/state regulations; Review proposed samples.*
Year 2: Develop draft bylaw; Involve & educate public, municipal officials, developers, contractors.
Year 3: Float new bylaw as Guidance; One year of comment period.
Year 4: Public Hearing on Bylaw; Attempt to pass bylaw; Revise bylaw if it does not pass.
Year 5: Initial discussions; Review current local/state regulations; Review proposed samples.

B) Choose Structural and Non-Structural BMPs

Responsible Party: Public Works & Planning Departments

Status: Expanded Program

Description: The Town will develop a list of recommended Best Management Practices (BMPs) that will include a combination of structural and/or non-structural practices appropriate for the community. The BMPs recommended will focus on minimizing water quality impacts and attempting to maintain pre-development runoff conditions. The BMP list will be responsive to changes, developments or improvements in control technologies, and will leave site-specific conditions as a large factor for determining which BMPs are implemented.

New Programs to Consider:	Include public in selection process; Review and revise design standards for site and subdivision projects; Choose BMPs that relate to the Comprehensive Plan; Encourage "Do Not Dump" catch basin castings for all new and redevelopment;
Measurable Goals:	*Year 1: Assess existing, brainstorm proposed BMP recommendations* *Year 2: Prepare draft* *Year 3-5: Final, to be a working list of recommendations. Revise as necessary.*

C) Long-Term BMP Operation and Maintenance Procedures

Responsible Party:	Public Works & Planning Departments
Status:	Expanded Program
Description:	The Town will develop and implement procedures to ensure adequate long-term operation and maintenance of BMPs.
Measurable Goals:	*Year 1: Assess existing and brainstorm proposed* *Year 2: Prepare draft, to include in draft bylaw* *Year 3-5: Final, to include in bylaw. Revise as necessary.*

D) Structural BMP Implementation Procedures

Responsible Party:	Public Works & Planning Departments
Status:	Expanded Program
Description:	The Town will ensure the appropriate implementation of structural BMPs by considering: Pre-construction review of BMP designs; inspections during construction to verify BMPs are built as designed; Post-construction inspection and maintenance of BMPs; and penalty provisions for the noncompliance with design, construction or operation and maintenance.
New Programs to Consider:	Address site and subdivision plan reviews; Address disturbance amount, earth removal, triggers, and waivers for review process and requirements; Assess Long-term funding options for site plan reviews and inspections; Checklist for developers with requirements and "encouraged" BMPs
Measurable Goals:	*Year 1: Assess existing and brainstorm proposed* *Year 2: Prepare draft, to include in draft bylaw* *Year 3-5: Final, to include in bylaw. Revise as necessary.*

Measure 6: Pollution Prevention / Good Housekeeping for Municipal Operations

Measure 6 requires that municipalities develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. Grafton will implement the following practices to achieve compliance with Measure 6:

A) Employee Training to Prevent/Reduce Stormwater Pollution

Responsible Party:	Public Works Department
Status:	Expanded Program
Description:	The Town will develop and implement an employee training program to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.
New Programs to Consider:	Include illicit discharge training
Measurable Goals:	*Year 1: Assess who, when, and what topics; Create schedule and checklist* *Year 2: Sample / test training* *Year 3-5: Fully implement training* *Year 4: Compile into Overall Municipal Operation and Maintenance Plan*

B) Maintenance/Inspection of Storm Drains and Structural / Non-Structural Controls

Responsible Party:	Public Works Department
Status:	Expanded Program
Description:	The Town will develop and implement maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural storm water controls to reduce floatables and other pollutants discharged from the separate storm sewers.
New Programs to Consider:	Prioritize maintenance and inspection programs based on local needs and sensitive areas; Maintenance schedules for detention basins, swales, and other structural BMPs besides catch basins; Coordinate with MassHighway regarding drainage from their systems.
Measurable Goals:	*Year 1: Assess existing controls, maintenance activities, schedules, and long-term inspection procedures* *Year 2: Develop Draft New/Improved Activities, Schedules, and Procedures*

Year 3: Finalize Maintenance Activities and Schedules, and Long-Term Inspection Procedures
Year 4: Compile into Overall Municipal Operation and Maintenance Plan
Year 5: Fully Implement maintenance and inspection procedures

C) Pollutant Source Reduction/Elimination from Municipal Facilities & Activities

Responsible Party: Public Works Department
Status: Expanded Program
Description: The Town will develop and implement controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations and snow disposal areas operated by the Town, and waste transfer stations.
New Programs to Consider: Connect to sewer at DPW garage; Perform vehicle washing indoors; BMPs for fueling area at DPW yard; BMPs for sand pile at DPW yard; Prioritize programs based on local needs and sensitive areas; Encourage "Do Not Dump" catch basin castings for all new municipal catch basins or grates; Assess Flood Management Water Quality; Assess Pesticide and Fertilizer Operations; Address Measures to reduce snow and ice removal impacts;
Measurable Goals: *Year 1: Assess existing facilities, activities, & BMPs; Brainstorm improved/new BMPs*
Year 2: Develop Draft BMPs
Year 3: Finalize BMPs
Year 4: Compile into Overall Municipal Operation and Maintenance Plan
Year 5: Fully Implement BMPs

D) Waste Disposal Procedures from Storm Drains & Municipal Facilities/Activities

Responsible Party: Public Works Department
Status: Expanded Program
Description: The Town will develop and implement procedures for properly disposing of waste removed from the storm drains and areas listed above under part C (such as dredge spoil, accumulated sediments, floatables, and other debris)
Measurable Goals: *Year 1: Assess existing waste disposal procedures; Review MA guidelines; Brainstorm improved/new procedures.*
Year 2: Develop Draft Procedures
Year 3: Finalize Procedures
Year 4: Compile into Overall Municipal Operation and Maintenance Plan
Year 5: Fully Implement waste disposal procedures

Evaluation, Record Keeping, and Reporting

The following tasks apply to all aspects of the permit:

Evaluation and Assessment

The Town will evaluate program compliance annually, the appropriateness of the identified best management practices, and progress towards achieving the identified measurable goals.

Record keeping

The Town will keep records required by the NPDES permit for at least 3 years. The Town will submit records to the NPDES permitting authority only when specifically asked to do so. The records, including a description of the storm water management program, will be available to the public at reasonable times during regular business hours.

Annual Reporting

The Town will submit annual reports to the NPDES permitting authority for the first permit term. For subsequent permit terms, the Town will submit reports in year two and four unless the NPDES permitting authority requires more frequent reports. The report will include:

- The status of compliance with permit conditions, an assessment of the appropriateness of the identified best management practices and progress towards achieving the identified measurable goals for each of the minimum control measures
- Results of information collected and analyzed, including monitoring data, if any, during the reporting period
- A summary of the storm water activities to undertake during the next reporting cycle
- A change in any identified best management practices or measurable goals for any of the minimum control measures
- Notice that the Town is relying on another governmental entity to satisfy some of the permit obligations (if applicable).

Discharges to Water Quality Impaired Waters

Four water bodies in Grafton have been identified as Category 5 impaired waters, or "Waters Requiring a TMDL", as listed in the Massachusetts 2002 Integrated List of Waters, prepared by the Executive Office of Environmental Affairs. The locations are summarized in Table 3.

Table 3: Water Quality Impaired Waters in Grafton

Name	Description	Pollutants of Concern
Hayes Pond	Grafton	noxious aquatic plants, exotic species
Lake Ripple	Grafton	noxious aquatic plants, exotic species
Blackstone River	Fisherville Dam, Grafton to outlet Rice City Pond, Uxbridge	unknown toxicity, priority organics, metals, nutrients, organic enrichment/low DO, flow alteration, pathogens, taste/odor/color, suspended solids, turbidity
Blackstone River	Confluence of Middle River and Mill Brook (just downstream of American Steel Dam), Worcester to Fisherville Dam, Grafton	unknown toxicity, priority organics, metals, unionized ammonia, chlorine, nutrients, organic enrichment/low DO, flow alteration, pathogens, suspended solids, turbidity, objectionable deposits
West River	Outlet Silver Lake, Grafton to Upton WWTP, Upton	pH, organic enrichment/Low DO, pathogens

Lake Ripple is currently undergoing improvements funded partly through the State's 319 grant program. Under this grant, stabilization and stormwater improvements are planned. Local volunteer groups are also actively monitoring outfalls at Lake Ripple and other waterbodies in Grafton within the Blackstone River watershed. The West River is located in a portion of Grafton that has recently been designated as an Area of Critical Environmental Concern (ACEC). The Miscoe, Warren and Whitehall watersheds were included as part of an expanded ACEC in 2000, thus providing greater environmental protection and more stringent environmental reviews within this area.

Grafton's Stormwater Management Program will control the discharge of the pollutants of concern for all of the listed impaired waterbodies, and will ensure that the discharges will not cause or contribute to in-stream exceedance of water quality standards. This stormwater management plan will focus education and participation efforts at these locations. In addition, these areas will be considered priority in the illicit discharge and municipal pollution prevention programs.

Total Maximum Daily Load Allocations

Flint Pond, located in the Northwest corner of Grafton and connected with Lake Quinsigamond in Worcester and Shrewsbury, has an EPA-approved TMDL allocation titled "Total Maximum Daily Loads of Phosphorus for Lake Quinsigamond and Flint Pond", approved 6/28/02. This report is avaialable for download at www.state.ma.us/dep/brp/wm/wmpubs.htm. Flint Pond is immediately downstream of Lake Quinsigamond, and because of the close connections, the two lakes are managed as one system.

Flint Pond has recreational uses including fishing, boating, water-skiing and swimming, but these uses are impaired by the growth of nuisance aquatic plants. The impairments to both Flint Pond and Lake Quinsigamond are due to high phosphorus loadings.

The TMDL report proposes recommendations to control both particulate and dissolved phosphorus. Additional aquatic management in Flint Pond, such as harvesting within boating channels, is recommended.

The Town of Grafton has determined that the approved TMDL is for a pollutant that may be found in stormwater discharges from the municipality. Much of the Flint Pond watershed in Grafton consists of commercialized areas. Other parts of the watershed consist of residential areas and a municipal playing field. There are currently several known outfalls from the Town roadways draining to the pond, along with overland flow. The residences in this area all have septic systems.

Under this stormwater management program, the Town will incorporate the following BMPs to help meet the TMDL. First, the Town will focus its public education and participation efforts in this area, including education on septic system maintenance. Second, the Town will inspect all outfalls or potential sewer failures, and will eliminate any illicit discharges within the first two years of the permit term. Finally, the Town will assess the municipal operations in this area and prioritize the good housekeeping and pollution prevention practices.

Groundwater Recharge

The Town of Grafton will consider opportunities for groundwater recharge and infiltration in the implementation of the six minimum control measures wherever feasible. Grafton currently has some requirements for groundwater recharge under its existing regulations. Additional recharge and infiltration opportunities will be evaluated for each measure during the five-year permit cycle.

Drinking Water Sources

Grafton considers public drinking water sources and their protection areas a priority in implementation of the stormwater management program. During the field location and testing program of municipal outfalls, the Town will determine which outfalls discharge to drinking water sources or protection areas, and will assess the impacts of the discharges to the water supply. The Town will consider providing pretreatment and spill control capabilities to the extent feasible for these discharges. The Town will also consider how to avoid, to the extent feasible, any direct discharges to Class A waters and Zone 1 wellhead protection areas.

Interconnected Municipal Separate Storm Sewer Systems

The Town of Grafton will coordinate with the owners/operators of interconnected municipal separate storm sewer systems (MS4s). The Town will first identify interconnections within the system, and will attempt to work cooperatively with the interconnected MS4s in instances of discharges impacting Grafton's drainage systems. The Massachusetts Highway Department is a known contributor to the Town's drainage systems and receiving waters. Adjacent towns' systems will be identified and assessed during the five-year permit cycle.

Endangered Species

Coverage under this permit is available only if the stormwater discharges, allowable non-stormwater discharges, and discharge related activities are not likely to jeopardize the continued existence of any species that are listed as endangered or threatened ("listed") under the Endangered Species Act (ESA) or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat").

The most recent Endangered and Threatened Species County-Species List available from EPA at http://cfpub.epa.gov/npdes/stormwater/endangersearch.cfm was used to determine if the endangered or threatened species or critical habitat are in proximity to the Town of Grafton or the point where authorized discharges reach the receiving waters. Worcester County has three listed species, however, species within the Town boundaries and possible impacts of discharges to them will be determined once all outfalls have been located. Because the outfalls within the town have not yet been located, the eligibility requirement is listed as "pending".

Once all outfalls have been located, and the Town consults with the U.S. Fish and Wildlife, if it is determined these outfalls have no impact on endangered species, a confirmation letter will be included in the annual report for this permit.

Historic Places

Discharges, or implementation of a stormwater management program, which adversely effects properties listed or eligible to be listed on the National Register of Historic Places, are not allowed under this NPDES permit. 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.

According to the listing on the National Register of Historic Places (http://www.nr.nps.gov), there are several historic properties listed or eligible for listing in Grafton, Massachusetts. Because the outfalls within the town have not yet been located, the eligibility requirement is listed as "pending".

Once all outfall locations within the Town have been identified, a letter will be sent to the Massachusetts Historical Commission to verify that stormwater discharge related activities will not result in an adverse effect on any archeological resources or historic properties of National Significance. A copy of all confirmations will be included in the annual report for this permit.

Summary

The Town of Grafton, led by the Public Works Department, has prepared this stormwater management plan to further reduce and eliminate stormwater pollutants to its numerous water resource areas.

The Town will address the general public and businesses through watershed-based stormwater education and participation programs from the SuAsCo Watershed Community Council, as well as education and participation programs focused on locally impaired waters.

Through expanded programs and bylaws to reduce pollutants from illicit discharges, construction runoff, and post-construction runoff, the Town will strengthen its current procedures to inspect and enforce against potential stormwater contamination.

In addition to reaching out to public and private entities to reduce stormwater pollution, the Town will do its part by continuing to improve upon its own operations with increased employee training and expanded procedures to control any potential pollutants and waste from municipal facilities and activities.

These efforts over the next five years, in addition to the Town's existing efforts, will be in accordance with the goals of the 2001 Comprehensive Plan and will further protect and improve the quality of Grafton's water resources.

Attachment B:
Public Outreach and Education

INVOICE FOR STORMWATER MATTERS "YEAR 9 PRODUCT"

Invoice # Y9-01 **Date: February 21, 2012**

Invoice for payment to the SuAsCo Watershed Community Council for the Stormwater Matters Year 9 Increasing Stormwater Public Awareness Residential and Business Flyers Product.

The Stormwater Matters "Year 9" Product consists of:

- A master copy (both digital and hard copy) of the **all new** Stormwater Matters **Residential Flyer** with municipal logo, website address and contact phone number (printing and distribution of flyers is community's responsibility)
- A master copy (both digital and hard copy) of the **all new** Stormwater Matters **Business Flyer** with municipal logo, website address and contact phone number (printing and distribution of flyers is community's responsibility)
- Large mounted **aerial photo map of municipality** highlighting waterways, town boundaries and watershed borders
- Two Stormwater Matters **brochure holders**
- Two Stormwater Matters **CDs** containing the Residential and Business Flyers in formats for printing, presentations, cable television, and website

These BMP products are designed for continuing compliance with the Public Education & Outreach and Public Involvement & Participation control measures of the NPDES Stormwater Phase II Program. Implementation of these tools is the responsibility of the community.

Cost: $2,550 if Payment is received by April 13, 2012

[Note: Cost is $2,950 if payment is late]

Expected delivery date is June 2012

Payable immediately. Please make check payable to: "SuAsCo Watershed Community Council" (The SuAsCo Watershed Community Council federal tax ID # is 04-3535560.)

Please mail to: *Attn: Nancy Bryant, Executive Director*
SuAsCo Watershed Community Council, Suite 200
118 Great Road, Stow, MA 01775

Please call Nancy Bryant at 978-461-0735 with any questions.

EPA
United States
Environmental Protection
Agency

EPA 841-F-03-004

Protecting Water Quality *from* Agricultural Runoff

Clean Water Is Everybody's Business

The United States has more than 330 million acres of agricultural land that produce an abundant supply of food and other products. American agriculture is noted worldwide for its high productivity, quality, and efficiency in delivering goods to the consumer. When improperly managed however, agricultural activities can affect water quality.

In the 2000 *National Water Quality Inventory,* states reported that agricultural nonpoint source (NPS) pollution is the leading source of water quality impacts on surveyed rivers and lakes, the second largest source of impairments to wetlands, and a major contributor to contamination of surveyed estuaries and ground water. Agricultural activities that cause NPS pollution include poorly located or managed animal feeding operations; overgrazing; plowing too often or at the wrong time; and improper, excessive, or poorly timed application of pesticides, irrigation water, and fertilizer.

Agricultural pollutants that result from these activities are sediment, nutrients, pathogens, pesticides, metals, and salts. Agricultural impacts on surface water and ground water can be minimized by using management practices that are customized for local conditions. Many practices designed to reduce pollution also save producers money in the long run.

What Is Nonpoint Source Pollution?

Nonpoint source (NPS) pollution, unlike pollution from point sources such as industrial and sewage treatment plants, comes from many diffuse sources. Polluted runoff is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into watersheds through lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water.

Did you know that runoff from farms is the leading source of impairments to surveyed rivers and lakes?

There are many government programs available to help people design and pay for management approaches to prevent and control NPS pollution. For example, over 40 percent of section 319 Clean Water Act grants have been used to control agricultural NPS pollution. Also, many programs funded by the U.S. Department of Agriculture and states provide cost-share, technical assistance, and economic incentives to implement NPS pollution management practices. Many local organizations and individuals have come together to help create regional support networks to adopt technologies and practices to eliminate or reduce water quality impacts caused by agricultural activities.

Sedimentation

The most prevalent source of water pollution caused by farming activities is soil that is washed off fields. Rain water carries soil particles (sediment) and dumps them into nearby lakes or streams. Too much sediment can cloud the water, reducing the amount of sunlight that reaches aquatic plants. It can also clog the gills of fish or smother fish larvae. In addition, other pollutants like fertilizers, pesticides, and heavy metals are often attached to the soil particles and wash into the water bodies, causing algal blooms and depleted oxygen, which is deadly to much aquatic life. Farmers and ranchers can reduce erosion and sedimentation by 20 to 90 percent by applying management practices that control the volume and flow rate of runoff water, keep the soil in place, and reduce soil transport.

Nutrients

Producers apply nutrients like phosphorus, nitrogen, and potassium in the form of chemical fertilizers, manure, and sludge. They may also grow legumes and leave crop residues to enhance production. When these sources exceed plant needs, nutrients can wash into aquatic ecosystems. There they can cause algae blooms, which reduce swimming and boating opportunities, create foul taste and odor in drinking water, and kill fish by removing oxygen from the water. High concentrations of nitrate in drinking water can cause methemoglobinemia, a potentially fatal disease in infants, also known as blue baby syndrome. To combat nutrient losses, farmers can implement nutrient management plans that help maintain high yields and save money on fertilizers.

Animal Feeding Operations (AFOs)

By confining animals in small areas or lots, farmers and ranchers can efficiently feed and maintain livestock. But these confined areas become major sources of animal waste. An estimated 238,000 farms and ranches in the United States are considered animal feeding operations, generating about 500 million tons of manure each year. Runoff from poorly managed facilities can carry pathogens (bacteria and viruses), nutrients, and oxygen-demanding organics and solids that contaminate shellfishing areas and cause other water quality problems. Ground water can also be contaminated by waste seepage. An operator can limit discharges by storing and managing facility wastewater and runoff with an appropriate waste management system.

Livestock Grazing

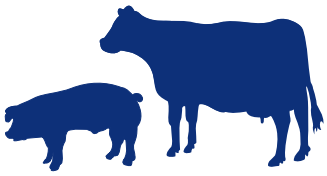
Overgrazing exposes soils, increases erosion, encourages invasion by undesirable plants, destroys fish habitat, and may destroy streambanks and floodplain vegetation necessary for habitat and water quality filtration. To reduce the impacts of grazing on water quality, farmers and ranchers can adjust grazing intensity, keep livestock out of sensitive areas, provide alternative sources of water and shade, and promote revegetation of ranges, pastures, and riparian zones.

Irrigation

Irrigation water is applied to supplement natural precipitation or to protect crops against freezing or wilting. Inefficient irrigation can cause water quality problems. In arid areas, for example, where rainwater does not carry minerals deep into the soil, evaporation of irrigation water can concentrate salts. Excessive irrigation can affect water quality by causing erosion, transporting nutrients, pesticides, and heavy metals, or decreasing the amount of water that flows naturally in streams and rivers. It can also cause a buildup of selenium, a toxic metal that can harm waterfowl reproduction. Farmers can reduce NPS pollution from irrigation by improving water use efficiency. They can measure actual crop needs and apply only the amount of water required. Farmers may also choose to convert irrigation systems to higher efficiency equipment.

Pesticides

Insecticides, herbicides, and fungicides are used to kill agricultural pests. These chemicals can enter and contaminate water through direct application, runoff, and atmospheric deposition. They can poison fish and wildlife, contaminate food sources, and destroy the habitat that animals use for protective cover. To reduce contamination from pesticides, producers should use Integrated Pest Management (IPM) techniques based on the specific soils, climate, pest history, and crop conditions for a particular field. IPM encourages natural barriers and limits pesticide use and manages necessary applications to minimize pesticide movement from the field.



Related Publications

Turn Your Home into a Storm Water Pollution Solution!

www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Agriculture

www.epa.gov/owow/nps/agmm

This technical guidance and reference document is for use by state, local, and tribal managers in the implementation of nonpoint source pollution management programs. It contains information on effective, readily available, and economically achievable means of reducing pollution of surface and ground water from agriculture.

Nonpoint Source News-Notes

www.epa.gov/owow/info/NewsNotes

News-Notes is a periodic newsletter that reports local, state, and national news on managing NPS pollution.

National Water Quality Inventory Report to Congress (305(b) report)

www.epa.gov/owow/305b

EPA prepares this biennial report to inform the public about general water quality conditions in the United States. The document summarizes water quality data provided by states, territories, tribes, and others.

Funding Sources

Clean Water Act Section 319(h) funding is provided to designated state and tribal agencies to implement approved nonpoint source management programs.

Clean Water State Revolving Fund provides funding for the construction of municipal wastewater facilities and implementation of NPS pollution management programs and estuary protection projects.

Environmental Quality Incentives Program offers financial, technical, and educational assistance to install or implement structural, vegetative, and management practices designed to conserve soil and other natural resources.

Conservation Reserve and Conservation Reserve Enhancement Programs implemented by the U.S. Department of Agriculture provide financial incentives to encourage farmers and ranchers to voluntarily protect soil, water, and wildlife resources.

In May 2002 President Bush signed the Farm Bill, providing up to $13 billion for conservation programs for six years. This Farm Bill represents an 80 percent increase above current levels of funding available for conservation programs designed to prevent polluted runoff. For more information, visit www.usda.gov/farmbill.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/nps

February 2003

United States Environmental Protection Agency
Office of Water (4203)
EPA 833-F-00-007
January 2000 (revised December 2005)
Fact Sheet 2.5

Stormwater Phase II Final Rule

Illicit Discharge Detection and Elimination Minimum Control Measure

This fact sheet profiles the Illicit Discharge Detection and Elimination minimum control measure, one of six measures the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its stormwater management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

What Is An "Illicit Discharge"?

Federal regulations define an illicit discharge as "...any discharge to an MS4 that is not composed entirely of stormwater..." with some exceptions. These exceptions include discharges from NPDES-permitted industrial sources and discharges from fire-fighting activities. Illicit discharges (see Table 1) are considered "illicit" because MS4s are not designed to accept, process, or discharge such non-stormwater wastes.

Table 1

Sources of Illicit Discharges
Sanitary wastewater
Effluent from septic tanks
Car wash wastewaters
Improper oil disposal
Radiator flushing disposal
Laundry wastewaters
Spills from roadway accidents
Improper disposal of auto and household toxics

Why Are Illicit Discharge Detection and Elimination Efforts Necessary?

Discharges from MS4s often include wastes and wastewater from non-stormwater sources. A study conducted in 1987 in Sacramento, California, found that almost one-half of the water discharged from a local MS4 was not directly attributable to precipitation runoff. A significant portion of these dry weather flows were from illicit and/or inappropriate discharges and connections to the MS4.

Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or paint or used oil dumped directly into a drain). The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to receiving waterbodies. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

What Is Required?

Recognizing the adverse effects illicit discharges can have on receiving waters, the Phase II Final Rule requires an operator of a regulated small MS4 to develop, implement and enforce an illicit discharge detection and elimination program. This program must include the following:

- ❑ A storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
- ❑ Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under State, Tribal, or local law) on non-stormwater discharges into the MS4, and appropriate enforcement procedures and actions;
- ❑ A plan to detect and address non-stormwater discharges, including illegal dumping, into the MS4;
- ❑ The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste; and
- ❑ The determination of appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Some program implementation approaches, BMPs (i.e., the program actions/activities), and measurable goals are suggested below.

Does This Measure Need to Address All Illicit Discharges?

No. The illicit discharge detection and elimination program does not need to address the following categories of non-stormwater discharges or flows unless the operator of the regulated small MS4 identifies them as significant contributors of pollutants to its MS4:

- ❑ Water line flushing;
- ❑ 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; and
- ❑ Street wash water.

What Are Some Guidelines for Developing and Implementing This Measure?

The objective of the illicit discharge detection and elimination minimum control measure is to have regulated small MS4 operators gain a thorough awareness of their systems. This awareness allows them to determine the types and sources of illicit discharges entering their system; and establish the legal, technical, and educational means needed to eliminate these discharges. Permittees could meet these objectives in a variety of ways depending on their individual needs and abilities, but some general guidance for each requirement is provided below.

The Map

The storm sewer system map is meant to demonstrate a basic awareness of the intake and discharge areas of the system. It is needed to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular waterbodies these flows may be affecting. An existing map, such as a topographical map, on which the location of major pipes and outfalls can be clearly presented demonstrates such awareness.

EPA recommends collecting all existing information on outfall locations (e.g., review city records, drainage maps, storm drain maps), and then conducting field surveys to verify locations. It probably will be necessary to walk (i.e., wade through small receiving waters or use a boat for larger waters) the streambanks and shorelines for visual observation. More than one trip may be needed to locate all outfalls.

Legal Prohibition and Enforcement

EPA recognizes that some permittees may have limited authority under State, Tribal or local law to establish and enforce an ordinance or other regulatory mechanism prohibiting illicit discharges. In such a case, the permittee is encouraged to obtain the necessary authority, if possible.

The Plan

The plan to detect and address illicit discharges is the central component of this minimum control measure. The plan is dependant upon several factors, including the permittee's available resources, size of staff, and degree and character of its illicit discharges. As guidance only, the four steps of a recommended plan are outlined below:

❶ **Locate Problem Areas**

EPA recommends that priority areas be identified for detailed screening of the system based on the likelihood of illicit connections (e.g., areas with older sanitary sewer lines). Methods that can locate problem areas include: visual screening; water sampling from manholes and outfalls during dry weather; the use of infrared and thermal photography, cross-training field staff to detect illicit discharges, and public complaints.

❷ **Find the Source**

Once a problem area or discharge is found, additional efforts usually are necessary to determine the source of the problem. Methods that can find the source of the illicit discharge include: dye-testing buildings in problem areas; dye- or smoke-testing buildings at the time of sale; tracing the discharge upstream in the storm sewer; employing a certification program that shows that buildings have been checked for illicit connections; implementing an inspection program of existing septic systems; and using video to inspect the storm sewers.

❸ **Remove/Correct Illicit Connections**

Once the source is identified, the offending discharger should be notified and directed to correct the problem. Education efforts and working with the discharger can be effective in resolving the problem before taking legal action.

❹ **Document Actions Taken**

As a final step, all actions taken under the plan should be documented. This illustrates that progress is being made to eliminate illicit connections and discharges. Documented actions should be included in annual reports and include information such as: the number of outfalls screened; any complaints received and corrected; the number of discharges and quantities of flow eliminated; and the number of dye or smoke tests conducted.

Educational Outreach

The Center for Watershed Protection and Robert Pitt (2004) researched the most cost-effective and efficient techniques that can be employed to identify and correct inappropriate discharges. Data from Montgomery County, Maryland, was analyzed and it was determined that staff identify and correct about six inappropriate discharges per year as a result of regular screening. By contrast, over 185 inappropriate discharges are corrected each year in Montgomery County as a direct result of citizen complaints and calls to a storm water compliant hotline. Public education and labeling of outfalls and other storm drain infrastructure is an important element of establishing a successful citizen hotline. Outreach to public employees, businesses, property owners, the general public, and elected officials regarding ways to detect and eliminate illicit discharges is an integral part of this minimum measure.

Suggested educational outreach efforts include:

- Developing ***informative brochures, and guidances*** for specific audiences (e.g., carpet cleaning businesses) and school curricula;
- Designing a program to ***publicize and facilitate public reporting*** of illicit discharges;
- ***Coordinating volunteers*** for locating, and visually inspecting, outfalls or to stencil storm drains; and
- Initiating ***recycling programs*** for commonly dumped wastes, such as motor oil, antifreeze, and pesticides.

What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 could establish a measurable goal of responding to all complaints received by the citizen complaint hotline within 24 hours to minimize water quality impacts or recurrent dumping. A complaint tracking system could be used to log response and enforcement activity.

The educational outreach measurable goals for this minimum control measure could be combined with the measurable goals for the Public Education and Outreach minimum control measure (see Fact Sheet 2.3).

Sources

Center for Watershed Protection and R. Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center for Watershed Protection, Ellicott City, MD, and University of Alabama, Birmingham, AL.

Maryland Department of the Environment, Water Management Administration. 1997. *Dry Weather Flow and Illicit Discharges in Maryland Storm Drain Systems*. Baltimore, Maryland.

U.S. EPA Office of Water. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide*. EPA/600/R-92/238. Washington, D.C.

Wayne County Rouge River National Wet Weather Demonstration Project. 1997. *Guidance for Preparing a Program for the Elimination of Illicit Discharges*. Wayne County, Michigan.

For Additional Information

Contacts

☞ U.S. EPA Office of Wastewater Management
http://www.epa.gov/npdes/stormwater
Phone: 202-564-9545

☞ Your NPDES Permitting Authority. Most States and Territories are authorized to administer the NPDES Program, except the following, for which EPA is the permitting authority:

Alaska	Guam
District of Columbia	Johnston Atoll
Idaho	Midway and Wake Islands
Massachusetts	Northern Mariana Islands
New Hampshire	Puerto Rico
New Mexico	Trust Territories
American Samoa	

☞ A list of names and telephone numbers for each EPA Region and State is located at http://www.epa.gov/npdes/stormwater (click on "Contacts").

Reference Documents

☞ EPA's Stormwater Web Site
http://www.epa.gov/npdes/stormwater
- Stormwater Phase II Final Rule Fact Sheet Series
- Stormwater Phase II Final Rule (64 *FR* 68722)
- National Menu of Best Management Practices for Stormwater Phase II
- Measurable Goals Guidance for Phase II Small MS4s
- Stormwater Case Studies
- And many others

☞ Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments
http://www.cwp.org/idde_verify.htm

Lawn Care the Environmentally-Friendly Way

Clean Waters *is a collaboration of the Connecticut Sea Grant Extension Program and the University of Connecticut Cooperative Extension System's NEMO Project, educating individuals about the impacts of everyday activities on water quality and simple techniques that help protect water resources from the home well to Long Island Sound.*

Americans devote an amazing amount of time and money to cultivating the "perfect" lawn. Literally BILLIONS of dollars are spent each year to re-seed, irrigate, and de-thatch lawns. Tons of water, lime, fertilizers and pesticides are applied, with potentially serious environmental and human health consequences, in order to create an expanse of green without the biodiversity or ecological structure of the plant community it replaces. While lawns have roles in the home landscape, including covering septic fields and serving as play areas, they do not have to be meticulously managed to be healthy and look good. Understanding a lawn's environmental needs and tailoring lawn care practices to suit local conditions allows for a dense, healthy, environmentally friendly lawn with less work and expense.

KNOW YOUR GRASSES

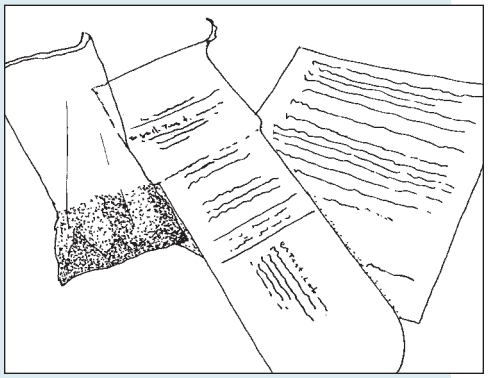
Cool-weather turfgrasses flourish in the spring and fall and some can spread by growing lateral stems across and below the soil surface. These grasses, including bluegrasses, fescues, ryegrasses and bentgrasses are not native to New England but have adapted to this environment through three hundred years of natural selection. These grasses still grow best with cool temperatures and adequate moisture and tend to go dormant or semi-dormant during hot, dry weather.

New England's native grasses include both cool-weather grasses and warm-weather grasses, which "green up" later in the spring and grow as a slowly expanding bunch or clump. Zoysia grass, a non-native, warm weather grass, grows best in hot temperatures, providing a green summer lawn, but it browns out early in the fall and is VERY slow to "green up" in the spring.

Different grass species have varying tolerances to the range of growing conditions found even within one yard. Conditions that can affect turfgrass growth include shade, excessively well-drained or poorly-drained soils, low pH or acid soils, low nutrient availability, high salt concentrations, and heavy foot, play, or animal traffic. The major reason for lawn failure is the improper match of selected grass species to site conditions. An evaluation of the lawn area before selecting a grass seed mix or sod type can go a long way toward preventing lawn problems.

KNOW YOUR SOIL

A soil test is one of the most important steps in maintaining a healthy lawn. Soil pH, organic matter and fertility (or nutrient availability) all affect grass growth. Proper soil pH (6.2 to 6.5) enhances the ability of grass to use available nutrients, tolerate drought, and resist diseases. Most soils in New England are more acidic (lower pH) than is optimal for grass, so soil pH is adjusted by applying limestone, in powder or pelletized form.



Limestone can be applied, at a rate of no more than 50 pounds per 1,000 square feet, at any time the ground is not frozen.

Organic matter in the soil helps the soil hold water and provides some nutrients. If soil is low in organic matter, compost can be spread in a very thin layer over the surface or tilled in to gradually increase the organic content. Leaving grass

ALL GRASSES ARE NOT CREATED EQUAL

	Shade Tolerance	Drought Tolerance	Wet Soil Tolerance	Low pH Acid Soil Tolerance	Low Fertility Tolerance	Salt Tolerance	Traffic Wear Tolerance
Fine Leaf Fescues	XX	XX	☹	X	XX	☹	☹
Roughstalk Bluegrass (M)	XX	☹	XX				☹
Supina Bluegrass (M)	XX	☹					XX
Tall Fescue	X	XX	XX	XX	X	XX	XX
Zoysia grass	X	XX	X	X	X	X	XX
Kentucky Bluegrass	☹	X	X	☹	☹	☹	X
Canada Bluegrass (C)		XX					
Redtop (C)		XX	XX				
Perennial Rye Grass	☹	X	X	☹	☹	X	X

Key

XX = Excellent
X = Good
☹ = Poor

(M) = moist conditions required
(C) = for conservation or erosion control areas

clippings on the lawn after mowing also adds organic matter to the soil.

Lawn health can be affected by soil compaction, as when heavy equipment is driven over the lawn area. Compacted soils prevent water infiltration and deep root growth. Soil coring or aeration helps correct this problem by loosening soils. Spring or Fall is the best time to address compaction. Check for soil compaction by cutting both ends off a large can – like a coffee can. Pound one end at least two inches into the ground. Fill the can with water and measure the water height, then time how long it takes for the water to filter into the ground. A minimum infiltration rate for Connecticut soils would be 0.5 to 1 inch per hour. Anything slower would indicate the soils are probably compacted. [Example calculation: If a full can has 5 inches of water and the water takes 12 hours to completely empty from can, the infiltration rate is 5/12 or 0.42 inches per hour.]

KNOW YOUR FERTILITY

Before adding ANY fertilizer to the lawn, consider all the "free" sources of nutrients. Rainfall provides about one-half pound of nitrogen per 1,000 square feet every year. Lesser amounts of phosphorus and sulfur also come with the rain. Lawns that have clover in their plant mix require less nitrogen since the clover "fixes" nitrogen and makes it available to the surrounding plants. Leaving the grass clippings on the lawn after mowing is the best kind of fertilizer. Research at the University of Connecticut shows that recycling clippings in place reduces the need for supplemental fertilizer applications by 50 to 100 per cent!

If you must fertilize, avoid over-fertilization by following soil test recommendations. Choose a fertilizer formulation that most closely matches what the soil lacks. Slow-release fertilizers improve the chances

that nutrients will remain in the root zone until the grass can use them. For additional water quality protection, use organic fertilizers if possible. Organic formulas combine the benefits of slow nutrient release with the addition of organic matter to the soil. Organic fertilizers may also help reduce some turf disease problems.

Turf type will determine the annual amount of fertilizer required for a healthy lawn. Never apply more than one pound of nitrogen per 1,000 square feet at one time. To determine what is one pound of nitrogen, divide the first number on the fertilizer bag into 100. The result is the amount (in pounds) of fertilizer that should be applied to 1,000 square feet of lawn. Fine and tall fescue-type lawns require only one (September) or two (May and September) applications per year. Bluegrass lawns generally require three applications. Recommended application times coincide with three holidays: Memorial Day, Labor Day and Columbus Day.

To ensure best plant use of fertilizers and to reduce potential water quality problems, New England lawns should never be fertilized before April 1 or after October 15. Always check the weather and avoid applying fertilizer before heavy rainstorms or during long, dry spells.

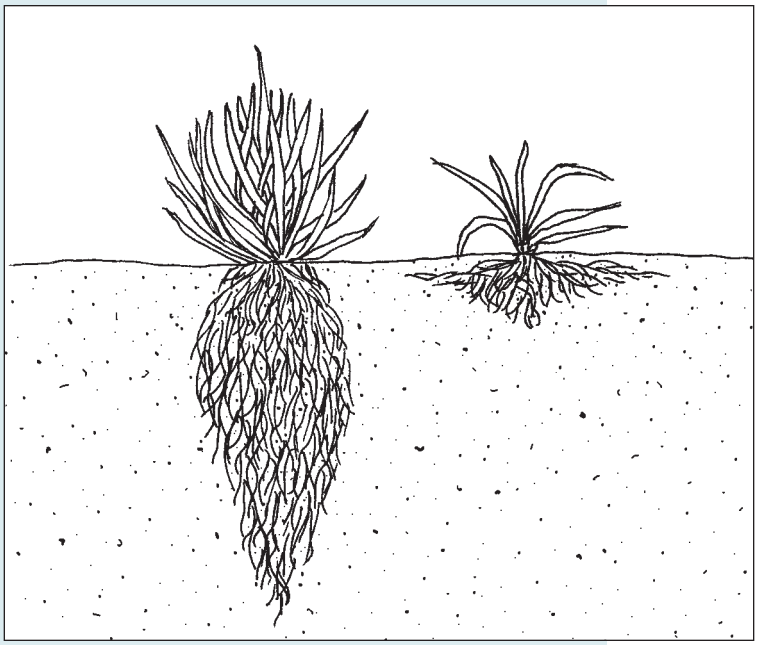
KNOW YOUR WATERING SCHEDULE

Most lawns require about one inch of water per week, either from natural rainfall or irrigation. Some homeowners like to water their lawn for a few minutes several times a week, but this practice actually weakens the grass by discouraging deep root growth. To promote deep root growth and drought resistance, use a rain gauge to keep track of rainfall. If Mother Nature has not provided an inch of rain in a week, then apply an inch of water. Measure watering levels by placing a tuna fish or other shallow can under the sprinkler system. Don't apply water faster than the ground can soak it up. If water runs off the lawn, slow down the watering.

During prolonged dry spells, it is better to let the lawn go dormant than to stress the grass by watering and forcing it to grow. Stressed grass is susceptible to pest and disease problems. Fine fescues and turf-type tall fescues are the more drought-tolerant of the common lawn grasses. Bluegrasses, ryegrasses and bentgrasses may require supplemental water to survive drought conditions.

KNOW YOUR PESTS

The best tool for pest management is to plant grass varieties suitable for the site's growing conditions, and then to avoid stressing them with poor lawn care practices. Weeds have a hard time invading a dense, healthy lawn. When establishing a new lawn or overseeding an old one, take advantage of a natural pest control by looking for "endophyte-enhanced" seed varieties. Certain fescues and ryegrasses contain a fungus that produces compounds that reduce certain insect and disease problems. As these varieties also tend to be more drought-tolerant, water and pesticide use can be reduced at the same time.



Judy Ricketts-White

Scout your lawn for pest problems frequently; catching a problem early makes it easier to correct. If you find a problem, take time to determine:

- What is causing the problem?
- What is the potential for damage?
- What is the best approach to solve the problem?

Correct identification of pest problems is CRITICAL. It does no good to spray grub control pesticides on brown spots in your lawn if they were actually caused by a fungus or dog urine.

Reduce your use of, and exposure to, pesticides by only treating the problem area. Avoid the use of

combination fertilizer-pesticide products, which force you to treat your entire lawn. You should also avoid applying pesticides according to a calendar UNLESS you have had a problem for several years and a pesticide is the ONLY means of control. When pesticide use is necessary, ALWAYS READ THE ENTIRE LABEL! Products should be chosen and treatments timed to be most effective in dealing with the pest and least likely to damage natural controls or be carried to other parts of the environment.

KNOW YOUR LAWN MOWER

How a lawn is mowed can help or hurt lawn health. Even the choice of lawn mower and its maintenance can make a difference. Gas-powered lawn mowers produce the same amount of air pollution in one hour as driving a car for 350 miles. Consider electric power or reel-type push mowers if you have small lawn areas to manage. Keep the mower blade sharp so grass blades are cut cleanly, reducing moisture loss and limiting disease spread. A mulching blade cuts grass clippings into very small pieces so they can be left on the lawn without clumping.

Always try to mow when the grass is dry to prevent spreading disease problems. Mow the lawn to the recommended height for the grass variety but never less than two inches. Grass plants have a hard time recovering from mowing if they have little blade left with which to photosynthesize. Reduce plant stress by never removing more than one-third of the blade at a time. Recommended mowing heights are:

- Tall fescues: 2.5 - 3 inches
- Perennial ryegrass/fine fescues: 2 - 3 inches
- Kentucky bluegrass: 2.5 inches
- Zoysia grass: 1 inch (an exception)

UNDERSTAND THATCH

Thatch is a dense layer of dead grass stems and roots that develops between the soil surface and the green grass blades. Contrary to popular belief, grass clippings do NOT contribute to thatch problems. Heavy thatch reduces water infiltration into the soil. Some grasses (fine fescues, Kentucky bluegrass) are prone to thatch problems; others (tall fescues, perennial ryegrass) are not. Serious thatch problems are usually a sign of poor lawn care practices, such as over-fertilization and improper mowing. De-thatching, best done in the fall, is recommended for lawns with more than one inch of thatch build-up. Top-dressing the lawn with a thin layer of good topsoil will also help control thatch.

ADDITIONAL RESOURCES

There are lots of excellent fact sheets available from The University of Connecticut Cooperative Extension System that cover lawn and pest problems in great detail. Call the University's Home and Garden Education Center, toll-free, at 877-486-6271 or check out the website at <http://www.lib.uconn.edu/canr/HomeGard/> (case-sensitive).

Written by –

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For more information contact: Connecticut Sea Grant,
1084 Shennecossett Rd., Groton, CT 06340
www.seagrant.uconn.edu

Sea Grant Connecticut

The Connecticut Sea Grant College Program, based at the University of Connecticut, is part of a national network of university-based programs sponsoring coastal and marine-related research, outreach and education.

NEMO

Fact Sheet #8

Stormwater Pollution Prevention

The stormwater and melted snow that runs off of the roadway, roofs and sidewalks in your neighborhood is eventually discharged to the nearest brook, stream, pond or wetland in your area. If certain contaminants come in contact with stormwater runoff from your neighborhood, these resources areas may become polluted. Your individual actions can help protect Graftons resources.

What you can do to protect Water Resources in Grafton:

- Do not place anything in the storm drain. **Only rain should go down the drain.**
- Eliminate or minimize fertilizer use.
- Choose slow release types of fertilizer with no phosphorus.
- Do not put leaves in storm drain. Collect for composting or proper disposal.
- Do not let rooftop drain to pavement. Direct your rooftop runoff over vegetation or into a dry well to promote infiltration into the ground.
- Pick up all pet waste and compost, bury, or dispose with sanitary waste.
- Use a car wash or wash cars so runoff goes on to the lawn, not the street, and minimize soap.
- Do not clean driveways by hosing dirt into the street. Collect sweepings and put in trash.
- Keep you neighborhood litter free.
- Do not use pesticides.
- Limit the use of sand and salt and promptly remove when weather permits.
- Don't feed the ducks or geese.

Prepared for Grafton Department of Public Works by Vanasse Hangen Brustlin, Inc., 2012
For additional information Contact: DPW at 508.839.5335

Pick up the Poop and Protect Graftons Ponds, Lakes, Rivers, Brooks and Community Health.

Why do you have to pick up after your dog? Won't it just degrade and wash away? Can't you just push it into the storm drain?

It is critical that you pick up and properly dispose of your pet's waste in the trash, toilet (without the bag), at pet waste disposal stations if available or by burying it (at least 6-inches deep and away from gardens). Pet waste is a serious problem for our health and our waters. If pet waste is left on the sidewalk, the street, the lawn or placed in a catch basin, it washes into the nearest water body, either directly or through storm drains. In Grafton that means directly into Cider Mill, Fisherville, Flint, Hayes, Hovey, Pratts and Windle Ponds, or to Silver Lake, Lake Ripples, the Blackstone River, Quinsigamond River or into all our local brooks, streams and wetlands.

Contrary to what some people think, water that goes down the storm drain does not enter a sewer treatment plant. With every rainfall, anything left on the lawn, street or in the storm drain goes out to the waterbodies. Pet waste that is left out during the winter will stay frozen until it all melts and creates quite a mess and health hazard during the spring thaw.

Some of the problems that occur when pet waste is not picked up include the following:

1. Pet waste contains bacteria that can cause diseases in humans and threaten wildlife.
2. Pets, children, and adults who swim in local waters, play outside or garden are at risk for infection from bacteria found in pet waste, with children having the highest risk.
3. Flies may spread diseases when stopping on waste and then onto uncovered food.
4. Diseases or parasites that can be carried from pet waste to humans include the following:
    a. *Campylobacteriosis* - a bacterial infection carried by dogs and cats that cause diarrhea in humans.
    b. *Cryptosporidium* – a protozoan parasite that can cause diarrhea, stomach cramps, nausea and dehydration. May be fatal to people with insufficient immune systems.
    c. *Toxocariasis* – roundworms transmitted from dogs to humans, often without symptoms, but can cause vision loss, rash, fever or cough.
    d. *Toxoplasmosis* – a protozoan parasite carried by cats that can cause birth defects such as blindness and mental retardation if a pregnant woman becomes infected. Also a problem for persons with depressed immune systems. Can cause headaches, muscle aches and lymph node enlargement.
5. Nutrients in pet waste can cause algae and weed growth in lakes and rivers and ponds. Water may become cloudy and green and unattractive for boating, swimming or fishing.
6. As waste decays in water it uses up the oxygen in the water threatening aquatic life and also releasing ammonia. Low oxygen levels combined with ammonia in warmer temperatures can cause fish kills.

Information Sources include EPA website and various states stormwater websites and articles.

Have you ever wondered where all the water goes when it rains or after the snow melts? Some of it seeps into the ground or evaporates, but much of it runs off over the land or through storm drains and then flows into our streams and ponds. This runoff water is called **"stormwater."**

Stormwater picks up litter, sand, bacteria, oil, and other chemicals as it flows over the land, and it carries these pollutants to our streams, ponds, and wetlands. Runoff from paved surfaces, such as roads, parking lots, and rooftops, may contribute large amounts of polluted stormwater.

Simply by putting fewer pollutants on the land, stormwater will be cleaner as it flows into our lakes and rivers. Cleaning up stormwater not only benefits your neighborhood and town, it benefits the entire network of water bodies and land that make up our watershed. We all need clean water for drinking, swimming, fishing, boating, and for protecting wildlife.

Keeping stormwater clean is in your best interest. Please read on to see how you can help.

Enter the

"SuAsCo Raffle for Stormwater Umbrellas"!

Detach and send the self-test panel with your answers and contact information to:

SuAsCo Watershed Community Council
P.O. Box 176
Maynard, MA 01754

Please keep the rest of the brochure.

The stormwater raffle will take place on June 30, 2004!

Our town is working hard to protect water quality by keeping pollutants out of stormwater. We're also trying to prevent flooding and erosion by managing stormwater flow. Our community has to comply with new federal and state stormwater requirements, and we need your help.

STORMWATER matters.

You'll see this stormwater logo a lot as our community and other cities and towns throughout Massachusetts reach out to residents for help in keeping stormwater clean. Please follow the tips in this flyer and save it as a useful reference. And please participate in our town's stormwater programs.

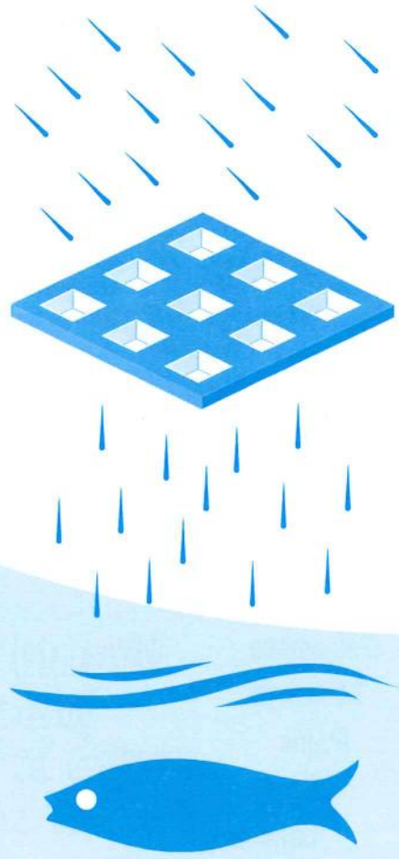
For more information about what our town is doing to clean up stormwater, you can contact:

Roger Hammond, Director
Grafton Department of Public Works
Phone: 508-839-5335 ext. 124
E-mail: dpw@town.grafton.ma.us
Town web site: www.town.grafton.ma.us

This brochure was created by the SuAsCo Watershed Community Council, a non-profit alliance of businesses, municipalities, environmental organizations, and state/federal/regional government agencies. For more information about stormwater, you can also visit the SuAsCo web site at **www.SuAsCo.org**

SuAsCo Watershed Community Council

Help spread the word: Stormwater Matters!



STORMWATER matters™

What is stormwater? Why should I care about it?

The word "stormwater" is new to me: ☐ yes ☐ no

Try this self-test before reading on.
Multiple answers are possible.

1) The water that flows into a storm drain in the street most likely:
- ☐ a goes to a wastewater treatment plant
- ☐ b goes to the nearest stream, pond, or wetland
- ☐ c stays in the drain until it seeps into the ground.

2) Used motor oil can be:
- ☐ a recycled by household hazardous waste collection programs
- ☐ b accepted by the place where purchased with a receipt
- ☐ c put down a storm drain because it will be treated there.

3) When I wash my car, it is best to:
- ☐ a use a commercial car wash
- ☐ b wash it on the street
- ☐ c wash it on the lawn.

4) If I use too much fertilizer on my lawn, the rain will:
- ☐ a push it deeper into the soil
- ☐ b wash it into the nearest stream or pond
- ☐ c dissolve it and make it harmless.

5) The best way to dispose of pet waste is:
- ☐ a put it in a storm drain
- ☐ b leave it on the lawn or curb
- ☐ c put it in the trash or flush it down the toilet.

6) Polluted stormwater might impair the quality of:
- ☐ a my drinking water
- ☐ b my favorite boating or swimming spot
- ☐ c the environment for aquatic species.

7) Stormwater is a problem for:
- ☐ a "big business" to fix
- ☐ b the government to fix
- ☐ c town residents to fix.

8) My age bracket is:
☐ < 20 ☐ 20 – 50 ☐ > 50

Name

Address

Town

Phone

Tips for Keeping Stormwater Clean

Pollutants from Cars:

Gas and Oil
Antifreeze
Metals
Detergents

Car care tips:

- Maintain your car to prevent fluid leaks
- Recycle motor oil, antifreeze, tires, and batteries
- Use a commercial carwash that treats and/or recycles the wash water
- If you wash your car at home, wash it on the lawn so that the water can seep into the soil, and use low-phosphate detergents in small amounts

- NEVER pour or sweep ANYTHING down a storm drain!

This includes:

Pet waste
Motor oil
Paint
Litter
Leaves
Sand

Would you want to swim in any of this?

- Don't block storm drains with refuse or debris

Stormwater on parking lots and streets flows into storm drains so that the pavement won't be flooded. Storm drains have underground pipes that channel the stormwater directly to a nearby water body, usually without any treatment or cleansing. So whatever flows down a storm drain comes out in a nearby water body, such as a wetland, stream, or pond.

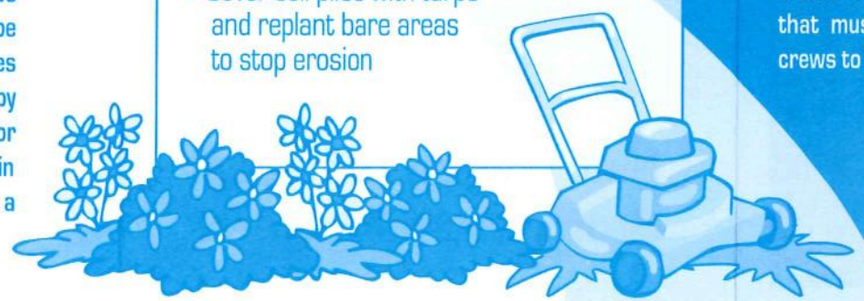
Using more fertilizer or pesticide than the label calls for wastes the product and doesn't help the lawn. The extra fertilizer or pesticide may wash away into a storm drain and out to a nearby wetland, stream, or pond where it can harm aquatic plants and animals.

Pollutants from Lawns:

Fertilizer
Pesticides Herbicides

Lawn care and garden tips:

- Use fertilizer, pesticides, and herbicides sparingly
- Try using organic lawn care methods
- Mow 2 to 3 inches high to encourage dense growth and deter weeds
- Mulch lawn clippings and leaves
- Do not overwater your lawn
- Reduce lawn size in favor of rock gardens or natural vegetation
- Cover soil piles with tarps and replant bare areas to stop erosion



More ways that YOU can help

- Pick up after your pet and dispose of droppings in the toilet or trash
- Aim your roof downspouts away from paved surfaces or into a rain barrel
- Dispose of paint, oil, and other household chemicals at a local hazardous waste collection day
- Support community efforts to keep stormwater clean
- Coordinate a neighborhood storm drain stenciling day
- Join a stream team to help care for your neighborhood stream
- Learn more about stormwater

Other Stormwater Pollutants:

Salt **Sand**
Bacteria **Chemicals**

Our town performs many activities that are critical to keeping stormwater clean. Street sweepers pick up sand and winter debris so that these pollutants won't be washed into storm drains. Most storm drains have catch basins to trap heavy particles that must be cleaned out regularly by our town crews to keep the drains clear.

Attachment C: Bylaws

ARTICLE 36

STORMWATER MANAGEMENT BY-LAW

SECTION 1: Purpose

The purpose of this By-law is to protect, maintain and enhance the public health, safety, environment and general welfare by establishing minimum requirements and procedures to control the adverse effects of increased post-development stormwater runoff and non-point source pollution associated with new development and redevelopment construction activity.

The Town of Grafton requires the use of Low Impact Development (LID) stormwater management practices whenever possible and better site design to minimize stormwater related impacts within the Town. The LID practices promoted in the Massachusetts Stormwater Management Regulations should be considered for use on development and redevelopment projects in the Town.

SECTION 2: Applicability

This By-law applies to any land-disturbing activity in the Town of Grafton as defined here in §2. All other land disturbing activities below the thresholds established below do not require an administrative review but shall employ best management practices to ensure that erosion is controlled and that disturbed soil is contained on site.

Stormwater Management Permit. The following land-disturbing activities, whether new development or redevelopment, shall require a Stormwater Management Permit:

1. Excavating, grading, or other activity which disturbs an area of 40,000 or more square feet or a volume of earth resulting in a total quantity equal to or greater than 1,000 cubic yards.

The application for a Stormwater Management Permit shall include the submittal of a Stormwater Management Plan to the Conservation Commission. This Stormwater Management Plan shall contain sufficient information for the Commission to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater. The Plan shall be designed to meet, at a minimum, the Massachusetts Stormwater Management Standards as set forth in the DEP Stormwater Management Regulations, Volumes I and II and as amended from time to time. The Town of Grafton requires the use of nonstructural stormwater management practices, better site design practices or Low Impact Development (LID) practices, such as reducing impervious cover and the preservation of Open Space and other natural areas, to the maximum extent practicable.

SECTION 3: Exceptions

The provisions of this By-law shall not apply to:

a. Work performed for normal maintenance or improvement of land in agricultural or forestry use;

b. The removal of hazardous and/or dead trees;

c. Routine maintenance of vegetation and removal of dead or diseased limbs or trees necessary to maintain the health of cultivated plants, to control noxious weeds or vines in accordance with a Department of Conservation and Recreation (DCR) approved Forest Management Plan, or to remedy a potential fire or health hazard or threat to public safety;

d. Repair or replacement of individual sewage disposal systems serving a single- or two-family dwelling when required by the Board of Health for the protection of public health;

e. Normal maintenance of existing landscaping, gardens or lawn areas associated with a single-family dwelling, provided that such maintenance does not include the following:

- construction of any walls more than four feet in height;
- alteration of existing grades by more than two feet in elevation; or
- alteration of drainage patterns.

f. Construction of utilities other than drainage (gas, water, sewer, electric, telephone, etc.) that will not alter terrain or drainage patterns.

g. Routine maintenance and upgrade of existing municipal drainage system/stormwater system that will not significantly alter existing terrain or drainage system.

h. Routine maintenance and upgrading of existing public ways including reclamation and paving, and other routine maintenance activities that apply to roadway maintenance that will not significantly alter the existing terrain or drainage system.

SECTION 4: Waivers

The Commission may waive strict compliance with any requirement of this By-law or the rules and regulations promulgated hereunder, where such action:

a. Is allowed by federal, state and local statutes and/or regulations;

b. Is in the public interest; and

c. Is not inconsistent with the purpose and intent of this Bylaw.

Any applicant may submit a written request to be granted such a waiver. Such a waiver request shall be accompanied by an explanation or documentation supporting the waiver request and demonstrating that strict application of this Bylaw does not further the purposes or objectives of this By-law.

All waiver requests shall be discussed by the Commission and a decision will be made by the Commission within 30 days of receiving the waiver request.

If, in the Commission's opinion, additional time or information is required for review of a waiver request, the Commission may continue consideration of the waiver request to a date certain announced at the meeting. In the event the applicant refuses a continuance, or fails to provide the requested information, the waiver request shall be denied.

SECTION 5: Administration - Permits, Determination, and Conditions

The Grafton Conservation Commission, as established under M.G.L. C. 40, § 8C shall have authority to administer this Bylaw. The Conservation Commission shall administer, implement and enforce this Bylaw. Any powers granted to or duties imposed upon the Conservation Commission may be delegated in writing by the Conservation Commission to its employees or agents.

a. Review. The Commission and its agents shall review all applications for Stormwater Management Permits, conduct inspections, issue a final permit and conduct any necessary enforcement action. The applicant shall submit all additional information requested by the Commission to issue a decision on the application.

b. Standards. Projects shall meet the standards of the Massachusetts Stormwater Management Regulations.

c. Action. The Commission may:

   1. Approve the Stormwater Management Permit application and issue an objectives and requirements of this Bylaw;

   2. Approve the Stormwater Management Permit application and issue a permit with conditions, modifications or restrictions that the Commission determines are required to ensure that the project will protect water resources and meet the objectives and requirements of this Bylaw;

   3. Disapprove the Stormwater Management Permit application and deny the permit if it finds that the proposed plan will not protect water resources or fails to meet the objectives and requirements of this By-law.

d. Extensions. A Stormwater Management Permit shall be valid for three years from the date the permit is issued. The Commission may grant extensions for additional 1 year periods, upon written request for renewal no later than 30 days prior to expiration of the permit.

SECTION 6: Coordination with other Boards

Following receipt of a completed application, the Commission shall seek review and comments from the Planning Board, Board of Health, Building Inspector, and Department of Public Works. The Commission shall not make a decision on the Stormwater Management Permit until it has received comments from these entities or until 14 days have elapsed after receipt of the application materials without submission of comments thereon.

SECTION 7: Notice and Hearings

a. **Application**. A completed application for a Stormwater Management Permit shall be filed with the Commission. A permit, or a determination that a permit is not required, must be obtained prior to the commencement of land disturbing activity. The permit application requirements are specified in regulations adopted by the Commission.

In an appropriate case, the Commission may accept as the application and plans under this By-law any application and plans filed under the Wetlands Protection Act (G.L. Ch. 131 §40) and regulations (310 CMR 10.00), but the Commission is not obliged to do so.

b. **Public Hearing**. The Commission shall hold a public hearing within 30 days of the receipt of a complete application, with written notice given at the expense of the applicant five days prior to the hearing. The applicant shall also notify abutters by certified mail at least five days prior to the hearing. The Commission shall make the application available for inspection by the public during business hours at the Town Hall. The Commission shall take final action within 21 days from the time of the close of the hearing unless such time is extended by agreement between the applicant and the Commission.

   In an appropriate case, the Commission may combine its hearing under this and regulations (310 CMR 10.00).

SECTION 8: Operation and Maintenance Plans

An operation and maintenance plan (O&M Plan) is required at the time of application for all projects subject to a Stormwater Management Permit. The maintenance plan shall be designed to ensure compliance with the permit, this By-law and that the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, are met in all seasons and throughout the life of the system. The Commission shall make the final decision on what maintenance option is appropriate in a given situation. The Commission will consider natural features, proximity of site to water bodies and wetland resource areas, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. The operation and maintenance plan shall remain on file with the Commission and shall be an ongoing requirement. Requirements for the content of the O&M Plan and its implementation are specified in Stormwater Management Rules and Regulations associated with this Bylaw.

SECTION 9: Certificate of Completion

Upon the completion of the activities allowed under a Stormwater Management Permit, the applicant shall notify the Commission and request a final inspection and certificate of completion. The applicant shall submit an as-built plan prepared by a professional land surveyor or registered professional engineer along with certification from a registered professional engineer that all construction has been done in accordance with the approved stormwater management plan.

SECTION 10: Stormwater Management Regulations

The Conservation Commission may adopt, and periodically amend, rules and regulations relating to the terms, conditions, definitions, enforcement, fees, procedures and administration of this By-law after conducting a public hearing to receive comments on any revisions. After public notice and public hearing, the Commission shall have authority to promulgate rules and regulations to implement this By-law, to review permit applications, to perform monitoring and inspections, to grant or deny permits, and to enforce the provisions of this By-law, and to take any other actions reasonable and appropriate to implement this By-law.

SECTION 11: Definitions

The following definitions shall apply in the interpretation and implementation of this By-law:

"**Abutter**" — The owner(s) of land sharing a common property line with the owner of land that is the subject of an application and the owners of land directly opposite on any public or private street or way, and abutters to the abutters within 300 feet of the property line of land that is the subject of the application as they appear on the most recent applicable tax list, notwithstanding that the land of any such owner is located in another city or town.

"**Agriculture**" — The normal maintenance or improvement of land in agricultural or aquacultural use, as defined by the Massachusetts Wetlands Protection Act (M.G.L. C. 131, §~40) and its implementing regulations (310 CMR 10.00) and any agricultural activity which is consistent with an approved soil conservation plan prepared or approved by the United States Department of Agriculture (USDA) Natural Resources Conservation Service.

"**Alteration**" —Any activity that will measurably change the ability of a ground surface area to absorb water or will change existing surface drainage patterns. Alteration may be similarly represented as "alteration of drainage characteristics," and "conducting land-disturbing activities." Such changes include, but are not limited to: change from distributed runoff to confined, discrete discharge; change in the volume of runoff from the area; change in the peak rate of runoff from the area; and change in the recharge to groundwater on the area.

"**Applicant**" — Any "person," as defined below, requesting a Stormwater Management Permit for a proposed land-disturbing activity.

"**Best Management Practice (BMP)"** — Structural, nonstructural and managerial techniques that are recognized to be the most effective and practical means to prevent and/or reduce increases in stormwater volumes and flows, reduce point source and non-point source pollution, and promote stormwater quality and protection of the environment. "Structural" BMPs are devices that are engineered and constructed to provide temporary storage and treatment of stormwater runoff. "Nonstructural" BMPs use natural measures to reduce pollution levels, do not require extensive construction efforts, and/or promote pollutant reduction by eliminating the pollutant source.

"**Clearing**" — Any activity that removes the vegetative surface cover. Clearing activities generally include disturbance or grubbing activity as defined below.

"**Cold Water Fishery**" – Environmental resources defined by Massachusetts Division of Fisheries & Wildlife as meeting at least one of three criteria:

1. Brook, brown or rainbow trout has been determined;
2. Slimy sculpin or longnose sucker are present; or
3. The water is part of the Atlantic salmon restoration effort or is stocked with Atlantic salmon fry or parr.

"**Development**" — The modification of land to accommodate a new use or expansion of use, usually involving construction.

"**Erosion**" – The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

"**Erosion And Sedimentation Control Plan**" — A document containing narrative, drawings and details developed by a qualified professional engineer (PE), a professional land surveyor (PLS), a registered landscape architect (RLA), or a certified professional in erosion and sedimentation control (CPESC), which includes best management practices or equivalent measures designed to control surface runoff, erosion and sedimentation during pre-construction and construction-related land disturbance activities.

"**Grubbing**" — The act of clearing land surface by digging up roots and stumps.

"**Land-Disturbing Activity or Land Disturbance**" — Any activity, including clearing and grubbing, that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

"**Low-Impact Development (LID)" —** Development that results in minimized alterations of the land for a more sustainable land development pattern. The site planning process t first identifies critical natural resources and then determines appropriate building envelopes to preserve resources. LID also incorporates a range of best management practices (BMPs) that preserve the natural hydrology of the land, minimize impervious areas and preserve vegetation.

"**Massachusetts Stormwater Management Policy**" — The policy issued by the Department of Environmental Protection, as amended from time to time, that coordinates the requirements prescribed by state regulations promulgated under the authority of the Massachusetts Wetlands Protection Act, M.G.L. C. 131, §~40, and the Massachusetts Clean Waters Act, M.G.L. C. 21, §~23-56. The policy addresses stormwater impacts through implementation of performance standards to reduce or prevent pollutants from reaching water bodies and control the quantity of runoff from a site.

"Municipal Storm Drain System or Municipal Separate Storm Sewer System (MS4)" — The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Grafton.

"Non-Point Source Pollution" — Pollution from diffuse sources, as opposed to discrete conveyances, caused by water, including rainfall or snowmelt, moving over or through the ground.

"Operation and Maintenance Plan" — A plan describing the functional, financial, and organizational mechanisms for the ongoing operation and maintenance of a stormwater management system to ensure that it continues to function as designed.

"Outstanding Resource Waters (ORW)" — Waters designated by the Massachusetts Department of Environmental Protection as ORWs. These waters have exceptional sociologic, recreational, ecological and/or aesthetic values and are subject to more stringent requirements under both the Massachusetts Surface Water Quality Standards (314 CMR 4.00) and the Massachusetts

Stormwater Management Standards. ORWs include vernal pools certified by the Natural Heritage Program of the Massachusetts Department of Fisheries and Wildlife and Environmental Law Enforcement, all Class A designated public water supplies with their bordering vegetated wetlands, and other waters specifically designated.

"Person" — An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

"**Point Source**" — Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants are or may be discharged.

"**Pre-Development**" — Those conditions that exist at the time that plans for the land development of a site or parcel of land are submitted to the Committee. When phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time prior to the first plan submission shall establish pre-development conditions.

"**Post-Development**" — Those conditions that reasonably may be expected or anticipated to exist after completion of the land development activity on a specific site or parcel of land. Post-development also refers to the phase of a new development or redevelopment project after completion, and does not refer to the construction phase of a project.

"**Redevelopment**" — Development, rehabilitation, expansion, demolition or phased projects that disturb the ground surface or increase the impervious area on previously developed sites.

"**Runoff**" — Rainfall, snowmelt, or irrigation water flowing over the ground surface.

"**Sediment**" — Mineral or organic soil material that is transported by wind or water from its origin to another location; the product of erosion processes.

"**Sedimentation**" — The process or act of deposition of sediment.

"**Site**" — Any lot or parcel of land or area of property where land-disturbing activities are, were, or will be performed.

"**Soil** — Earth materials, including decomposed organic material, humic materials, sand, rock and gravel.

"**Stabilization**" — The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

"**Stormwater**" — Stormwater runoff, snow melt runoff, and surface water runoff and drainage.

"**Stormwater Management Permit (SMP)"** — A permit issued by the Commission, which is designed to protect the environment of the Town of Grafton from the deleterious effects of uncontrolled and untreated stormwater runoff.

"**Stormwater Management Plan**" — A document containing narrative, drawings and details prepared by a qualified professional engineer (PE), a professional land surveyor (PLS), or a certified professional in erosion and sedimentation control (CPESC),which includes structural and nonstructural best management practices to manage and treat stormwater runoff generated from regulated development activity. A Stormwater Management Plan also includes an Operation and Maintenance Plan describing the maintenance requirements for structural best management practices.

"**Wetland Resource Area**" — Areas specified in the Massachusetts Wetlands Protection Act, M.G.L. C. 131, §~40, and in Article 25, General Wetlands Protection Bylaw, of the Town of Grafton.

SECTION 12: Security

The Commission may require the applicant to post a surety bond, cash, or other acceptable security before the start of any land-disturbing activity. The form of the bond/surety shall be approved by Town Counsel and the Town Treasurer, and be in an amount deemed sufficient by the Commission to insure that the work will be completed in accordance with the permit. Any performance bond or certificate of guarantee shall be executed and maintained by a financial institution, surety, or guaranty company qualified to do business in the Commonwealth.

SECTION 13: Enforcement and Penalties

The Commission or its authorized agent shall enforce this By-law, its regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

Any person who violates any provision of this By-law, regulation, order or permit issued thereunder, shall be punished by a fine of not more than $300. Each day or part thereunder that such violation occurs or continues shall constitute a separate offense.

As an alternative to criminal prosecution or civil action, the Town may elect to utilize the non-criminal disposition procedure set forth in M.G.L. C. 40, §~21D, in which case the Commission or authorized agent shall be the enforcing person. The non-criminal penalty for violations shall be $50 for the first violation, $100 for the second violation, and $300 for the third violation and each subsequent violation. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

SECTION 14: Inspection

Filing an application for a Stormwater Management Permit grants the Commission, or its agent, permission to enter the site of the land-disturbing activity, as permitted by law, to verify the information in the application and to inspect for compliance with permit conditions.

SECTION 15: Fees

The Commission by regulation shall promulgate an application fee schedule for stormwater management permit applications and completion certificates. The fee schedule shall be reasonably related to the costs of processing, reviewing and acting upon the application. The fee specified in such a fee schedule shall be made payable to the Town of Grafton and shall accompany the permit

application or request for certificate of completion. The Commission may require an additional fee for review of any change in or alteration from an approved permit. Said fee shall be paid into a special account set up by the Town Treasurer and may be expended by the Commission for the purpose allocated without further appropriation in accordance with the provisions of M.G.L C. 44, §~55E 1/2.

Pursuant to G.L. Ch. 44 §53G and regulations promulgated by the Commission, securing outside consultants, including engineers or other experts, in order to aid in the review of proposed projects. Such funds shall be deposited with the town treasurer, who shall create an account specifically for this purpose. Additional consultant fees may be requested where the requisite review is more expensive than originally calculated or where new information requires additional consultant services.

SECTION 16: Appeals

A decision by the Conservation Commission made under this By-law shall be reviewable in the Superior Court in an action filed within 60 days thereof, in accordance with M.G.L. C. 249 § 4.

SECTION 17: Relation to the Clean Water Act.

This By-law is adopted under authority granted by the Home Rule Amendment of the Massachusetts Constitution, the Home Rule Statutes, and the regulations of the Federal Clean Water Act found at 40 CFR 122.34.

SECTION 18: Severability

If any provision, paragraph, sentence, or clause of this By-law is held invalid for any reason by a court of competent jurisdiction, all other provisions shall continue in full force and effect.

(ATM 5/11/09)

ARTICLE 37

ILLICIT DISCHARGE BY-LAW

SECTION 1: Purpose

Increased and contaminated stormwater runoff is a major cause of impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater; contamination of drinking water supplies; alteration or destruction of aquatic and wildlife habitat; and flooding.

Regulation of illicit connections and discharges to the municipal storm drain system is necessary for the protection of the town's water bodies and groundwater, and to safeguard the public health, safety, welfare and the environment.

The objectives of this by-law are:

- to prevent pollutants from entering the town's municipal separate storm sewer system (MS4);
- to prohibit illicit connections and unauthorized discharges to the MS4;
- to require the removal of all such illicit connections;
- to comply with state and federal statutes and regulations relating to stormwater discharges; and
- to establish the legal authority to ensure compliance with the provisions of this by-law through inspection, monitoring, and enforcement.

SECTION 2: Definitions

For the purposes of this by-law, the following shall mean:

"Authority": Board of Selectmen.

"Authorized Administrative Agency": The Department of Public Works hereafter the DPW its employees or agents designated to enforce this by-law.

"Best Management Practices (BMP)": An activity, procedure, restraint, or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

"Clean Water Act": The Federal Water Pollution Control Act (33 U.S.C. § 1251 *et seq*.) as hereafter amended.

"Discharge of Pollutants": The addition from any source of any pollutant or combination of pollutants into the municipal storm drain system or into the waters of the United States or Commonwealth from any source.

"Groundwater": Water beneath the surface of the ground.

"Illicit Connection": A surface or subsurface drain or conveyance, which allows an illicit discharge into the municipal storm drain system, including without limitation sewage, process wastewater, or wash water and any connections from indoor drains, sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this by-law.

"Illicit Discharge": Direct or indirect discharge to the municipal storm drain system that is not composed entirely of stormwater, except as exempted in Section 8. The term does not include a discharge in compliance with an NPDES Storm Water Discharge Permit or a Surface Water Discharge Permit.

"Impervious Surface": Any material or structure on or above the ground that prevents water infiltrating the underlying soil. Impervious surface includes without limitation roads, paved parking lots, sidewalks, and rooftops.

"Municipal Separate Storm Sewer System (MS4) or Municipal Storm Drain System": The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the town of Grafton.

"National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit": A permit issued by United States Environmental Protection Agency or jointly with the State that authorizes the discharge of pollutants to waters of the United States.

"Non-Stormwater Discharge": Discharge to the municipal storm drain system not composed entirely of stormwater

"Person": An individual, partnership, association, firm, company, trust, corporation, agency, authority, department or political subdivision of the Commonwealth or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.

"Pollutant": Any element or property of sewage, agricultural, industrial or commercial waste, runoff, leachate, heated effluent, or other matter whether originating at a point or non-point source, that is or may be introduced into any sewage treatment works or waters of the Commonwealth. Pollutants shall include without limitation:

(1) paints, varnishes, and solvents;

(2) oil and other automotive fluids;

(3) non-hazardous liquid and solid wastes and yard wastes;

(4) refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnances, accumulations and floatables;

(5 pesticides, herbicides, and fertilizers;

(6) hazardous materials and wastes; sewage, fecal coliform and pathogens;

(7) dissolved and particulate metals;

(8) animal wastes;

(9) rock, sand, salt, soils;

(10) construction wastes and residues; and

(11) noxious or offensive matter of any kind.

"Process Wastewater": Water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any material, intermediate product, finished product, or waste product.

"Recharge": The process by which groundwater is replenished by precipitation through the percolation of runoff and surface water through the soil.

"Stormwater": Storm water runoff, snow melt runoff, and surface water runoff and drainage.

"Surface Water Discharge Permit": A permit issued by the Department of Environmental Protection (DEP) pursuant to 314 CMR 3.00 that authorizes the discharge of pollutants to waters of the Commonwealth of Massachusetts.

"Toxic or Hazardous Material or Waste": Any material, which because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Toxic or hazardous materials include any synthetic organic chemical, petroleum product, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as Toxic or Hazardous under G.L. Ch.21C and Ch.21E, and the regulations at 310 CMR 30.000 and 310 CMR 40.0000.

"Watercourse": A natural or man-made channel through which water flows or a stream of water, including a river, brook or underground stream.

"Waters of the Commonwealth: All waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, costal waters, and groundwater.

"Wastewater": Any sanitary waste, sludge, or septic tank or cesspool overflow, and water that during manufacturing, cleaning or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct or waste product.

SECTION 3: Applicability

This by-law shall apply to flows entering the municipally owned storm drainage system.

SECTION: Authority

This bylaw is adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution and the Home Rule Procedures Act, and pursuant to the regulations of the federal Clean Water Act found at 40 CFR 122.34.

SECTION 5: Responsibility for Administration

The DPW shall administer, implement and enforce this by-law. Any powers granted to or duties imposed upon the DPW may be delegated in writing by the Board of Selectmen to the DPW.

SECTION 6: Regulations

The Board of Selectmen may promulgate rules and regulations to effectuate the purposes of this by-Law. Failure by the Board of Selectmen to promulgate such rules and regulations shall not have the effect of suspending or invalidating this by-law.

SECTION 7: Prohibited Activities

Illicit Discharges. No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into the municipal separate storm sewer system (MS4), into a watercourse, or into the waters of the Commonwealth.

Illicit Connections. No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drain system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection.

Obstruction of Municipal Storm Drain System. No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drain system without prior written approval from Board of Selectmen.

SECTION 8: Exemptions

Discharge or flow resulting from fire fighting activities.

The following non-stormwater discharges or flows are exempt from the prohibition of non-stormwater provided that the source is not a significant contributor of a pollutant to the municipal storm drain system:

(1) Waterline flushing;
(2 Flow from potable water sources;
(3) Springs;
(4) Natural flow from riparian habitats and wetlands;
(5) Diverted stream flow;
(6) Rising groundwater;
(7) Uncontaminated groundwater infiltration as defined in 40 CFR 35.2005(20), or uncontaminated pumped groundwater;
(8) Water from exterior foundation drains, footing drains not including active groundwater dewatering systems, crawl space pumps.
(9) Discharge from landscape irrigation or lawn watering or air conditioning condensation;
(10) Water from individual residential car washing;

(11) Discharge from dechlorinated swimming pool water (less than one ppm chlorine) provided the water is allowed to stand for one week prior to draining and the pool is drained in such a way as not to cause a nuisance;

(12) Discharge from street sweeping;

(13) Dye testing, provided writing notification is given to the DPW prior to the time of the test;

(14) Non-stormwater discharge permitted under an NPDES permit or a Surface Water Discharge Permit, waiver, or waste discharge order administered under the authority of the United States Environmental Protection Agency or the Department of Environmental Protection, provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations,

(15) Discharge for which advanced written approval is received from the Board of Selectmen as necessary to protect public health, safety, welfare or the environment,

(16 For discharges pertaining to items defined in section 7 and 8 the Town shall require testing of currently conveyed or to be conveyed flow at the expense of the property owner. The town may also require a hydraulic capacity analysis of its drainage system to accommodate the flow conveyed or to be conveyed.

SECTION 9: Emergency Suspension of Storm Drainage System Access

The Board of Selectmen may suspend municipal storm drain system access to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened discharge of pollutants that presents imminent risk of harm to the public health, safety, welfare or the environment. In the event any person fails to comply with an emergency suspension order, the Authorized Enforcement Agency may take all reasonable steps to prevent or minimize harm to the public health, safety, welfare or the environment.

SECTION 10: Notification of Spills

Notwithstanding other requirements of local, state or federal law, as soon as a person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of or suspects a release of materials at that facility or operation resulting in or which may result in discharge of pollutants to the municipal drainage system or waters of the Commonwealth, the person shall take all necessary steps to ensure containment, and cleanup of the release. In the event of a release of oil or hazardous materials, the person shall immediately notify the municipal fire and police departments and [insert other appropriate departments]. In the event of a release of non-hazardous material, the reporting person shall notify the Authorized Enforcement Agency no later than the next business day. The reporting person shall provide to the Authorized Enforcement Agency written confirmation of all telephone, facsimile or in-person notifications within three business days thereafter. If the discharge of prohibited materials is from a commercial or industrial facility, the facility owner or operator of the facility shall retain on-site a written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 11: Enforcement

The Board of Selectmen through the DPW shall enforce this by-law, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations.

Civil Relief. If a person violates the provisions of this by-law, regulations, permit, notice, or order issued thereunder, the Board of Selectmen may seek injunctive relief in a court of competent jurisdiction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

Orders: The DPW may issue a written order to enforce the provisions of this by-law or the regulations thereunder, which may include:

(a) elimination of illicit connections or discharges to the MS4

(b) performance of monitoring, analyses, and reporting;

(c) that unlawful discharges, practices, or operations shall cease and desist; and

(d) remediation of contamination in connection therewith.

If the town determines that abatement or remediation of contamination is required, the order shall set forth a deadline by which such abatement or remediation must be completed. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the town may, at its option, undertake such work, and expenses thereof shall be charged to the violator.

Within thirty (30) days after completing all measures necessary to abate the violation or perform remediation, the violator and the property owner will be notified of the costs incurred by the town including administrative costs. The violator or property owner may file a written protest objecting to the amount or basis of costs with the Board of Selectmen within thirty (30) days of receipt of the notification of the costs incurred. If the amount due is not received by the expiration of the time in which to file a protest or within thirty (30) days following a decision of the Board of Selectmen affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the owner's property for the amount of said costs. Interest shall begin to accrue on any unpaid costs at the statutory rate provided in G.L. Ch. 59, 57 after the thirty-first day at which the costs first become due.

Criminal Penalty: Any person who violates any provision of this by-law, regulation, order or permit issued thereunder, shall be punished by a fine of not more than $ 250.00. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

Non-Criminal Disposition: As an alternative to criminal prosecution or civil action, the Board of Selectmen may elect to utilize the non-criminal disposition procedure set forth in G.L. Ch. 40, §21D in which case the DPW shall be the enforcing town department The penalty for the 1st violation shall be $100.00. The penalty for the 2nd violation shall be $250.00. The penalty for the 3rd and subsequent violations shall be $300.00. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

Entry to Perform Duties Under this By-Law: To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Board of Selectmen, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this by-law and regulations and may make or cause to be made such examinations, surveys or sampling as the Board deems reasonably necessary.

Appeals: The decisions or orders of the Board of Selectmen shall be final. Further relief shall be to a court of competent jurisdiction.

Remedies Not Exclusive: The remedies listed in this by-law are not exclusive of any other remedies available under any applicable federal, state or local law.

SECTION 12: Severability

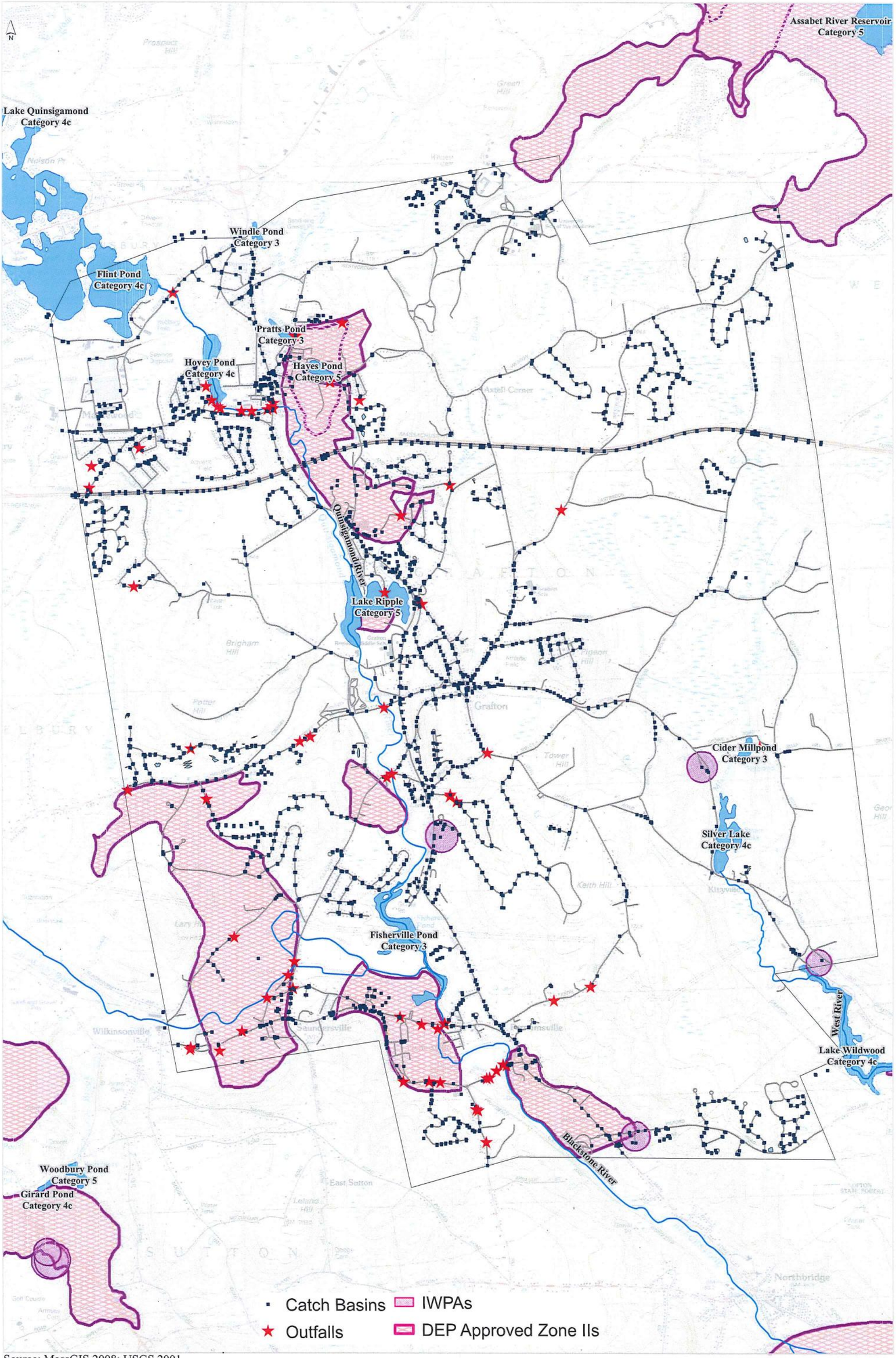
The provisions of this by-law are hereby declared to be severable. If any provision, paragraph, sentence, or clause, of this by-law or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this by-law.

SECTION 13: Transitional Provisions

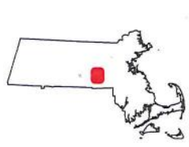
Residential property owners shall have (90) ninety days from the effective date of the by-law to comply with its provisions provided good cause is shown for the failure to comply with the by-law during that period.

(ATM 5/11/09)

Attachment D:
Storm Sewer Map



Source: MassGIS 2008; USGS 2001



The stormwater infrastructure presented on this map was provided by the Town of Grafton. This map may not include all of the available data. It is provided for information purposes only.

April 2012

Grafton, Massachusetts Stormwater Map

VHB Vanasse Hangen Brustlin, Inc.