

**GENERAL PERMIT FOR THE DISCHARGE OF  
STORMWATER FROM SMALL MS4S**

**2016 ANNUAL REPORT**

**FOR  
TOWN OF GREENWICH, CT  
(GSM 000084)**



**DRAFT REPORT FOR DEEP  
January 09, 2017**

# TABLE OF CONTENTS

1. **PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS**
  - BMP 1-1 Educational Brochures and Fact Sheets*
  - BMP 1-2 Educational Seminars and Workshops*
  - BMP 1-3 Website Development*
2. **PUBLIC INVOLVEMENT AND PARTICIPATION**
  - BMP 2-1 Public Involvement and Participation Program*
  - BMP 2-2 Comply with State and Local Public Notice and FOI Requirements*
  - BMP 2-3 Volunteer Monitoring*
3. **ILLICIT DISCHARGE DETECTION AND ELIMINATION**
  - BMP 3-1 Town Drainage System Mapping (>15" in UA)*
  - BMP 3-2 Town Drainage System Mapping (>15" Town-wide)*
  - BMP 3-3 Town Drainage System Mapping (>12" in UA)*
  - BMP 3-4 Illicit Discharge Elimination Program*
  - BMP 3-5 Ordinance Review and Revisions*
  - BMP 3-6 Outfall Inspection and Dry-weather Monitoring*
  - BMP 3-7 Outfall Inspection Training*
4. **CONSTRUCTION SITE STORMWATER RUNOFF CONTROL**
  - BMP 4-1 Regulation Review and Revisions*
  - BMP 4-2 Plan Review*
  - BMP 4-3 Inspection and Enforcement*
  - BMP 4-4 Inspection Training*
5. **POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT**
  - BMP 5-1 Regulation Review and Revisions*
  - BMP 5-2 Develop Post-construction Regulations*
  - BMP 5-3 BMP Strategy*
  - BMP 5-4 Post-construction Inspection and Maintenance*
  - BMP 5-5 Drainage Manual Revisions*
  - BMP 5-6 Plan Review*
  - BMP 5-7 Staff Training*
6. **POLLUTION PREVENTION AND GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS**
  - BMP 6-1 Staff Training*
  - BMP 6-2 Annual Street Sweeping*
  - BMP 6-3 Evaluate Street Sweeping Program*
  - BMP 6-4 Stormwater Structure Cleaning Program*
  - BMP 6-5 Evaluate Stormwater System for Upgrade or Repair*
  - BMP 6-6 Inventory of Town Facilities and Procedures*
7. **MONITORING**
  - BMP S-1 Wet-weather Outfall Monitoring*

# **1. Public Education and Outreach on Stormwater Impacts**

# BMP 1-1 Educational Brochures and Fact Sheets

## Description

Educational materials on a variety of stormwater related topics will be selected/developed for distribution. Many fact sheets, brochures and similar materials are available from EPA, DEEP and other sources. The Town needs to adapt these pieces to provide town-specific information, such as dates and times of town wide programs, and promoting the volunteer water quality effort.

1. Potential topics for “new” brochures
  - “A Complete Guide to the Disposal of Residential Trash”
  - “Don’t Trash Grass”
  - NEMO information
  - “Stormy” pamphlet
  - Stormwater impacts and steps to reduce pollution
  - Residential Lot Development – E&S Controls
  - Identify Urbanized Areas, drainage areas, outfalls and receiving streams
  - Information about catch basin stenciling program
  - Parking lot pollution prevention and stormwater system maintenance
  - Residential land use - NEMO sheets, composting, animal waste management
  - Nutrient and pesticide management and lawn practices
2. Potential methods of distribution
  - Environmental Forum
  - Workshops
  - Bill inserts or individual mailings
  - Fact sheets at town offices and with building permit applications
  - Town website.

## Goals

- Annually introduce for distribution a “new” brochure on a town-wide basis
- Make brochures available at town offices
- Identify new brochures for future availability and distribution with input from community

## Schedule

2005-8 ..... Identify new brochure(s) and distribute

Lead Responsible Person: Director, Conservation Commission

## Other Responsible Person(s):

- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

## Assessment

Brochure topics will be selected annually with input from community groups on educational needs/priorities.

## Record Keeping

All brochures and distribution records of the review assessments are to be kept on file with the SWMP. Submittals to CTDEEP will be made as required.

## 2004 Progress

No developments to report. A brochure will be distributed in 2005.

## 2005 Progress

Conservation Commission has promoted the new Connecticut Stormwater Quality Manual within land use department to staff, commission members, and applicants. Staff routinely refers to BMPs in manual in technical reports on land use applications.

Conservation Commission has assisted the Greenfingers Garden Club with updating of brochure on water conservation for Greenwich as part of a display on water conservation developed for their spring flower show.

Conservation Commission has made available the following brochures in the land use office:

- DEEPs brochure “Home Composting”
- Connecticut College brochure “The New American Lawn”
- Town of Greenwich Mosquito Management Program brochure – promotes IPM practices rather than chemical treatments

## 2006 Progress

Conservation Commission has continued to promote the Connecticut Stormwater Quality Manual and has continued to make available the brochures identified in 2005.

In 2006, Conservation Commission added the new UConn Cooperative Extension System publication “Rain Gardens – A Design Guide for Homeowners in Connecticut”; and will continue to distribute.

Conservation Commission is currently reviewing EPA’s new WaterSense program information for 2007.

## 2007 Progress

Conservation Commission has continued to promote the Connecticut Stormwater Quality Manual and has continued to make available the brochures identified in 2005-06.

Conservation Commission continued work with Byram River workgroup providing information on stormwater quality as needed. Have identified need for information on flooding and stormwater management and will work on for 2008.

Inland Wetlands developed an Erosion Control Pamphlet to be distributed to Public and General Contractors performing work in Town.

### 2008 Progress

Conservation Commission has continued to promote the Connecticut Stormwater Quality Manual and has continued to make available the brochures identified in 2005-06.

Conservation Commission developed fact sheets on the fishway and the diadromous fish that use it as part of their habitat restoration program.

Conservation Commission prepared GIS-based map for Climate Change exhibit at Bruce Museum showing potential sea-level rise challenges on Greenwich coast.

### 2009 Progress

Conservation Commission has continued to promote the Connecticut Stormwater Quality Manual and has continued to make available the brochures identified in 2005-2008.

Conservation Commission, as part of the Byram Watershed Coalition, distributed new brochure on work of the BWC at forum in March 2009 and at office.

### 2010 Progress

Inland Wetlands completed a Wetland Brochure designed to assist new property owners with their understanding of wetlands and the regulatory process.

Byram Watershed Coalition, with support from the Conservation Commission, produced and an updated brochure on the watershed management. Completed in spring 2010 for distribution.

### 2011 Progress

The Engineering Division created a pamphlet called Managing Stormwater through Low Impact Development as part of the new drainage manual that will be effective May 01, 2012.

Conservation Commission distributed the "Good Horse Keeping – Best Practices Manual for Protecting the Environment 2011", developed by the CT Horse Environmental Awareness Program (HEAP) and produced by the North Central Conservation District and partner agencies, to all land use staff. It will be used as part of the watershed education efforts throughout town.

### 2012 Progress

Conservation Commission created a new booklet for school age children entitled "Greenwich Point Junior Ranger Activity Book". This was piloted in September 2012 for National Estuary Day and is now in final editing stage for publication and for website. Includes information on Long Island Sound and water quality including the activities: "An Estuary of National Significance", "Where Does the Water Shed?" and "Keep the Water Clean". Modeled after the National Park Service programs, children who complete the activities in the booklet will receive a patch.

### 2013 Progress

The Engineering Division prepared a Statement of Clarification on The Placement of Fill dated May 1, 2013 that was published to the Town website and made available to the Land Use Departments.

Conservation Commission continued outreach on "Greenwich Point Junior Ranger Activity Book" that focused on Long Island Sound watershed and nonpoint source pollution.

### 2014 Progress

IWWA prepared an instructional tutorial for users navigating its web portal. The portal allows users the ability to access archived data between years 1974-2005 from off-site terminals.

Conservation Commission, in coordination with the Greenwich Tree Conservancy, promoted distribution of the new pamphlet entitled "StormWise" produced by UConn that focuses on proper management of road side trees.

Conservation Commission began coordination of a leaf composting program similar to the "Love 'em and Leave 'em" program in Westchester County, NY. Will be working with DPWP and Greenwich Tree Conservancy to develop similar program and materials for Greenwich.

### 2015 Progress

Conservation Commission continued work on its leaf composting program. This has expanded to also include school cafeteria waste as a nitrogen source. Town has received a grant from CT DEEP Recycling to expand program. Information on leaf recycling has been developed and is now on the website. Additionally, a leaf composting primer for school teachers has been developed to compliment the school recycling program. This program also including conducting a survey on leaf composting for residential land owners.

### 2016 Progress

Conservation Commission continued work on its leaf composting program. This program, originally geared towards leaf recycling has been expanded to target the entire spectrum of organic wastes produced by local schools and property owners. The program rests on three major pillars. The first one focuses on cycling nutrients through shredding grass clippings and leaves into the lawn when mowing. This step could be easily achieved by the use of mulching mowers. The second pillar deals with protecting planted beds with shredded leaves using them as a valuable mulch. The third pillar addresses the entire spectrum of organic wastes. Leaves and other dead yard wastes are used as a valuable source of carbon while kitchen scraps provide a great source of nitrogen. When mixed together, both materials provide a successful compost mix. Compost when ready is applied as a soil amendment. For the property owners who does not have a sizable yard, vermicomposting is offered as a great alternative to recycle kitchen wastes.

The above program was initiated by the endorsement of the Board of Selectmen on July 30, 2015. The initial efforts were limited to introduction of the composting into two pilot schools: Riverside Elementary School and Eastern Middle School. The students were trained to sort wastes in cafeterias to separate them into three categories: recyclables, compostable and trash. The crew from Parks and Recreation applied the mulching mowing program to the school grounds. Excess leaves was collected and put into the outdoor compost bins to mix them with cafeteria scraps collected by students. An educational program was drafted for the second and sixth grade. The second grade received an introduction to vermicomposting tied to the soil unit found in their curriculum, while the sixth grade was introduced to composting while covering the decomposition unit. In addition to schools, the organic waste management program was also promoted throughout several environmental events, radio interviews and newspaper articles.

The CT DEEP grant, received at the beginning of year 2016, boosted up the program creating more opportunities. An educational website was designed for "Leaves Nature's Treasures"

and random group of property owners and landscape professionals were surveyed. These surveys were also made available on the website. The Earth Day Month in April was celebrated through several events emphasizing the organic waste management program. One of the most successful events was the celebration of Earth Day at Riverside School, where over 700 students were engaged in learning about worms, soil, vermicomposting and the importance of recycling. In August a mass mailing reaching out to the neighborhood associations, environmental groups, landscape professionals and even RTM members. The recipients were educated about the program and invited to partner with the Town. In addition, a breakfast meeting was setup to discuss the efforts with the leaders of the landscape industry. In strive of leading by example, the Department of Parks and Recreation was equipped with mulching blades. This great improvement to their mowers allow them to initiate cycling of leaves and grass clippings on Town properties. In September, nine workshops were hosted: five for the property owners and four for the landscape professionals including one in Spanish. October was dedicated to individual and group coaching. One hundred free composters were distributed to the property owners. Together with the compost bin, each owner received practical demonstration of how, what and why to compost. These efforts were concluded with educational workshop/coaching at Innis Arden Cottage on November 8, 2016. In November and December, the focus rested on schools. Earlier in this year, Western Middle School, Greenwich Country Day and Hamilton School had received the outdoor compost bins and proper training. Putnam Indian Field School which is a local daycare embraced organic management program in December. They were supported with free outdoor composters and proper training. A new vermicompost setup in this daycare will be used by 4-years old students to learn about worm habitat and recycling of fruit and vegetable scraps. Currently the composting program is getting ready to enter Greenwich High School with Cos Cob school closely behind.

The beginning of the new year 2017 will continue with composting at schools. Five more schools will be targeted by the efforts. The Earth Day Month in April would bring another opportunity to promote organic waste management. Fifty additional composters were ordered bringing further opportunity for individual/group coaching. More workshops would be scheduled during the winter to reach out to landscape professionals. In fall, workshops would continue so would all the other forms of public outreach. All schools involved in composting program would be monitored and periodically retrained. As learned from the recycling program, it takes time to train the public and send the message out, therefore the Conservation Commission Staff is fully prepared to carry this program with persistence over the upcoming years.

## BMP 1-2 Educational Seminars and Workshops

### Description

#### For the general public, youth students and teachers:

By continuing to provide a variety of workshops, seminars, and volunteer opportunities for youth and adults, it will help to increase public awareness, knowledge, and support for stormwater management programs.

#### For town officials and land use professionals:

To provide opportunities for transfer of current technical information and stormwater management BMPs to both public and private sector involved in land planning or management. The target audience may include:

- Town officials including CEO, BET and Land Use Commissioners
- Town staff (Land Use, DPW, Parks and Recreation and others)
- Private land use professionals
- Private owners/businesses

### Goals

- Annual seminar for general public
- Conduct Environmental Forum meeting on watershed management and non-point source education to encourage and coordinate programming (Conservation)
- Conduct at least 2 Project WET workshop for teachers (Environmental Ed groups)
- Select target area for special workshop (e.g. Marinas)
- Conduct at least 1 special workshop

### Schedule

2004-8 .....	Environmental Forum meeting
2005-8 .....	Annual seminar for general public
2005 .....	Select target areas for special workshops
2005 & 2006 .....	Project WET workshops (1/year)
2006 .....	Special workshop

Lead Responsible Person: Director, Conservation Commission

#### Other Responsible Person(s):

- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

- Meeting goals and schedule set forth herein.
- Review of content and attendance for each workshop

### Record Keeping

A documented review of date, content and overall evaluation of each event will be documented and filed with the SWMP

### 2004 Progress

In November 2002, the Conservation Commission, working with the League of Women Voters hosted two workshops in anticipation of the Phase II program. One was an evening session for the general public and the other was an all day technical workshop for town staff, commission members etc.

In Spring 2004, the Conservation Commission gave a 3-part lecture series at the Garden Education Center on watershed topics including the importance of forests, invasive species and landscaping for water quality.

Also in early 2004, the Conservation Commission, working with the League of Women Voters and Audubon Greenwich presented a forum on groundwater and water quality issues attended by over 100 people.

Another forum is being planned for 2004 on SALT (Smaller American Lawns Today.)

### 2005 Progress

Project WET workshop – Conservation Commission held January 26, 2005 at Soundwaters Environmental Education Center

Held training for in July 2005 for Nestle Water staff in preparation for statewide “Splash” event at Greenwich Garden Education Center.

Assisted DEEP with “Splash” event in Bridgeport - September

In February and March 2005 Conservation Commission presented lectures at Wilton, Darien and Bedford on urban forestry, invasive species, and landscaping for water quality respectively.

On April 14, 2005, the Conservation Commission gave a lecture presentation at the Garden Education Center on Healthy Soils, Healthy Water that focused on the benefits of using compost both to conserve water use and reduce chemical use on residential properties.

Conservation Commission coordinated with the Greenfingers Garden Club on the development of topnotch exhibit on Water Quality and Quantity. After initial showing at flower show held March 5 2005 has been displayed throughout the community including Town Hall and Soundwaters Education Center. Currently at Audubon Greenwich through January 2006.

Conservation Commission presented workshop with the CT Association of Inland Wetland Agents on Vernal Pools for local inland wetland commission staff and members March 31, 2005 at CT Forest and Parks Association.

Conservation Commission met with GG&C and Garden Clubs as environmental forum to discuss educational needs for coming years – March 16.

This was followed up with the establishment of planning team lead by WestFair Hort Club on program for 2006 on reducing use of lawn chemicals.

### 2006 Progress

On March 14, 2006, Conservation Commission co-sponsored workshop with West-Fair Hort Club entitled "Chemical-Free Land Care for Family Friendly Lawns." Over 100 people were in attendance. This met the goal for the annual seminar.

On April 26, 2006, Conservation Commission co-sponsored a forum with the CT League of Conservation Voters entitled "Clearcut", Coming to Neighborhood Near You"; a forum on saving our community forest. This has created two groups, the Greenwich Tree Conservancy and a workgroup to create local ordinances for protection of trees on public and private lands. This met the goal for a special topic.

### 2007 Progress

On February 21, 2007, Conservation Commission presented lecture at the Garden Education Center focusing on the Role of Conservation in the Plan of Conservation and Development (POCD). The focus was on watersheds and open space protection. The lecture encouraged residents to participate in public hearings on the POCD scheduled for the Fall 2007. The presentation was also posted to the Town website; and the organizers used an email group list to reinforce to a broader audience.

Conservation Commission staff served on planning team for regional NACD conference in Mystic, CT – August 2007. Multiple workshops were presented including a presentation and field trip to Jordan Cove.

On September 12, 2007, Conservation Commission co-sponsored a workshop at Audubon Greenwich on chemical free turf/lawns.

### 2008 Progress

Environmental Symposium held March 11, 2008 entitled "Nature at Home in your Garden: Suburban Landscapes to Help the Planet" focusing on native species and pesticide free landscaping. Co-sponsored by the WestFair Horticultural Club, the Conservation Commission, Greenwich Tree Conservancy, Audubon Greenwich and a host of other environmental NGO's

Conservation Director presented program March 19 to Retired Men's Association on watershed management.

Conservation Commission conducted a series of three open houses at the Mianus Pond Fishway in April and May 2008. Over 300 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. Over 400 youth.

### 2009 Progress

Environmental Symposium held March 12, 2008 entitled "Crossing Boundaries: Reclaiming the Byram River - An Introductory Symposium". This event was coordinated by the Byram Watershed Coalition as part of the 319 program and was funded in part by CT DEEP. This event was co-sponsored by the Interstate Environmental Commission, Save the Sound/CFE, Citizens Campaign for the Environment, the Southwest (CT) Conservation District, Westchester County, Town of Greenwich, Town of North Castle, Bedford Audubon, and Audubon Greenwich.

Conservation Director held a series of training program across the state focused on reduction of Canada geese through an egg-oiling program working with watershed initiatives and of Conservation Commissions. Specific to Greenwich held workshop on March 25,

2009 for local landowners and volunteers as part of ongoing goose management program.

Conservation Commission, co-hosted, the Greenwich Tree Conservancy, a walk exploring vernal pools on town parkland. Held March 28 2009 with over 25 folks in attendance.

Conservation Commission conducted a series of three open houses at the Mianus Pond Fishway in April and May 2009. This is the second year for this program. Over 200 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. All marine biology classes at Greenwich High School participated in the program.

Shellfish Commission hosted "Experience the Sound" on April 17, 2009 outdoor field day focusing on the fishery resources of Long Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

Go Greener Greenwich and Conservation Commission sponsored an aggressive education campaign with a different focus each month starting in April 2009 through November 2009. Themes included April – Recycling, May – Indoor/Outdoor Chemical Usage, June/July – Know Your Watershed: From Source to Sound, August/September – Transportation: Choices and Idling, and October/November – Energy Conservation. Highlights of the campaign included a May 12 lecture entitled "Protecting our Children from the Health Hazards of Common Chemicals", a tour of the Bargh Reservoir on June 25, a tour of the Grass Island Wastewater Treatment Plant on July 15, Long Island Sound Educational Cruise – August 1, and an education campaign including materials, window displays and website on transportation choices and idling campaign aimed at local schools and school bus issues.

### 2010 Progress

Inland Wetlands held a seminar entitled "Wetlands and Low Impact Development" Understanding Regulations and Better Building Practices. Half Day seminar introduced residents and professionals to the Agency Regulation, the modifications to the Storm Water Manual and shared alternate design approaches.

The Engineering Division consultant Fuss & O'Neill presented a draft of the Town of Greenwich Stormwater Drainage Manual as part of the seminar entitled "Wetlands and Low Impact Development" held by Inland Wetlands.

Conservation Director held a series of training programs across the state focused on reduction of Canada geese through an egg-oiling program working with watershed initiatives and of Conservation Commissions. Specific to Greenwich held workshop on March 30, 2010 for local landowners and volunteers as part of ongoing goose management program.

Conservation Commission conducted two open houses at the Mianus Pond Fishway in April 2010. This is the third year for this program. Over 100 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. All marine biology classes at Greenwich High School participated in the program totally more than 200 students. Additionally, the Conservation Corps, a young team employment program, brought 4 teams of participants to the fishway for another 80+ youth to learn about this resource.

Shellfish Commission hosted "Experience the Sound" on May 29, 2010 outdoor field day focusing on the fishery resources of Long



Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

#### 2011 Progress

IWWA staff conducted five training seminars covering topics that included comprehension of the local regulations, stormwater management, buffer protection and enhancement and sedimentation and erosion control methods that trained over 200 participants.

The Engineering Division consultant Fuss & O'Neill presented the New Town of Greenwich Stormwater Drainage Manual to the public on April 19, 2011.

The Engineering Division and our consultant Fuss & O'Neill held Low Impact Development Workshops for the New Town of Greenwich Drainage Manual on November 15, 2011 and November 16, 2011.

The Commissioner of Public Works and Chief Engineer attended the 2011 Philadelphia Low Impact Development Symposium September 25-28, 2011, Philadelphia, PA

Three engineers from the Engineering Division attended the Stabilizing Stream Banks: An Introductory Workshop on November 2, 2011, Westchester County Center, White Plains, NY

Working with the League of Women Voters of Greenwich, Conservation Director served on a panel for a program entitled "Greenwich Water: Scarce and Precious" held January 19, 2010 in the Town Hall Meeting Room. Over 100 people attended this forum on Greenwich's drinking water supply.

Conservation Director continued to work with other shoreline communities focused on water quality and goose management. Conducted an egg oiling training workshop in Greenwich on February 25, 2011 for municipal and conservation teams from Greenwich, Milford, and Rhode Island. Provided follow-up technical assistance to Milford in March.

Conservation Commission again conducted two open houses at the Mianus Pond Fishway in March and April 2011. This is the fourth year for this program. Over 100 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. All marine biology classes at Greenwich High School participated in the program totally more than 300 students. Additionally, the Conservation Corps, a young team employment program, brought 4 teams of participants to the fishway for another 80+ youth to learn about this resource.

In coordination with the Southwest Regional Planning Agencies lunch time series, Conservation Director gave a presentation on May 11, 2011 entitled "Water Supply Planning: The Need for Drought Preparedness in Southwestern Connecticut."

Shellfish Commission once again hosted "Experience the Sound" on May 28, 2011 outdoor field day focusing on the fishery resources of Long Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

#### 2012 Progress

IWWA staff hosted two educational forums, one of which was co-sponsored by the Department of Public Works. The public

information sessions covered topics that include low impact development, safe dam removal, means of improving stormwater conveyance, and understanding the importance of vegetated buffers in the landscape.

The IWWA Director scheduled multiple opportunities to speak to professional associations, and community groups about the functioning of the Agency and its role in the landuse process.

Agency Director participated in the preparation of the Mianus River Watershed Plan.

Engineer Division staff educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Engineering Division staff attended the workshop for Watershed Assessment and Low Impact Development for Local and Regional Stormwater Management on September 21, 2012, Westchester County Center, White Plains, NY

Conservation staff continued to work with other shoreline communities focused on water quality and goose management. Conducted an egg oiling training workshop in Greenwich on February 28, 2012.

Conservation Commission again conducted two open houses at the Mianus Pond Fishway in March and April 2012. This is the fifth year for this program. Over 75 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. All marine biology classes at Greenwich High School participated in the program totally more than 300 students. Additionally, the Conservation Corps, a young team employment program, brought 4 teams of participants to the fishway for another 80+ youth to learn about this resource.

Conservation staff and volunteers lead a Vernal Pool walk in the Mianus River State Park (formerly Treetops) on April 1. This was co-sponsored by the Greenwich Land Trust and Greenwich Tree Conservancy.

Conservation staff provide program on watershed and Long Island Sound to Riverside and Old Greenwich Schools in April and May. All 4<sup>th</sup> grade classes participated. This included the activity "Long Island Sound in Jar" at the Riverside School.

The League of Women Voters sponsored a program on water quality and Long Island Sound. Conservation staff moderated the panel, which included staff from the Town Environmental Health Division.

Shellfish Commission once again hosted "Experience the Sound" in June 2012. This is a field day focusing on the fishery resources of Long Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

Conservation Commission once again hosted a series of field workshops entitled "From Source to Sound" in the summer of 2012. This included a tour of the Bargh Reservoir, a tour of our wastewater treatment plant, and ended with a program on Long Island Sound for National Estuary Day.

#### 2013 Progress

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Chief Engineer was a speaker at the 2013 APWA Sustainability Conference and the 2013 Villanova University of Pennsylvania Stormwater Symposium.

Chief Engineer attended numerous sessions at the 2013 APWA Sustainability Conference and 2013 Villanova University Pennsylvania Stormwater Symposium that were related to stormwater.

Conservation staff continued to work with other shoreline communities focused on water quality and goose management with outreach to Westchester county local governments.

Conservation Commission again conducted two open houses at the Mianus Pond Fishway in April 2013. Over 100 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. All marine biology classes at Greenwich High School participated in the program totally more than 300 students. Additionally, the Conservation Corps, a young team employment program, brought 4 teams of participants to the fishway for another 80+ youth to learn about this resource.

Conservation staff provided programs on watershed and Long Island Sound to Riverside and Old Greenwich Schools in April, May, and October 2013. All 4<sup>th</sup> grade classes participated. This included the activity "Long Island Sound in Jar" at the Riverside School.

Conservation Staff conducted a Project WET workshop for PTAC members and teachers on April 25, 2013 with a focus on LIS and its watershed.

Shellfish Commission once again hosted "Experience the Sound" in June 2013. This is a field day focusing on the fishery resources of Long Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

#### 2014 Progress

IWWA scheduled two educational sessions designed to inform members of the Agency and the regulated public about the hazards associated with the use of chemical pesticides/herbicides in aquatic systems and the identification of vernal pools. Two-experienced PhD's in their respective fields hosted the sessions.

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Conservation staff continued to work with other shoreline communities focused on water quality and goose management with outreach other local governments on the Sound.

Conservation Commission worked with several schools within the Greenwich School District on initiating the CT Green Leaf School Program. This included having an environmental awareness day at Parkway School and training GHS students to conduct water related activities for the event. In December 2014, Parkway was the first Greenwich Public School to become a CT Green Leaf School.

Conservation Commission again conducted two open houses at the Mianus Pond Fishway in April and May 2014 including participation in the International Migratory Fish Day. Over 100 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other

groups by appointment. All marine biology classes at Greenwich High School participated in the program totally more than 300 students. Additionally, the Conservation Corps, a young team employment program, brought 4 teams of participants to the fishway for another 80+ youth to learn about this resource.

Conservation staff provided programs on watershed and Long Island Sound to Riverside and Old Greenwich Schools in October 2014. All 4<sup>th</sup> grade classes participated. This included the activity "Long Island Sound in Jar" at the Riverside School.

Shellfish Commission once again hosted "Experience the Sound" in June 2014. This is a field day focusing on the fishery resources of Long Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

#### 2015 Progress

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Conservation staff continued to work with other shoreline communities focused on water quality and goose management with outreach to other local governments on the Sound.

Conservation Commission continued outreach to schools within the Greenwich School District on initiating the CT Green Leaf School Program working to expand last year's program. Focus this year was on soil health with numerous programs being held with for schools and the general public.

Conservation Commission again conducted two open houses at the Mianus Pond Fishway in April and May 2015 including participation in the International Migratory Fish Day. Over 100 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. All marine biology classes at Greenwich High School participated in the program totally more than 300 students. Additionally, the Conservation Corps, a young team employment program, brought 4 teams of participants to the fishway for another 80+ youth to learn about this resource.

Conservation staff provided programs on watershed and Long Island Sound to Riverside and Old Greenwich Schools in fall 2015. All 4<sup>th</sup> grade classes participated. This included the activity "Long Island Sound in Jar" at the Riverside School.

Shellfish Commission once again hosted "Experience the Sound" in June 2015. This is a field day focusing on the fishery resources of Long Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

#### 2016 Progress

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Conservation staff continued to work with other shoreline communities focused on water quality and goose management. Once again the Town conducted an egg oiling program on all Town owned properties oiling over 200 eggs. Assistance was also provided to local residents and an egg oiling training program was conducted for local volunteers. The town expanded its hazing program to include the Cos Cob Library grounds.

Conservation Commission, work with the Greenwich Environmental Roundtable, once again host “Earth Day Celebration Month” in April. This month long event features numerous walks, talks, and workshops on all things environmental. The kickoff event was held at Greenwich Point.

Conservation Commission again conducted two open houses at the Mianus Pond Fishway in April and May 2016. Over 80 attendees were able to view the fishway and learn about this important habitat restoration program from staff and fishway volunteers. The fishway was also available to schools and other groups by appointment. All marine biology classes at Greenwich High School also participated in the program. Additionally, the Conservation Corps, a young team employment program, brought 4 teams of participants to the fishway for another 80+ youth to learn about this resource.

Conservation staff provided programs on watershed and Long Island Sound to Riverside, North Mianus, and Old Greenwich Schools in fall 2016. All 4<sup>th</sup> grade classes participated.

Shellfish Commission once again hosted “Experience the Sound” in June 2016. This is a day-long event focusing on the fishery resources of Long Island Sound. Display for general public on shellfishing, fishway restoration, water quality, and other aspects of Long Island Sound.

Conservation Commission continued work on its leaf composting program (see BMP 1-1).

## BMP 1-3 Website Development

### Description

Develop a web page on the town website devoted to stormwater quality requirements with links to state, federal sites, and other appropriate sites.

### Goals

- Establish “stormwater” web page
- Update periodically
- Have a public feedback section

### Schedule

2004.....Establish work group and meet to discuss content  
2005-6 .....Implement web page  
2006-8 .....Meet periodically to update

Lead Responsible Person: Director, Conservation Commission

### Other Responsible Person(s):

- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

- Meeting goals and schedule set forth herein
- Institute a “hit-meter” to track site activity
- Periodic review of content, public feedback

### Record Keeping

- Document page content and revisions
- Document public feedback
- File with SWMP

### 2004 Progress

Conservation Commission is currently:

- using the website to post SWMP and Annual reports, and
- Gathering information to post and to link on town web site.

### 2005 Progress

Conservation Commission staff met with IT staff and webpage coordinator to begin updating of webpage.

- Established links with other environmental agencies including DEEP and
- Reorganized document page.

### 2006 Progress

All land-use departments have links to other agencies; All departments will continue work next year to have better coordination with newly established Stormwater Division in DPW.

### 2007 Progress

All departments continued to update information on the website. A review of content will occur in 2008.

### 2008 Progress

Conservation Commission started review of website with plans to update in 2009. Established protocol with IT department for direct posting by Conservation staff to the website.

### 2009 Progress

Conservation Commission continued work on Town website to better integrate stormwater management. Go Greener site developed with links to other environmental organizations including government and NGO sites. 2010 will continue work of Go Greener to coordinate environmental links under Conservation Commission.

Byram Watershed Coalition establishes webpage as part of Southwest Conservation District website.

The Engineering Division created a web page giving access to the completed Stormwater Master Plan Drainage Studies developed to evaluate the Town drainage systems because of the flooding on April 15, 2007.

The Engineering Division created a web page giving access to the completed Stormwater Phase II Annual Reports.

### 2010 Progress

All departments continued to update information on the website.

Conservation Commission continued work on Town website to better integrate stormwater management. Go Greener site developed with links to other environmental organizations including government and NGO sites. 2011 will continue work of Go Greener to coordinate environmental links under Conservation Commission.

### 2011 Progress

The IWWA provided access to training information to the Public through its web page. The public now has access to critical information including regulations, training materials, and dated bond account information for expired projects. The Agency anticipates launching web-based access for limited department files on December 1, 2011.

The Engineering Division continues to update the web page for Stormwater Master Plan Drainage Studies developed to evaluate the Town drainage systems because of the flooding on April 15, 2007.

The Engineering Division continues to update the web page for Stormwater Phase II Annual Reports.

The Engineering Division has added a web page for the New Town of Greenwich Drainage Manual, which is effective May 1, 2012.

### 2012 Progress

IWWA has continued the use of its web page as a means of disseminating educational initiatives and critical public information.

The Engineering Division continues to update the web page for Stormwater Master Plan Drainage Studies developed to evaluate the Town drainage systems because of the flooding on April 15, 2007.

The Engineering Division continues to update the web page for Stormwater Phase II Annual Reports.

The Engineering Division continues to update the web page for the Town of Greenwich Drainage Manual.

### 2013 Progress

IWWA has continued the use of its web page as a means of disseminating educational initiatives and critical public information.

The Engineering Division continues to update the web page for Stormwater Master Plan Drainage Studies developed to evaluate the Town drainage systems because of the flooding on April 15, 2007.

The Engineering Division continues to update the web page for Stormwater Phase II Annual Reports.

The Engineering Division continues to update the web page for the Town of Greenwich Drainage Manual.

### 2014 Progress

IWWA prepared strategy to step up publicity on the existence of its web portal allowing residents and land use professionals the opportunity to access archived information from off-site terminals.

The Engineering Division continues to update the web page for Stormwater Master Plan Drainage Studies developed to evaluate the Town drainage systems because of the flooding on April 15, 2007.

The Engineering Division continues to update the web page for Stormwater Phase II Annual Reports.

The Engineering Division continues to update the web page for the Town of Greenwich Drainage Manual.

### 2015 Progress

The Engineering Division continues to update the web page for Stormwater Master Plan Drainage Studies developed to evaluate the Town drainage systems because of the flooding on April 15, 2007.

The Engineering Division continues to update the web page for Stormwater Phase II Annual Reports.

The Engineering Division continues to update the web page for the Town of Greenwich Drainage Manual.

### 2016 Progress

The Engineering Division continues to update the web page for Stormwater Phase II Annual Reports.

The Engineering Division continues to update the web page for the Town of Greenwich Drainage Manual.

Conservation Commission created a page on leaf recycling program as part of this overall initiative. (see link below)  
[http://www.greenwichct.org/government/departments/conservation\\_commission/leaves/](http://www.greenwichct.org/government/departments/conservation_commission/leaves/)

## **2. Public Involvement and Participation**

## BMP 2-1 Public Involvement and Participation Program

### Description

A panel of town staff and volunteers will be created

1. To establish and maintain community support for stormwater management program by involving all stakeholders in the development and implementation of the SWMP, and
2. To provide opportunities for citizen volunteers to participate in meaningful watershed management activities.

The existing stakeholders may include members from the following agencies:

- Department of Public Works
- Planning and Zoning
- Inland Wetland and Watercourses Agency
- Conservation Commission
- Department of Parks and Recreation
- Board of Health
- League of Women Voters
- Mianus River Watershed Council
- Greenwich Green and Clean
- Audubon of Greenwich
- Soundwaters
- Bruce Museum
- Greenwich Land Trust
- Mianus Greenway Alliance

Meeting topics may include:

- Permit compliance status
- BMP implementation status
- SWMP revisions
- Identifying additional stakeholders
- Coordinating volunteer efforts

### Goals

- Establish interagency/citizen panel possibly relying on established groups in leadership roles
- Hold periodic meetings with entire panel (annually, minimum)
- Use neighborhood association network to provide updates on progress of SWMP
- Conduct periodic meeting with only town staff to monitor implementation
- Increase public participation in *Greenwich Green and Clean's* spring and fall town-wide cleanups (including beach cleanup)

### Schedule

2004-8 .....	Annual (minimum)
Interagency/citizen panel meetings	
2004-8 .....	Annual (minimum) town staff meetings
2004-8 .....	Promote GG&C Spring and Fall Cleanups
2005.....	Coordinate speaker's bureau and newsletter articles with neighborhood associations

Lead Responsible Person: Director, Conservation Commission

### Other Responsible Person(s):

- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

- Meeting goals and schedule set forth herein.
- Identification of additional stakeholders (including volunteers)

### Record Keeping

Meeting minutes and other materials will be documented and kept on file with the SWMP.

### 2004 Progress

Conservation Commission established working group in 2002 including the League of Women Voters, Audubon Greenwich, Bruce Museum and several neighborhood groups and the local garden clubs to help get the message out on stormwater management and to give input on the Town's progress.

In Spring 2004, the Conservation Commission conducted a series of stakeholder meetings with the Mianus River Watershed Council (MRWC), to revitalize organization and develop a watershed plan for the river. This effort is ongoing.

Town staff has met regularly in 2004 to prepare the SWMP and Annual Report and monitor the implementation of 2004 tasks.

### 2005 Progress

Conservation Commission continued work with MRWC that has created a new mission statement and goals for the organization. This is an ongoing effort.

A new focus has been placed on storm water quality and quantity issues for the Byram River. Initial meetings were held in fall of 2005 to establish group. Series of meetings are planned plan for 2006 starting on January. The DEEP watershed coordinator is involved and working with neighborhood groups.

Efforts continue to involve the League of Women Voters and Audubon Greenwich.

### 2006 Progress

Conservation Commission continued work with MRWC. They now have a new mission statement and vision and held first workshop in Fall 2006 on "Frog Deformities in CT"

Continued work with Byram River Workgroup. Held 6 meetings with neighborhood groups and reactivated towns Flood and Erosion Control Board. DEEP Watershed coordinator involved. Program ongoing in 2007.

Working with Greenwich Land Trust, Byram River Workgroup, and local neighborhood associations on land protection effort that will protect a parcel Class III water company land in the Byram River Watershed. Ongoing.

### 2007 Progress

Inland Wetlands assembled a group of Municipal officials and land use professionals to tackle issues affecting the Town and brainstorm effective long-term strategies.

Conservation Commission has continued work with Byram River Workgroup. This has resulted in the formation of a Byram River Watershed Task Force and potential 319 projects. The group's first meeting is scheduled for January 2008.

Significant flooding this year provided impetus for stormwater management work throughout town. Numerous public meetings with neighborhood groups and town boards have resulted in the town funding the first phase of a town-wide stormwater master plan.

Conservation Commission continued to meet with numerous organizations including Greenwich Land Trust, Mianus River Watershed Council, on watershed issues including the Aquarion land acquisition.

Planning and Zoning is updating the Plan of Conservation and Development and held over 10 public meetings; gathering information on all relevant topics. These included meetings held specifically, on Conservation and Town Infrastructure.

### 2008 Progress

Planning and Zoning continued to update the Plan of Conservation and Development and held many workshops and meetings with the public and Town leaders. These meetings helped establish the framework of the plan and a prioritization of issues. Drainage, flood control, watershed health and water quality are at the forefront.

Planning and Zoning, Conservation and Inland Wetlands and Watercourses continued to meet with the Department of Public Works to discuss updating the Drainage Manual. This involved discussions about the philosophy of how runoff should be handled in Town and which Best Management Practices would be most effective given our soil types and topography.

Conservation and Planning and Zoning are working in collaboration with the South West Regional Planning Agency to secure a section 319 grant from the Connecticut Department of Environmental Protection to create a watershed management plan for the Mianus watershed. The Byram Watershed Coalition was recently granted a DEEP Section 319 Grant for the Byram River.

### 2009 Progress

Conservation Commission continued work in Byram River Watershed working with Byram Watershed Coalition and local neighborhood associations. Work this year-included outreach to public on the watershed planning process (Forum held March 12) and planning has begun for volunteer effort for stream walk assessment.

Conservation Commission coordinated with Mianus River Watershed Council on fishway monitoring jointly working on grant from Fish and Wildlife Foundation to secure camera and computers.

Planning and Zoning finalized the update to the Plan of Conservation and Development dated 5/12/2009 in compliance with Section 92 of the Town Charter the Planning and Zoning Commission. The Plan is based on studies of physical, social, economic, and governmental conditions and trends, and is designed to promote the development of the Town and the general

welfare and prosperity of its people. Since beginning the POCD updating process in September 2007 the Commission held a total of 23 public meetings prior to this final draft plan so as to include as wide a public input as possible, both by neighborhood and by topics of interest; and these meetings were well attended and comments and issues heard at these meetings have been included in the record and addressed as appropriate in this May 2009 Plan of Conservation and Development.

Planning and Zoning, Conservation and Inland Wetlands and Watercourses continued to meet with the Department of Public Works to discuss updating the Drainage Manual.

Planning and Zoning Staff also continues to participate in the Flood and Erosion Control Board Meetings.

Conservation and Planning and Zoning worked in collaboration with the South West Regional Planning Agency to secure a section 319 grant from the Connecticut Department of Environmental Protection to create a watershed management plan for the Mianus watershed. The Byram Watershed Coalition was recently granted a DEEP Section 319 Grant for the Byram River.

### 2010 Progress

Inland Wetlands began meeting with Chairman and appointed officials from each of the 12 RTM Districts to discuss wetland and watercourses. Information obtained during the gatherings will ultimately be used for watershed-based strategies developed and put forth by the Agency.

Planning and Zoning, Conservation and Inland Wetlands and Watercourses continue to meet with the Department of Public Works to discuss updating the Drainage Manual. The respective Land Use Boards are planning a joint meeting to discuss implementation of the plan.

Planning and Zoning Staff continues to participate in the Flood and Erosion Control Board Meetings.

Planning and Zoning held public information meetings to discuss upcoming zoning regulation changes that would impact storm water such as the definition of lot coverage and severe grading to add floor area.

Conservation Commission continued work in Byram River Watershed working with Byram Watershed Coalition (BWC) and local neighborhood associations. Draft watershed management plan was submitted to DEEP in October 2010.

Conservation Commission and Mianus River Watershed Council are working with the Southwest Regional Planning Agency on developing a watershed management plan for the Mianus River watershed. Planning meetings held through out 2010.

### 2011 Progress

Planning and Zoning continues to meet with the Department of Public Works to discuss updating the Drainage Manual. The respective Land Use Boards attended a joint meeting to discuss the Manual and its implementation.

Planning and Zoning Staff continues to participate in the Flood and Erosion Control Board Meetings.

Based on a public information meeting, Planning and Zoning Staff developed zoning regulations to maintain open areas and green spaces. This has the related benefit of helping with drainage (more green space = more absorption of water), flooding (more green space = slower water) and water quality problems (more green =



more natural cleaning of water) and has been the source of much inter-departmental discussion and public discussion. The Regulation involves requiring a minimum Green Area on residentially zoned properties. The purpose of the New Drainage Manual is to provide an effective stormwater management program to protect and restore water resources and related water dependent uses. Although the Town Drainage Manual is the primary document that handles issues associated with drainage and water quality, it is well documented that there is a direct correlation between the health of a watershed and the amount of natural areas within that watershed.

*This regulation touches on the following goals outlined in the 2009 Plan of Conservation and Development:*

*Goal 1.4: To reduce and manage runoff, establish regulations to limit impervious lot coverage and reduce site hydrology for all new construction on residential properties*

*Goal 1.9: Develop plans to protect water quality in Town watersheds using low impact and best management practices*

*Goal 3.1: Monitor Residential build-out and develop new land-use regulations to preserve traditional development patterns.*

Conservation Commission continued work in Byram River Watershed working with Byram Watershed Coalition (BWC) and local neighborhood associations. Final plan submitted to DEEP in October 2011.

Conservation Commission and Mianus River Watershed Council continued its coordination with the Southwest Regional Planning Agency on developing a watershed management plan for the Mianus River watershed. Planning meetings held through out 2011.

#### 2012 Progress

Planning and Zoning Staff continues to participate in the Flood and Erosion Control Board Meetings.

Planning and Zoning Commission adopted zoning regulations to maintain open areas and green spaces on residentially zoned properties as described above.

Conservation Commission continued work in Byram River Watershed working with Byram Watershed Coalition (BWC) and local neighborhood associations. Focus is on working to implement plan adopted in 2011.

Conservation Commission and Mianus River Watershed Council continued its coordination with the Southwest Regional Planning Agency on developing a watershed management plan for the Mianus River watershed. Planning meetings held through out 2012.

#### 2013 Progress

The Department of Public Works continues to hold quarterly Flood and Erosion Control Board Meetings to keep the public informed of the Towns stormwater activities.

Planning and Zoning Staff continues to participate in the Flood and Erosion Control Board Meetings.

Conservation Commission continued work in Byram River Watershed working with Byram Watershed Coalition (BWC) and local neighborhood associations. Focus is on working to implement plan adopted in 2011.

Conservation Commission and Mianus River Watershed Council continued its coordination with the Southwest Regional Planning Agency on completion of developing a watershed management

plan for the Mianus River watershed. Now will focus on implementation of the plan.

#### 2014 Progress

The Department of Public Works continues to hold quarterly Flood and Erosion Control Board Meetings to keep the public informed of the Towns stormwater activities.

Planning and Zoning Staff continue to participate in the Flood and Erosion Control Board Meetings.

Planning and Zoning adopted a new zoning regulation to define a "Flood Zone Grade Plane" that impacts properties in flood zones. The grade plane is generally the average grade around a structure and the Flood Zone Grade Plane is defined as "A reference plane from which to measure the number of stories, height, and floor area of dwelling units in residential zones within the Flood Hazard Overlay Zone. The flood zone grade plane shall be measured from two feet (2') below the Base Flood Elevation, or the grade plane as defined under Section 6-5(a) (26), whichever is higher..." One of the intended benefits of the regulation is to deter major grading and fill, which impact stormwater, in order to meet height and stories.

Conservation Commission continued work in Byram River Watershed working with Byram Watershed Coalition (BWC) and local neighborhood associations. Focus is on working to implement plan adopted in 2011.

Conservation Commission and Mianus River Watershed are now focused on implementation of the plan adopted in 2013.

Conservation staff, working with the CT Association of Conservation Districts and other state and federal partners, began promotion of a Long Island Sound Watershed Initiative with a focus on landscape scale program that included the entire watershed. This led to the CT Council being invited to submit a full grant application for the new NRCS RCPP program focused nutrient management. This was done in October 2014 with a request for \$20 million for the Long Island Sound Watershed.

#### 2015 Progress

The Department of Public Works continues to hold quarterly Flood and Erosion Control Board Meetings to keep the public informed of the Towns stormwater activities.

Conservation Commission continued work in Byram River Watershed local neighborhood associations. Focus is on working to implement plan adopted in 2011.

Conservation Commission and Mianus River Watershed Council are now focused on implementation of the plan adopted in 2013. MRWC folded into the Mianus River Gorge as a standing committee. Conservation staff assisted with annual Source to Sound tour for Mianus River Gorge.

Conservation staff, working with the CT Association of Conservation Districts and other state and federal partners, began promotion of a Long Island Sound Watershed Initiative with a focus on landscape scale program that included the entire watershed. This led to the CT Council being awarded a \$10 million grant focusing on nutrient reduction for LIS.

Conservation Commission held series of public meetings on the 2015 Open Space Plan and is finalizing for implementation.

Conservation Commission and staff is coordinating with the newly appointed Harbor Management Commission on the development

of a Harbor Management Plan.

Planning and Zoning Staff continue to participate in the Flood and Erosion Control Board Meetings.

Planning and Zoning completed the Eastern Greenwich Neighborhood Plan (adopted 9/15/15). Part of that plan makes recommendations for stormwater management practice, floodplain management and tree preservation. Recommendations included: looking to strengthen land use regulations related to tree preservation; encouraging the use of green infrastructure consistent with the Stormwater Drainage Manual; potentially limiting any fill in non-floodplain areas; and working with homeowners to encourage bank stabilization on private properties upstream from Binney Park to possibly reduce sedimentation downstream.

#### 2016 Progress

Planning and Zoning Staff will continue to participate in the Flood and Erosion Control Board Meetings.

Planning and Zoning is in the process of completing the Glenville and Pemberwick Neighborhood Plan. Part of that plan makes recommendations for stormwater management practices, and floodplain management tree preservation. Recommendations include: Promote the use of green infrastructure, particularly on Town-owned property such as Glenville Green, Bendheim Western Civic Center, Glenville School and Pemberwick Park; Support the USACE study on flooding along the Byram River and coordinate with the USACE on implementation of the study's recommendations; and facilitate the cleanup of invasive vegetation and dumping along the banks of Byram Pond through public - private partnerships.

The Inland Wetlands and Watercourses Agency held 16 public meetings for application reviews and included public hearings and an invitation for the public to comment on applications which did not receive hearings.

The Department of Public Works continues to hold quarterly Flood and Erosion Control Board Meetings to keep the public informed of the Towns stormwater activities.

Conservation Commission continued work in Byram River Watershed local neighborhood associations. Focus is on working to implement plan adopted in 2011.

Conservation Commission and Mianus River Watershed Council are now focused on implementation of the plan adopted in 2013. MRWC folded into the Mianus River Gorge as a standing committee in 2015 and this change is now being implemented. Conservation staff assisted with annual Source to Sound tour for Mianus River Gorge.

Conservation staff, working with the CT Association of Conservation Districts and other state and federal partners, continued work on a Long Island Sound Watershed Initiative with a focus on landscape scale program that included the entire watershed. Work began on the implementation by the CT Council of the \$10 million grant Regional Conservation Partnership Program focusing on nutrient reduction for LIS and forestry land conservation in the watershed.

Conservation staff was appointed to the Long Island Sound Study Citizens Advisory Committee in 2016 and provides municipal input into the important work of this group.

Conservation Commission made final edits to the 2015 Open Space Plan for implementation.

Conservation Commission and staff continues to work with the Harbor Management Commission on the development of a Harbor Management Plan.

Conservation Commission, working with Aquarion, has identified the need from increased public awareness of the impact of nutrients on public drinking water supplies and algal bloom problems. The Commission has begun the development of an outreach program on algal blooms in the next fiscal year.

Conservation staff worked with Eagle Scout on program focused on educating folks about Long Island Sound. This project included affixing over 100 medallions to stormdrains and development and distribution of materials on nonpoint source pollution.

## BMP 2-2 Comply with State and Local Public Notice and FOI Requirements

### Description

Prior to submission of the Part B Registration to the Department, the Town will make available for public review and comment a draft copy of the SWMP for a minimum period of 30 days. A notice for the review will be printed in the *Greenwich Time* and placed on the town website. Draft copies of the SWMP will be available at the Town Hall and through the town website.

Prior to submission of the Part B Registration to the Department the Town will also hold a public hearing to document any comments in a public forum. A notice for the hearing will be printed in the *Greenwich Time* and placed on the town website.

Prior to submission of each Annual Report to the Department, the Town will make available for public review and comment a draft copy of the complete Annual Report for a minimum period of 30 days. A notice for the review will be printed in the *Greenwich Time* and placed on the town website. Draft copies of the Annual Report will be available at the Town Hall and through the town website.

Availability of all documents will be consistent with the federal and state Freedom of Information Acts.

### Goals

- Obtain public feedback on the SWMP
- Obtain public feedback on the Annual Report

### Schedule

2004.....	Hold public Hearing for review of SWMP
2004.....	30-day public review of SWMP
2004-8 .....	30-day public review of Annual Reports

Lead Responsible Person: Director, Conservation Commission

### Other Responsible Person(s):

- Commissioner, Public Works
- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

- Meeting the schedule defined herein
- Incorporation of public comment and public interest
- Public approval.

### Record Keeping

Copies of all written comments and minutes from public hearings will be kept on file with the SWMP.

### 2004 Progress

The SWMP draft was posted on the town website and made available in the Town Hall for public review for a period of 30 days. After the review period, a legally noticed public hearing was held on June 10, 2004. Public comments were taken and incorporated into the final permit.

The 2004 Annual report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2005 Progress

The 2005 Annual report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2006 Progress

The 2006 Annual report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2007 Progress

The 2007 Annual report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2008 Progress

The 2008 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2009 Progress

The 2009 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2010 Progress

The 2010 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2011 Progress

The 2011 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2012 Progress

The 2012 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

### 2013 Progress

The 2013 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

2014 Progress

The 2014 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

2015 Progress

The 2015 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

2016 Progress

The 2016 Annual Report was placed on the town website and made available in Town Hall for public review for a period of 30 days, prior to submission to DEEP.

## BMP 2-3 Volunteer Monitoring

### Description

The use of volunteers in a monitoring program has proven to be a very successful way to create an awareness and ownership of water quality issues in their community. Volunteers can help by working on a variety of programs from vernal pool monitoring to stream-walk assessments.

### Goals

- Assess existing volunteer monitoring programs being conducted (e.g. Save the Sound, Greenwich High School, Conservation Commission) and identify areas for potential expansion of benthic monitoring
- Hold at volunteer training program on stream walk using the NRCS technique
- Conduct at least two volunteer stream-walks in town

### Schedule

2004-05.....Assess existing programs  
2006.....Train volunteers  
2006-7 .....Conduct neighborhood stream walks  
2004-08.....Continue existing programs on vernal pools

Lead Responsible Person: Director, Conservation Commission

### Other Responsible Person(s):

- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

Monitoring data will be collected and shared with DEEP and other agencies. Interagency panel will evaluate interest in data.

### Record Keeping

All data gathered will be recorded and filed. Other materials such as handouts will be kept on file with the SWMP.

### 2004 Progress

No developments to report. The existing program is currently being assessed. Volunteer training is scheduled in 2005. Volunteer monitoring is scheduled to begin in 2006.

### 2005 Progress

No progress on this effort to date. The goal is to work this into efforts with both the Mianus and Byram River groups for next year.

### 2006 Progress

Began education process on stream-walk with Byram River Workgroup. High flow conditions throughout Fall 2006 delayed start. Schedule to conduct a stream-walk in 2007.

Initiated contact with Environmental education class at Greenwich High School and provided feedback on monitoring that they are doing on a school site. New faculty is interested in more involvement in community. This will be further pursued in 2007.

### 2007 Progress

Along with the Byram River Watershed Group, Inland Wetlands has begun to study locations on the river that are suitable for a comprehensive wetland restoration project designed to improve stream hydraulics and the effects of floods. Volunteer monitoring is recommended to be part of this effort.

Major flooding in March and April 2007 focused attention on cleanup efforts rather than monitoring this year. Conservation Commission hired new part-time staff to work on non-regulatory issues including fisheries management, watershed protection. Staff will be developing monitoring program for next year.

### 2008 Progress

The Town of Greenwich established a volunteer group to maintain and clean the walkway used to maintain and monitor the Fishway. Conservation continues to survey horseshoe crabs with the help of Town volunteers on an annual basis.

### 2009 Progress

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway. Conservation continues to survey horseshoe crab with volunteers as part of statewide census.

Conservation Commission is coordinating with Byram Watershed Coalition and has started planning for volunteer stream walk of the Byram River in conjunction with USDA- NRCS and the Southwest Conservation District. Planning will continue through spring 2010. Volunteer training to take place in June 2010 and assessment during summer 2010.

The IWWA Agency Director participated in a number of meetings with residents and representatives of the Byram River Watershed and the Brothers Brook watershed to discuss storm conveyance concerns and areas where wetlands could be enhanced and/or created to assist in metering storm events.

#### 2010 Progress

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway. Conservation continues to survey horseshoe crab with volunteers as part of statewide census.

The BWC also conducted a training program for volunteers to do a stream walk assessment using the USDA- RCS protocol. Training program held June 12, 2010 with over 25 folks in attendance. Assessment completed on targeted reaches of the river completed in summer 2010 and data is being analyzed. Additional segment assessment is planned for 2011.

#### 2011 Progress

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway. Conservation continues to survey horseshoe crab with volunteers as part of statewide census.

The BWC conducted a second training program for volunteers to do a stream walk assessment using the USDA- RCS protocol. Training program held June 25, 2011 with over 25 folks in attendance. Training extended to include Mianus River Watershed volunteers. Assessment completed on targeted reaches of the river completed in summer 2011 and data is being analyzed. Additional segment assessment is planned for 2011.

#### 2012 Progress

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway. Conservation continues to survey horseshoe crab with volunteers as part of statewide census.

The Byram Watershed Coalition continued stream assessments in 2012 using USDA protocol and worked to coordinate all data gathered from prior years. Conservation assisted with GIS.

#### 2013 Progress

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway. Conservation continues to survey horseshoe crab with volunteers as part of statewide census.

The Byram Watershed Coalition continued stream assessments in 2013 using USDA protocol. Worked to coordinate all data gathered from prior years. Conservation assisted with GIS.

#### 2014 Progress

Through a partnership with the Sacred Heart University, the IWWA begin studying effective means of controlling the spread of invasive species.

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway. Conservation continues to survey horseshoe crab with volunteers as part of statewide census.

#### 2015 Progress

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway. Conservation continues to survey horseshoe crab with volunteers as part of statewide census.

Shellfish Commission expanded its monitoring program working with NOAA to better assess near shore water quality in

Greenwich's coastal waters. Early results show better water quality than usually reported in western Long Island Sound. Waiting on final results.

#### 2016 Progress

Inland Wetlands and Watercourses Agency continued its Rapid bioassessment of Wadable Streams and Rivers by Volunteer Monitoring (RBV), using identified macroinvertebrates as the indicator of water quality.

Conservation Commission continued its volunteer monitoring programs at the Mianus River Fishway.

Shellfish Commission continued its expanded monitoring program working with NOAA to better assess near shore water quality in Greenwich's coastal waters. Early results show better water quality than usually reported in western Long Island Sound. Waiting on final results.

In 2016, the Town began working with Harbor Watch on water quality monitoring and has established a relationship for monitoring in the future. A report was prepared and submitted to the Town.

The Town also is working with Save the Sound to identify sites for potential stormwater best management practice implementation for 2017.

# **3. Illicit Discharge Detection and Elimination**

## BMP 3-1 Town Drainage System Mapping (>15" in UA)

### Description

The Town will maintain an updated map of stormwater structures and outfalls to provide an accurate index for the illicit discharge detection and elimination program.

### Goals

Within the UA, mapping of the town drainage system will be updated to include at a minimum the location of all outfalls of 15-inch diameter and larger.

For each discharge, the following information will be indicated on the mapping:

- Type, material and size of conveyance, outfall or channelized flow,
- Name and Surface Water Quality Classification of the immediate surface waterbody or wetland to which the stormwater runoff discharges (if no name exists, the name of the nearest named waterbody to which the outfall eventually discharges),
- The name of the watershed where the discharge is located,
- CT grid coordinates.

Map system on town GIS system

- Collect all existing information on outfall locations from: existing GIS information, town records, mapping, and plans.
- Use consultants, town staff and volunteers to locate unmapped outfalls.
- Implement procedures for updating mapping with newly constructed outfalls.

### Schedule

2004.....Collect all existing information on outfall locations  
2004.....Contract consultants for locating outfalls  
2004.....Begin to locate existing outfalls, update database  
2005.....Map will contain all outfalls, 15-inch and larger within the UA

Lead Responsible Person: Commissioner, Public Works

Other Responsible Person(s): GIS Coordinator

### Assessment

Map development based on requirements and schedule as defined by the Permit.

### Record Keeping

Updated mapping will be on file with the Town. Review records to be kept on file with the SWMP.

### 2004 Progress

CDM has been contracted to inspect and locate outfalls in town. This information is to be incorporated into the town GIS database.

A map containing the required information will be prepared in 2005.

### 2005 Progress

A total of 893 outfalls were located within the Town. The outfalls varied in size from 2-inches in diameter to 96-inches. The majority of the outfalls were within the range of 12 to 18-inches.

CDM is summarizing information in a report.

### 2006 Progress

Outfall mapping was completed in 2005.

### 2007 Progress

Outfall mapping was completed in 2005.

### 2008 Progress

Outfall mapping was completed in 2005.

### 2009 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2010 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2011 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2012 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2013 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2014 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2015 – 2016 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.



## BMP 3-2 Town Drainage System Mapping (>15" Town-wide)

### Description

The Town will maintain an updated map of stormwater structures and outfalls to provide an accurate index for the illicit discharge detection and elimination program.

### Goals

Throughout the municipality, mapping of the town drainage system will be updated to include at a minimum the location of all outfalls of 15-inch diameter and larger.

For each discharge, the following information will be indicated on the mapping:

- Type, material and size of conveyance, outfall or channelized flow,
- Name and Surface Water Quality Classification of the immediate surface waterbody or wetland to which the stormwater runoff discharges (if no name exists, the name of the nearest named waterbody to which the outfall eventually discharges),
- The name of the watershed where the discharge is located,
- CT grid coordinates.

Map system on town GIS system

- Collect all existing information on outfall locations from: existing GIS information, town records, mapping, and plans.
- Use consultants, town staff and volunteers to locate unmapped outfalls.
- Implement procedures for updating mapping with newly constructed outfalls.

### Schedule

2006.....Map will contain all outfalls, 15-inch and larger throughout the municipality

Lead Responsible Person: Commissioner, Public Works

Other Responsible Person(s): GIS Coordinator

### Assessment

Map development based on requirements and schedule as defined by the Permit.

### Record Keeping

Updated mapping will be on file with the Town. Review records to be kept on file with the SWMP.

### 2004 Progress

CDM has been contracted to inspect and locate outfalls in town. This information is to be incorporated into the town GIS database.

A map containing the required information will be prepared in 2006.

### 2005 Progress

A total of 893 outfalls were located within the Town. The outfalls varied in size from 2-inches in diameter to 96-inches. The majority of the outfalls were within the range of 12 to 18-inches.

CDM is summarizing information in a report.

### 2006 Progress

Outfall mapping was completed in 2005.

### 2007 Progress

Outfall mapping was completed in 2005.

### 2008 Progress

Outfall mapping was completed in 2005.

### 2009 Progress

Outfall mapping was completed in 2005. And the Town continues to update the information when new infrastructure is added.

### 2010 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2011 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2012 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2013 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2014 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2015 – 2016 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

## BMP 3-3 Town Drainage System Mapping (>12" in UA)

### Description

The Town will maintain an updated map of stormwater structures and outfalls to provide an accurate index for the illicit discharge detection and elimination program.

### Goals

Within the UA, mapping of the town drainage system will be updated to include at a minimum the location of all outfalls of 12-inch diameter and larger.

For each discharge, the following information will be indicated on the mapping:

- Type, material and size of conveyance, outfall or channelized flow,
- Name and Surface Water Quality Classification of the immediate surface waterbody or wetland to which the stormwater runoff discharges (if no name exists, the name of the nearest named waterbody to which the outfall eventually discharges),
- The name of the watershed where the discharge is located,
- CT grid coordinates.

Map system on town GIS system

- Collect all existing information on outfall locations from: existing GIS information, town records, mapping, and plans.
- Use consultants, town staff and volunteers to locate unmapped outfalls.
- Implement procedures for updating mapping with newly constructed outfalls.

### Schedule

2007.....Map will contain all outfalls, 12-inch and larger within the UA  
2008.....Add newly constructed outfalls, maintain mapping

Lead Responsible Person: Commissioner, Public Works

Other Responsible Person(s): GIS Coordinator

### Assessment

Map development based on requirements and schedule as defined by the Permit.

### Record Keeping

Updated mapping will be on file with the Town. Review records to be kept on file with the SWMP.

### 2004 Progress

CDM has been contracted to inspect and locate outfalls in town. This information is to be incorporated into the town GIS database.

A map containing the required information will be prepared in 2007.

### 2005 Progress

A total of 893 outfalls were located within the Town. The outfalls varied in size from 2-inches in diameter to 96-inches. The majority of the outfalls were within the range of 12 to 18-inches.

CDM is summarizing information in a report.

### 2006 Progress

Outfall mapping was completed in 2005.

### 2007 Progress

Outfall mapping was completed in 2005.

### 2008 Progress

Outfall mapping was completed in 2005.

### 2009 Progress

Outfall mapping was completed in 2005. And the Town continues to update the information when new infrastructure is added.

### 2010 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2011 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2012 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2013 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2014 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

### 2015 – 2016 Progress

Outfall mapping was completed in 2005. The Town continues to update the information when new infrastructure is added.

## BMP 3-4 Illicit Discharge Elimination Program

### Description

The Town will develop a program to address the elimination of illicit discharges.

### Goals

- Review of outfall mapping and inspection results
- Continue to locate problem areas by public complaints, dye testing, smoke testing, and visual inspections
- Identify town personnel with extensive knowledge of town stormwater facilities and possible illicit discharges
- Review illicit discharge programs undertaken by other communities
- Review complaint files to identify past unauthorized discharges and verify these have been removed or corrected
- Review and identify existing “clean” non-stormwater water discharge locations and verify compliance with the new permit
- Review existing surface water data that has been collected by the Town since 1998 to determine potential presence of pollutant source in stream reach and pollutants of concern in each of 6 monitored watershed areas
- Take enforcement actions against owners in accordance with town ordinance
- Review and assess remediation of illicit and non-stormwater discharges noted above

### Schedule

2005.....Review existing complaints, non-stormwater discharges, and surface water data  
2006-8 .....Implement corrective measures

Lead Responsible Person: Commissioner, Public Works

### Other Responsible Person(s):

- Director, Conservation Commission
- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

- Meeting goals and schedule set forth herein
- Results of outfall monitoring
- Elimination of illicit discharges

### Record Keeping

Records of any corrective actions will be kept on file with the SWMP.

### 2004 Progress

No developments to report. This is an ongoing process that will continue with a review of the outfall mapping and inspections and monitoring of outfalls.

### 2005 Progress

Initial field screening was performed at the same time the outfall was located. Physical observations (Color, Odor, Oil, Scum, Turbidity, Corrosion/Damage, and Vegetation) were used to differentiate between uncontaminated and possible contaminated discharges. A total of 41 outfalls were identified as showing signs of illicit discharge.

CDM is summarizing information in a report.

The Town has a contract with CDM for FY 06-07 to perform a detailed investigation of the 41 outfalls to determine the source of the discharges and recommendations on how to correct them.

### 2006 Progress

The Towns consultant (CDM) has completed the *NPDES Phase II Stormwater Permitting Illicit Discharge Confirmation Program Report*. The report includes the following:

- The detailed investigation of the 41 outfalls that showed signs of a possible illicit discharge have been completed and only one outfall of the 41 has an issue.
- The outfall of concern is located on the western side of the Mianus River, downstream of the Mianus River Dam. The outfall is built into the retaining wall of the DPW facility at 1 Newman Street. At the time of the initial screening the inspector noticed white colored water flowing from the outfall. There was some activity in the DPW yard at the time with vehicles being washed down. At the follow-up visit there was no flow coming from the outfall and no sign of illicit discharge was observed. The observed illicit discharge appears to be due to improper vehicle wash down practices. The Town will put together Stormwater Management and Pollution Prevention Practices for the facility as part of BMP 6-6.

### 2007 Progress

Corrective measures were implemented for only discharge found under program. The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

### 2008 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2009 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2010 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2011 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2012 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2013 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2014 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2015 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

2016 Progress

The Town continues to monitor for illicit discharges through routine system maintenance. The Town also continues its internal training program for stormwater management and pollution prevention practices.

## **BMP 3-5 Ordinance Review and Revisions**

### Description

Town ordinances and policies will be updated to prohibit 1) illicit discharges and 2) the connection of non-stormwater flows as defined by the Permit to the town drainage system without a clean water discharge permit. Establish a permit process similar to existing town permit processes. Review ordinance for enforcement procedures and fines.

### Goals

The goal is to review and update ordinances to be consistent with the requirements of the permit.

### Schedule

2004 .....	Review ordinances, prepare proposed language
2005.....	Establish permit procedures
2006 .....	Present ordinance revisions to Town
2007.....	Adopt revised ordinances
2007-8 .....	Review and make revisions based on effectiveness

Lead Responsible Person: Commissioner, Public Works

### Other Responsible Person(s):

- Director, Conservation Commission
- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

Review activities permitted under ordinance.

### Record Keeping

Modification history and the updated ordinance language will be kept on file with the SWMP and available on the town website.

### 2004 Progress

The Engineering Division has reviewed illicit discharge ordinances as provided by CTDEEP. The ordinance is on schedule for adoption in 2007.

### 2005 Progress

The Engineering Division has reviewed illicit discharge ordinances as provided by CTDEEP. Ordinance revisions will be presented to the Town in 2006. The ordinance is on schedule for adoption in 2007.

### 2006 Progress

The Town will contract CDM for FY 07-08 to work on the review of the illicit discharge ordinance and the Town will begin the process to adopt the ordinance.

### 2007 Progress

Inland Wetlands sponsored an Ordinance for Municipal Fines to be applied to all parties involved in blatant violations of the Agency Regulations.

The Town has contracted with CDM to begin work on ordinance revisions. The work is being coordinated with ordinance changes recommended through the on-going stormwater manual update.

### 2008 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance will be developed through 2009 with possible adoption by 2010.

### 2009 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance will be developed through 2009 with possible adoption in 2010.

The IWWA Agency lobbied to have the Municipal Fine Ordinance passed in 2007 to be permanently adopted.

### 2010 Progress

The Inland Wetlands and Watercourses Agency permanently adopted a Municipal Fine Ordinance.

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance is still being developed with possible adoption in 2011.

### 2011 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance is still being developed with possible adoption in 2012.

### 2012 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance is still being developed with possible adoption in 2013.

2013 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance is still being developed with possible adoption in 2014.

2014 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance is still being developed with possible adoption in 2014.

The Town of Greenwich Drainage Manual February 2014 as amended includes Standard 14: Illicit Discharges, which prohibits illicit discharges to the stormwater management system of the Town.

IWWA put forth two draft proposals for legislative amendments to the forestry statutes and greater local authority in the review and approval of pesticide/herbicide use in aquatic systems.

The Planning and Zoning Department worked with the Department of Public Works and the community to craft and adopt the Cos Cos Neighborhood Plan. The Plan identifies several stormwater improvements and areas of priority.

2015 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The draft ordinance is still being developed with possible adoption in 2016.

The Town of Greenwich Drainage Manual February 2014 as amended includes Standard 14: Illicit Discharges, which prohibits illicit discharges to the stormwater management system of the Town.

The Planning and Zoning Department worked with the Department of Public Works and the community to craft and adopt the Eastern Greenwich Neighborhood Plan. The Plan identifies several stormwater improvements and areas of priority.

2016 Progress

The Town has completed the initial draft of the Illicit Discharge and Connection – Stormwater Ordinance. The Town will be using Standard 14: Illicit Discharges from the Town of Greenwich Drainage Manual February 2014 to address illicit discharges instead of adopting an ordinance. Modifications will be proposed to Standard 14 as part of the 2017 General Permit.

The Planning and Zoning Department worked with the Department of Public Works and the community to craft and the Glenville and Pemberwick Neighborhood Plan. The Plan identifies several stormwater improvements and areas of priority.

## BMP 3-6 Outfall Inspection and Dry-weather Monitoring

### Description

The Town will develop a stormwater structure and outfall inspection program to identify non-stormwater and illicit discharges throughout town.

### Goals

- Conduct dry weather outfall inspections and wet weather sampling and monitoring.
- Use consultants, town staff and/or volunteers to perform outfall inspections.
- Establish inspection protocol form, including visual factors and water characteristics (sheen, scum, color, odor, etc.) indicative of pollutant discharge.
- Conduct dry weather inspections of outfalls for non-stormwater discharges and illicit discharges.

### Schedule

2004.....Establish inspection and record keeping protocol  
2004-8 .....Perform dry weather inspection of stormwater structures and major (>12") outfalls

Lead Responsible Person: Commissioner, Public Works

Other Responsible Person(s): Director, Inland Wetlands and Watercourses

### Assessment

- Identification of non-stormwater and illicit discharges
- Monitoring and sampling of outfalls to reduce pollutants

### Record Keeping

Outfall inspections and monitoring results will be kept on file with DPW.

### 2004 Progress

CDM has been contracted to inspect and locate outfalls in town. The town developed the dry-weather inspection protocol. Results are being filed.

### 2005 Progress

Initial field screening was performed at the same time the outfall was located. Physical observations (Color, Odor, Oil, Scum, Turbidity, Corrosion/Damage, and Vegetation) were used to differentiate between uncontaminated and possible contaminated discharges. A total of 41 outfalls were identified as showing signs of illicit discharge.

CDM is summarizing information in a report.

### 2006 Progress

The Towns consultant (CDM) has completed the *NPDES Phase II Stormwater Permitting Illicit Discharge Confirmation Program Report*. The report includes the following:

- The detailed investigation of the 41 outfalls that showed signs of a possible illicit discharge have been completed and only one outfall of the 41 has an issue.
- The outfall of concern is located on the western side of the Mianus River, downstream of the Mianus River Dam. The outfall is built into the retaining wall of the DPW facility at 1 Newman Street. At the time of the initial screening the inspector noticed white colored water flowing from the outfall. There was some activity in the DPW yard at the time with vehicles being washed down. At the follow-up visit there was no flow coming from the outfall and no sign of illicit discharge was observed. The observed illicit discharge appears to be due to improper vehicle wash down practices. The Town will put together Stormwater Management and Pollution Prevention Practices for the facility as part of BMP 6-6.

### 2007 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

### 2008 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

### 2009 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

### 2010 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

### 2011 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

2012 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

2013 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

2014 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

2015 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.

2016 Progress

Sampling is completed and the Town continues to monitor its system as it conducts routine maintenance.



## BMP 3-7 Outfall Inspection Training

### Description

The Town will develop a staff-training program on inspection protocol, identifying potential illicit discharges and town policies on prohibiting non-stormwater and illicit discharges.

### Goals

- Initial training for all Public Works and Engineering staff
- Annual refresher training for existing staff and new employees

### Schedule

2004.....Initial training program  
2005-8 .....Annual training program

Lead Responsible Person: Commissioner, Public Works

Other Responsible Person(s): Director, Inland Wetlands and Watercourses

### Assessment

- Identification of non-stormwater and illicit discharges
- Annual review of training attendance and program content

### Record Keeping

Training records will be maintained for all employees.

### 2004 Progress

No training has been initiated at this point. A proposal has been solicited to provide training for illicit discharge detection in Spring 2005.

### 2005 Progress

No formal training has been provided as of yet. The Town has solicited a proposal from Osprey Environmental and S E A Consultants for performing training for various stormwater related activities, including outfall inspection training.

### 2006 Progress

The Town will contract CDM for FY 07-08 to work on putting together a training program for outfall inspection.

### 2007 Progress

The Town is setting up a contract with Osprey for formal training. General program training, maintenance activities, and staff experience provides the ability to identify possible illicit discharges.

### 2008 Progress

Osprey Environmental Engineering will prepare an inspection policy and training program to begin in 2009. The program will cover the assessment of stormwater outfalls with respect to issues of environmental concern, including sediment accumulation; scour concerns, evidence of oils/fuel/grease discharges, and other water quality degradation factors.

### 2009 Progress

Osprey Environmental Engineering has completed the inspection policy and the training program will begin in 2010. The program will cover the assessment of stormwater outfalls with respect to issues of environmental concern, including sediment accumulation; scour concerns, evidence of oils/fuel/grease discharges, and other water quality degradation factors.

### 2010 Progress

Osprey Environmental Engineering has completed the inspection policy and field inspection form. The training will be completed in 2011. The program will cover the assessment of stormwater outfalls with respect to issues of environmental concern, including sediment accumulation; scour concerns, evidence of oils/fuel/grease discharges, and other water quality degradation factors.

### 2011 Progress

Osprey Environmental Engineering has completed the training. The program covered the assessment of stormwater outfalls with respect to issues of environmental concern, including sediment accumulation; scour concerns, evidence of oils/fuel/grease discharges, and other water quality degradation factors.

### 2013-2016 Progress

A refresher course is planned for future years.

# **4. Construction Site Stormwater Runoff Control**

## BMP 4-1 Regulation Review and Revisions

### Description

Zoning and subdivision regulations will be revised to require erosion and sediment control and stormwater control measures for all construction activities involving land disturbance greater than one-half acre. All erosion and sedimentation control measures will be in accordance with CTDEEP's *Guidelines For Soil Erosion and Sediment Control, 2002*.

Zoning and subdivision regulations will be revised to require construction site operators to control waste at the site such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste that may cause adverse impacts to water quality.

Street use regulations will be revised to prohibit construction dewatering and construction site stormwater runoff to town drainage system.

### Goals

The goal is to review and update the regulations to be consistent with the requirements of the permit

### Schedule

2004-5 .....Review regulations, prepare proposed language  
2006 .....Adopt revised regulations  
2007-8 .....Review and make revisions based on effectiveness

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Director, Conservation Commission
- Director, Inland Wetlands and Watercourses

### Assessment

Implementation

### Record Keeping

Updated regulations will be kept on file with the Town. Excerpts of revised language will be kept on file with the SWMP.

### 2004 Progress

The Town's land use regulations including the Building Zone Regulation, Subdivision Regulations, and Excavation and Fill Regulations each offer the opportunity to either introduce erosion and sedimentation controls or improve upon those controls where they presently exist. The staff of the Planning and Zoning Department has undertaken a review of the following land use controls: Article 2 of the Town Code, titled Excavation, Grading and Filling Operations; Sections 6-183.1 to 6-183.10, the Soil and Erosion and Sediment Control Section of the Building Zone Regulations; revisions to the site plan provisions of the Building Zone Regulations; and an update of Article 4 of the Town Code, Subdivisions governing the Planning Board's regulation of land subdivision and development standards. The review of these regulations by the staff to the Planning and Zoning Commission is being done in consultation with the Department of Public Works Engineer Division, the Director of Conservation, and the Director of the Inland Wetlands and Watercourses Agency.

Furthest along in these series of regulation review is the update of the soil and erosion and sediment control of the Planning and Zoning Commission's Building and Zone Regulations. Originally enacted in 1985, Sections 6-183.1 to 6-183.10 are being revised to include the latest techniques for stormwater runoff control for construction sites as well as the inclusion of a new section dealing with post-construction stormwater management. A completed draft of the proposed revision, which reference the 2002 Edition of the State of Connecticut Guidelines for Soil Erosion and Sedimentation Control, has been prepared and is, expected to be taken to public hearing in 2005.

### 2005 Progress

No additional progress to report.

### 2007 Progress

Planning and Zoning began process of updating the Plan of Conservation and Development. Over 10 public meetings were held in fall 2007.

Inland Wetlands has continued work on local ordinance to allow them to assess fines for frequent/bad actor violations of the wetland and watercourse act.

Conservation Commission and the Tree Warden continued work on tree ordinance to provide for better protection of the community forest. A proposed ordinance is currently being reviewed by the Law Department.

### 2008 Progress

Planning and Zoning continued to update the Plan of Conservation and Development and held many workshops and meetings with the public and Town leaders. The completed plan will be up for adoption in 2009. The plan sets the stage for exploring new zoning regulations such as impervious cover restrictions. The Plan emphasizes critical action designed to benefit watersheds and water quality. Conservation and the Town Tree Warden are in the process of adopting a Town Tree Ordinance.

### 2009 Progress

Planning and Zoning and the Representative Town Meeting adopted the 5/12/09 Plan of Conservation and Development. The Plan emphasizes critical action designed to benefit watersheds and water quality such as

1. The First Selectman and the Flood & Erosion Control Board should coordinate all Town agencies' efforts to develop plans addressing flooding in various parts the Town.
2. Per NPDES requirements develop comprehensive stormwater management plans, policies and solutions to address flooding in the six watershed areas.
3. Work with the Army Corps of Engineers to address flood-prone areas such as the Route 1 Bridge, Byram River and Pemberwick.
4. To reduce and manage runoff, establish regulations to limit impervious lot coverage and reduce site hydrology for all new construction on residential properties.
5. Update flood regulations to ensure redevelopment in flood and coastal zones meet Federal Emergency Management Agency (FEMA) standards without variances.
6. Evaluate whether the Town should participate in the Community Rating System program.
7. Evaluate stormwater funding options to pay for needed stormwater improvements.
8. Continue to acquire open space where appropriate to protect water resource areas in order to assure continued supply of surface and ground water.
9. Develop plans to protect water quality in Town watersheds using low impact and best management practices.
10. Continue rigorous separation of development activities from regulated wetlands and watercourses.
11. Review and implement land-use policies based on concerns raised in the USGS Water Study.

### 2010 Progress

Inland Wetlands established a compliance program that called for a minimum of 100 site compliance inspections per month and further laid out a strict enforcement program for sites found to be in violation of the Agency Regulations.

The Planning and Zoning Commission updated the Flood Zone Regulations intended to add additional safeguards to those areas of Greenwich subject to riverine and coastal flooding. These regulations exceed FEMA standards.

Planning and Zoning Staff completed the study on the percentage of lot coverage on residential lots. This problem is clearly identified in the first chapter under Water Resources in the 2009 Plan of Conservation and Development adopted by the Planning and Zoning Commission and the RTM, under Action Item 1.4, which states:

*"To reduce and manage runoff, establish regulations to limit impervious lot coverage and reduce site hydrology for all new construction on residential properties..... Development increases impervious surfaces, which impacts water quality as well. Planning and Zoning should evaluate the impact of impervious surfaces and institute regulations to restrict the amount of new impervious surface on residential properties."* Public information meetings are scheduled for January 2011 to allow residents to see and hear how the study was conducted and provide input to the Commission and staff in crafting regulations to be reviewed in 2011

The Commission adopted a revised definition of lot coverage.

### 2011 Progress

IWWA staff initiated a five-year monitoring program for all IWWA permits involving the installation of stormwater infiltrators. The condition requires an environmental professional oversee the maintenance of these systems and a report certifying compliance upon completion.

Planning and Zoning Staff completed the study on the percentage of lot coverage/green area on residential lots. Public information meetings were held in January 2011 to allow residents to see and hear how the study was conducted and provide input to the Commission and staff in crafting regulations to be reviewed in 2011. Based on a public information meeting, Planning and Zoning Staff developed zoning regulations to maintain open areas and green spaces. This has the related benefit of helping with drainage (more green space = more absorption of water), flooding (more green space = slower water) and water quality problems (more green = more natural cleaning of water) and has been the source of much inter-departmental discussion and public discussion. The Regulation involves requiring a minimum Green Area on residentially zoned properties. The purpose of the New Drainage Manual is to provide an effective stormwater management program to protect and restore water resources and related water dependent uses. Although the Town Drainage Manual is the primary document that handles issues associated with drainage and water quality, it is well documented that there is a direct correlation between the health of a watershed and the amount of natural areas within that watershed.

The Town's land use regulations including the Building Zone Regulation, Subdivision Regulations, and Excavation and Fill Regulations each offer the opportunity to either introduce erosion and sedimentation controls or improve upon those controls where they presently exist. The staff of the Planning and Zoning Department had previously undertaken a review of the following land use controls: Article 2 of the Town Code, titled Excavation, Grading and Filling Operations; Sections 6-183.1 to 6-183.10, the Soil and Erosion and Sediment Control Section of the Building Zone Regulations; revisions to the site plan provisions of the Building Zone Regulations; and an update of Article 4 of the Town Code, Subdivisions governing the Planning Board's regulation of land subdivision and development standards but then put these projects on hold until after the acceptance of the 2009 Plan of Conservation and Development.

The review of these regulations by the staff to the Planning and Zoning Commission is now on the work schedule to begin this year.

### 2012 Progress

IWWA has commenced progress seeing legislative approval to strengthen their enforcement ordinance, designed to apply penalties to residents and contractors conducting regulated activities in blatant violation of the local Agency Regulations.

The staff of the Planning and Zoning Department has crafted draft amendments to the Soil and Erosion and Sediment Control Section of the Building Zone Regulations. They have been written in accordance with the CTDEEP's *Guidelines For Soil Erosion and Sediment Control, 2002* and are currently also being reviewed against the Connecticut General Statutes.

### 2013 Progress

The amendments to the Soil and Erosion and Sediment Control Section of the Building Zone Regulations are still under review for

compliance with Town Drainage Manual and Connecticut State Statutes.

#### 2014 Progress

IWWA requires soil testing of all sites importing fill or removing dredged spoils. Testing performed by a licensed laboratory must certify that soils do not contain elevated levels of volatile, semi-volatile, and other hazardous compounds.

The Planning and Zoning Department worked with the Department of Public Works and the community to craft and adopt the Cos Cos Neighborhood Plan. The Plan identifies several stormwater improvements and areas of priority.

Planning and Zoning adopted a new zoning regulation to define a "Flood Zone Grade Plane" that impacts properties in flood zones. The grade plane is generally the average grade around a structure and the Flood Zone Grade Plane is defined as "A reference plane from which to measure the number of stories, height, and floor area of dwelling units in residential zones within the Flood Hazard Overlay Zone. The flood zone grade plane shall be measured from two feet (2') below the Base Flood Elevation, or the grade plane as defined under Section 6-5(a) (26), whichever is higher..." One of the intended benefits of the regulation is to deter major grading and fill, which impact stormwater, in order to meet height and stories.

#### 2015 Progress

The Planning and Zoning Department worked with the Department of Public Works and the community to craft and adopt the Eastern Greenwich Neighborhood Plan. The Plan identifies several stormwater improvements and areas of priority.

Planning and Zoning completed the Eastern Greenwich Neighborhood Plan (adopted 9/15/15). Part of that plan makes recommendations for stormwater management practice, floodplain management and tree preservation. Recommendations included: looking to strengthen land use regulations related to tree preservation; encouraging the use of green infrastructure consistent with the Stormwater Drainage Manual; potentially limiting any fill in non-floodplain areas; and working with homeowners to encourage bank stabilization on private properties upstream from Binney Park to possibly reduce sedimentation downstream.

#### 2016 Progress

The Planning and Zoning Department worked with the Department of Public Works and the community to craft the Glenville and Pemberwick Neighborhood Plan. The Plan identifies several stormwater improvements and areas of priority.

Planning and Zoning is in the process of completing the Glenville and Pemberwick Neighborhood Plan. Part of that plan makes recommendations for stormwater management practices, and floodplain management tree preservation. Recommendations include: Promote the use of green infrastructure, particularly on Town-owned property such as Glenville Green, Bendheim Western Civic Center, Glenville School and Pemberwick Park; Support the USACE study on flooding along the Byram River and coordinate with the USACE on implementation of the study's recommendations; and facilitate the cleanup of invasive vegetation

and dumping along the banks of Byram Pond through public - private partnerships.

## **BMP 4-2 Plan Review**

### Description

A program will be instituted to ensure the review of plans for all construction activities involving land disturbance greater than one-half acre. Town staff will review design plans and erosion and sediment control plans for compliance with CTDEEP's *Guidelines For Soil Erosion and Sediment Control, 2002*. Plan review will continue to be conducted during permit application process for Inland Wetlands permits, zoning compliance permits and site development planning & zoning permits. A checklist for erosion and sediment control and stormwater control measures will be developed and updated in order to maintain consistency in plan reviews.

### Goals

- Review all design plans for consistency with the town and state guidelines for erosion and sediment control
- Develop and update a plan review checklist

### Schedule

2004-8 .....Examine and assess current review process

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Director, Conservation Commission
- Director, Inland Wetlands and Watercourses

### Assessment

All construction plans will require review and approval.

### Record Keeping

All review comments and approvals will be kept on file with the Land Use Department.

### 2004 Progress

Planning & Zoning staff routinely reviews plans in the Coastal Overlay Zone, Subdivision Lots and Business Zones for compliance with Section 6-183.2 (Activities Requiring a Certified Erosion and Sediment Control Plan). Staff works with project engineers on placement of E&S measures on sites and also site dewatering. Plans are often referred to the Conservation Commission staff for review as well. Plans are evaluated relative to their compliance with the Standard of Section 6-183.4 of the Building Zone Regulations and the CT DEEP 2002 Guidelines for Soil Erosion and Sediment Control Manual (DEEP Bulletin 34).

Conservation Commission has developed an E&S checklist. It will be completed when the new regulations have been finalized.

### 2005 Progress

Conservation Commission and Planning & Zoning are using new DEEP Storm Water Manual in review process. Additionally, Conservation Commission has distributed new information on soils and capabilities from USDA-NRCS (2005) relating to stormwater BMPs for use by all staff.

### 2007 Progress

Plan review coordination between the land use agencies and the Department of Public Works Engineering Division has been improved and streamlined by dedicating an engineer to plan review. This staff member is familiar with stormwater management practices and is providing consistent and timely plan review. Furthermore, this person is actively involved in work to update other elements of the Town's stormwater management program, including the stormwater design manual.

Inland Wetlands continues its review of all applications creating potential impacts to wetland and watercourse areas on- and offsite. Reviews consistently require detailed scrutiny of upland development in an effort to minimize its effect on the surrounding environments.

Inland Wetlands has begun to impose conditions requiring prescribed periods of review by a licensed professional engineer involving large projects and subdivisions that introduce detention ponds and similar stormwater control features.

### 2008 Progress

Planning and Zoning has hired a part-time Engineer to work closely with the dedicated engineer in the Department of Public Works. Through this coordination and also by being available to the public, the number of complete and compliant applications has increased.

### 2009 Progress

Planning and Zoning continues to employ a part-time Engineer that has worked effectively with the dedicated engineer in the Department of Public Works. The Planning and Zoning Commission initiated a study of looking at Impervious Surfaces in Town with the goal of adopting coverage limits. P&Z will review each property for existing lot and building coverage in all residential zones and provide existing percentages for each lot and provide a range of existing percentages for each residential zone. Using these ranges, staff will develop proposed percent limits for

each zone and see how much new development that will allow on each property and how many non-conforming lots would be created with each percent limitation in each residential zone.

Staff will meet with DPW after developing conceptual percentages for each zone and have Engineering Division review these proposals for estimates of runoff and drainage issues and to evaluate flooding issues that may or may not occur with these limits. Public information meetings will be held to allow residents to see and hear the draft regulations proposals and provide input to the Commission and staff. Public hearings will be held on proposed regulations to limit amount of lot coverage (impervious surfaces).

#### 2010 Progress

Planning and Zoning continues to employ a part-time Engineer and are working with DPW staff to effectively utilize this staff person to ensure the public submits a complete plan for review. DPW staff reviews the plans to ensure that they comply with storm water regulations. This will be particularly important when the new Drainage Manual becomes effective and Low Impact Development techniques will be used more frequently.

The Engineering Division continues to review development plans for Planning and Zoning and Inland Wetlands. The development plans are reviewed for compliance with the Town of Greenwich Drainage Manual and Roadway Design Manual.

#### 2011 Progress

Planning and Zoning continues to employ a part-time Engineer and are working with DPW staff to effectively utilize this staff person to ensure the public submits a plan that complies with storm water regulations. This will be particularly important when the New Drainage Manual becomes effective and Low Impact Development techniques will be used more frequently.

#### 2012 Progress

The Engineering Division continues to review development plans for Planning and Zoning and Inland Wetlands. The development plans are reviewed for compliance with the Town of Greenwich Drainage Manual and Roadway Design Manual.

Planning and Zoning continues to employ a part-time Engineer and are working with DPW staff to effectively utilize this staff person to ensure the public submits a plan that complies with storm water regulations. With the adoption of the new Drainage Manual, the part-time Engineer has taken on the task of reviewing the "exemption requests" for all applications, administrative or reviewed by the Planning and Zoning Commission, that come through the office to ensure that the exemption form was first, appropriate and second, completed correctly.

#### 2013 Progress

The Engineering Division continues to review development plans for Planning and Zoning and Inland Wetlands. The development plans are reviewed for compliance with the Town of Greenwich Drainage Manual and Roadway Design Manual.

Planning and Zoning continues to employ a part-time Engineer and are working with DPW staff to effectively utilize this staff person to ensure the public submits a plan that complies with stormwater regulations.

#### 2014 Progress

The Wetland Agency Director held several field meetings with the Agency as a means of helping participants understand the application review process from the perspective of their staff.

The Engineering Division continues to review development plans for Planning and Zoning and Inland Wetlands. The development plans are reviewed for compliance with the Town of Greenwich Drainage Manual and Roadway Design Manual.

Planning and Zoning continues to employ a part-time Engineer and are working with DPW staff to effectively utilize this staff person to ensure the public submits a plan that complies with stormwater regulations. With the adoption of the new Drainage Manual, the part-time Engineer has taken on the task of reviewing the "exemption requests" for all applications, administrative or reviewed by the Planning and Zoning Commission, that come through the office to ensure that the exemption form was first, appropriate and second, completed correctly.

Planning & Zoning staff continues to routinely review plans in the Coastal Overlay Zone, Subdivision Lots and Business Zones for compliance with Section 6-183.2 (Activities Requiring a Certified Erosion and Sediment Control Plan). Staff works with project engineers on placement of E&S measures on sites and also site dewatering. Plans are often referred to the Conservation Commission staff for review as well. Plans are evaluated relative to their compliance with the Standard of Section 6-183.4 of the Building Zone Regulations and the CT DEEP 2002 Guidelines for Soil Erosion and Sediment Control Manual (DEEP Bulletin 34).

#### 2015 Progress

The Engineering Division continues to review development plans for Planning and Zoning and Inland Wetlands. The development plans are reviewed for compliance with the Town of Greenwich Drainage Manual and Roadway Design Manual.

Planning and Zoning continues to employ a part-time Engineer and are works with DPW staff to effectively utilize this staff person to ensure the public submits a plan that complies with storm water regulations. With the adoption of the new Drainage Manual, the part-time Engineer has taken on the task of reviewing the "exemption requests" for all applications, administrative or reviewed by the Planning and Zoning Commission, that come through the office to ensure that the exemption form was first, appropriate and second, completed correctly.

Planning & Zoning staff continues to routinely reviews plans in the Coastal Overlay Zone, Subdivision Lots and Business Zones for compliance with Section 6-183.2 (Activities Requiring a Certified Erosion and Sediment Control Plan). Staff works with project engineers on placement of E&S measures on sites and also site dewatering. Plans are often referred to the Conservation Commission staff for review as well. Plans are evaluated relative to their compliance with the Standard of Section 6-183.4 of the Building Zone Regulations and the CT DEEP 2002 Guidelines for Soil Erosion and Sediment Control Manual (DEEP Bulletin 34).

#### 2016 Progress

The Engineering Division continues to review development plans for Planning and Zoning and Inland Wetlands. The development plans are reviewed for compliance with the Town of Greenwich Drainage Manual and Roadway Design Manual.

Planning and Zoning Staff works to ensure the public submits a plan that complies with storm water regulations. With the

adoption of the new Drainage Manual, P&Z Staff has taken on the task of reviewing the “exemption requests” for all applications, administrative or reviewed by the Planning and Zoning Commission, that come through the office to ensure that the exemption form was first, appropriate and second, completed correctly.

Planning & Zoning staff continues to routinely reviews plans in the Coastal Overlay Zone, Subdivision Lots and Business Zones for compliance with Section 6-183.2 (Activities Requiring a Certified Erosion and Sediment Control Plan). Staff works with project engineers on placement of E&S measures on sites and also site dewatering. Plans are often referred to the Conservation Commission staff for review as well. Plans are evaluated relative to their compliance with the Standard of Section 6-183.4 of the Building Zone Regulations and the CT DEEP 2002 Guidelines for Soil Erosion and Sediment Control Manual (DEEP Bulletin 34).

The Inland Wetlands and Watercourses Agency now conducts site walks, led by a staff member to review the on-site conditions of the more complex applications.

The Inland Wetlands and Watercourses Agency receives a report from their technical staff for each application to assist them in identifying issues and concerns.



## BMP 4-3 Inspection and Enforcement

### Description

The town program will continue to provide a sufficient level of inspection and enforcement to ensure that E&S and stormwater control measures are installed and maintained properly.

### Goals

- Continue *existing program* of construction inspection, performance bonding and enforcement of regulations
- Develop an inspection checklist to assist town inspectors and contractors in compliance with the E&S requirements and stormwater control/management practices
- Train inspectors to keep up with current requirements and new practices

### Schedule

2004.....Develop an inspection checklist  
2005-8 .....Maintain established inspection processes

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Director, Conservation Commission
- Director, Inland Wetlands and Watercourses
- Zoning Enforcement Officer

### Assessment

- Annual review of enforcement history
- Evaluate effectiveness of enforcement program
- Document and investigate public complaints

### Record Keeping

Inspection records will be kept on file with the Land Use Department.

### 2004 Progress

Planning & Zoning staff with assistance from Conservation Commission staff to review and inspect in the field the installation of Erosion Controls and other site protection measures. The field reviews confirm that the approved E&S plans from BMP 4-2 are implemented correctly on site. Sites are monitored on a periodic basis to ensure that all protection measures are maintained for the duration of the construction.

Conservation Commission has developed an E&S checklist. It will be completed when the new regulations have been finalized.

### 2005 Progress

No additional progress to report.

### 2007 Progress

Inland Wetlands has begun to lobby for an expanded role in the review and management of upland development and landscape clearing.

### 2008 Progress

Planning and Zoning continues to use the checklist developed in 2004. There has also been more emphasis placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period.

### 2009 Progress

IWWA Implemented an internal policy requiring no less than 100 staff inspections of active permit sites per month and increased staff presence throughout the exterior development phase of construction project. Goal is to reduce incidents of site violations due to a failure to comply and detection of stormwater and erosion control concerns on all upland sites within the municipality.

Planning and Zoning continues to use the checklist developed in 2004. There has also been more emphasis placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period.

### 2010 Progress

See Inland Wetlands comments regarding the inspection program and closely related violation policy.

Planning and Zoning continues to use the checklist developed in 2004. Continued emphasis is placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period.

### 2011 Progress

Planning and Zoning continues to use the checklist developed in 2004. Continued emphasis is placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period.

2012 Progress

Planning and Zoning continues to use the checklist developed in 2004. Continued emphasis is placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period. Planning and Zoning Staff continues to work closely with the Conservation Staff in conducting site visits of properties under construction to ensure that the soil and erosion controls are adequately maintained.

2013 Progress

Planning and Zoning Staff continues to work closely with the Conservation Staff in conducting site visits of properties under construction to ensure that the soil and erosion controls are adequately maintained.

2014 Progress

Planning and Zoning continues to use the checklist developed in 2004. Continued emphasis is placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period. Planning and Zoning Staff continues to work closely with the Conservation Staff in conducting site visits of properties under construction to ensure that the soil and erosion controls are adequately maintained.

2015 Progress

Planning and Zoning continues to use the checklist developed in 2004. Continued emphasis is placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period. Planning and Zoning Staff continues to work closely with Conservation Staff in conducting site visits of properties under construction to ensure that the soil and erosion controls are adequately maintained.

2016 Progress

Planning and Zoning continues to use the checklist developed in 2004. Continued emphasis is placed on review of required construction Phasing Plans to ensure that proper soil and erosion controls measures are used throughout the construction period. Planning and Zoning Staff continues to work closely with Conservation Staff in conducting site visits of properties under construction to ensure that the soil and erosion controls are adequately maintained.

Inland Wetlands and Watercourses Agency continues to average 100 compliance inspections per month via the two full-time enforcement positions.

The Inland Wetlands and Watercourses Agency routinely requires performance bonds be posted to motivate compliance by applicants.

## BMP 4-4 Inspection Training

### Description

The Town will develop a staff-training program on inspection protocol to ensure that E&S and stormwater control measures are installed and maintained properly.

### Goals

- Initial training for all land use staff
- Annual refresher training for existing staff and new employees

### Schedule

2004.....Initial training program  
2005-8 .....Annual training program

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Director, Conservation Commission
- Director, Inland Wetlands and Watercourses
- Zoning Enforcement Officer

### Assessment

- Reduction of erosion and sediment runoff
- Annual review of training attendance and program content

### Record Keeping

Training records will be maintained for all employees.

### 2004 Progress

All land use staff attended the kickoff stormwater workshop held November 8, 2002 that covered session's site inspections as well as other BMPs.

In addition, all Conservation Commission and IWWA staff, which conducts most the field inspections, regularly attend training sessions provided by DEEP and/or CACIWC.

All IWWA staff are trained as certified agents.

### 2005 Progress

Conservation Commission staff attended CACIWC Annual meeting and attended training on stormwater. Will bring training on new manual to Town hall for all staff and commission members in 2006.

Conservation Commission staff attended professional conferences on forestry, water law in CT.

### 2006 Progress

Wetlands staff has attended DEEP Legal Training, DEEP training on indigenous vegetation and their distribution throughout the wetland, and have also attended the Westchester County Planning workshop on E&S Controls. Additionally, key staff members have attended the CACIWC Conference that had various workshops that included municipal ideas for the use of GIS, ways of securing open space, etc.; and the NEIWPCC Conference in Massachusetts.

### 2007 Progress

Land use staff and commission members continued to attend various training sessions and conferences including:

- NACD Regional Meeting (August 2007)
- Urban Forestry Conference
- DEEP Session I
- DEEP Session II
- DEEP Session III
- CACIWC Annual Meeting
- Westchester County Planning Conference
- NEIWPCC Vulnerable Wetlands Conference
- CAWS
- Connecticut Land Use Law
- UMASS Hydric Soils

Materials received at conferences are shared with other staff, officials, and departments.

### 2008 Progress

Land use staff and commission members continued to attend various training sessions and conferences including:

- NACD Regional Meeting
- Urban Forestry Conference
- DEEP Session I
- DEEP Session II
- DEEP Session III
- CACIWC Annual Meeting
- CAWS
- APA Conference in Rhode Island
- Lorman – controlling Stormwater, New Haven, CT

### 2009 Progress

Land use staff and commission members continued to attend various training sessions and conferences including:

- NACD Regional Meeting
- Urban Forestry Conference
- DEEP Session I
- DEEP Session II
- DEEP Session III
- CACIWC Annual Meeting
- CAWS
- APA Conference at Mohegan Sun

#### 2010 Progress

Inland Wetlands Training Sessions include the following:

- Segment I
- Segment II
- CAWS
- L.I.S.S. Greenspaces Blue Water
- Invasive Plant Removal
- NEIWPCC Forum, Plymouth Mass.
- Land Use Leadership Alliance Training Program
- N.E.M.O.

Land use staff and commission members continued to attend various training sessions and conferences including:

- NACD Regional Meeting
- Urban Forestry Conference
- DEEP Session I
- DEEP Session II
- DEEP Session III
- CACIWC Annual Meeting
- CAWS
- APA National Conference to be held in Boston, MA

#### 2011 Progress

Inland Wetlands Training Sessions include the following:

- CAWS Annual Meeting
- CT DEEP Communications Seminar
- Nature Conservancy, Dam Workshop
- DEEP Segment I
- DEEP Segment II
- DEEP Segment III
- Invasive Plant Workshop
- Stabilizing Stream Banks

Land use staff attended various applicable training sessions at the following multi-day conferences including:

- APA National Conference held in Boston, MA
- Southern New England APA Conference, Providence, RI

#### 2012 Progress

3/22/12 – CAWS Annual Meeting  
5/23/12 DEEP Segment II training  
6/15/12 – Land Use Leaders Academy Training  
9/21/12 – Westchester Dept. of Planning Seminar, Watershed Assessment  
10/11/12 – AMWS – Wetland Delineation  
11/14/12 – DEEP Segment III  
12/6/12 – CAWS Legal Wetland Issues

Land use staff attended various applicable training sessions at the following multi-day conferences including:

- Southern New England APA Conference, Hartford, CT

#### 2013 Progress

Land use staff attended various applicable training sessions at the following multi-day conferences including:

- Southern New England APA Conference was held in Worcester, MA.

#### 2014 Progress

IWWA training and conferences:

Anton Forest, native grass identification training  
Anton Forest, invasive plant identification training  
DEEP, Segment III field training  
DEEP, Segment II Legal Training  
Westchester County Planning, Landscape design seminar  
CACIWC Annual Meeting and training workshops  
Yale Urban Ecosystem workshop  
NEIWPCC, Pollution Control Conference

Land use staff attended various applicable training sessions at the following multi-day conferences including:

- Southern New England APA Conference was held in Providence, Rhode Island.

#### 2015 Progress

Land use staff attended various applicable training sessions at the following multi-day conferences including:

- Southern New England APA Conference held in Hartford, CT.

#### 2016 Progress

Land use staff attended various applicable training sessions at the following multi-day conferences including:

- Southern New England APA Conference held in Worcester, MA.

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

## **BMP 5-1 Regulation Review and Revisions**

### Description

Zoning and subdivision regulations will be revised to require stormwater quality BMPs both structural and non-structural for stormwater control and pollutant removal.

A SWMP and Operations and Maintenance plan will be required for all structural BMPs to ensure adequate long-term performance.

### Goals

The goal is to review and update the regulations to be consistent with the requirements of the permit

### Schedule

2004-5 .....Review regulations, prepare proposed language  
2005.....Adopt revised regulations  
2006-8 ..... Review and make revisions based on effectiveness

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Commissioner, Public Works
- Director, Inland Wetlands and Watercourses

### Assessment

Implementation

### Record Keeping

Updated regulations will be kept on file with the Planning and Zoning Commission and Town Clerk.

### 2009 Progress

IWWA completed the permanent adoption of the Municipal Fine Ordinance, Instituted an additional filing fee based on percentage of earth disruption over a total lot area.

### 2010 Progress

Inland Wetlands conducts multiple strategic planning sessions designed to evaluate and refine existing policies and procedures associated with Agency operations.

### 2011 Progress

Inland Wetlands conducts multiple strategic planning sessions designed to evaluate and refine existing policies and procedures associated with Agency operations.

IWWA staff initiated a five-year monitoring program for all IWWA permits involving the installation of stormwater infiltrators. The condition requires an environmental professional oversee the maintenance of these systems and a report certifying compliance upon completion.

### 2012 Progress

IWWA places greater emphasis on requiring all restoration and remediation to be completed on sites that conducted regulated activities without the prior consent of the Agency before entertaining new activities.

IWWA requires soil testing of all residential stream and ponds proposing to remove spoils and further studies the creation of a fill certification program for sites seeking approval to import materials.

## BMP 5-2 Develop Post-Construction Regulations

### Description

Zoning and subdivision regulations will be revised to require stormwater quality BMPs both structural and non-structural for stormwater control and pollutant removal.

A SWMP and Operations and Maintenance plan will be required for all structural BMPs to ensure adequate long-term performance.

### Goals

The goal is to review and update the regulations to be consistent with the requirements of the permit

### Schedule

2004-5 .....Review regulations, prepare proposed language  
2005 .....Adopt revised regulations  
2006-8 .....Review and make revisions based on effectiveness

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Commissioner, Public Works
- Director, Inland Wetlands and Watercourses

### Assessment

Implementation

### Record Keeping

Updated regulations will be kept on file with the Planning and Zoning Commission and Town Clerk.

### 2004 Progress

As part of the update of the soil erosion and sediment control section of the Building Zone Regulations, the staff has recommended to the Planning and Zoning Commission that a section be added to control erosion and sedimentation from completed projects. These guidelines are intended to supplement the Department of Public Works Drainage Manual by setting forth specific procedures for protecting water quality from point source storm discharges with the mitigation of potential flooding and peak for projects once they are constructed. When adopted these guidelines will apply to all sites requiring permits or approvals from town departments and agencies for a proposed activity that will increase stormwater runoff because of an increase in impervious area or change in vegetative cover. As noted above, the completed draft of the proposed amendment to Sections 6-183.1 to 6-183.10 of the Building Zone Regulations is expected to be taken to public hearing in 2005.

### 2005 Progress

Town land-use staff has begun using the Connecticut Stormwater Quality Manual for guidance.

### 2007 Progress

Inland Wetlands has begun to require prescribed monitoring of holding ponds by a licensed professional engineer to ensure the drainage feature maintains its designed intent over the extended period of time.

### 2012 Progress

The Town of Greenwich Drainage Manual that went into effect May 1, 2012 includes and Operations and Maintenance Plan requirement which includes a Maintenance Declaration that is filed on the Town of Greenwich Land Records to ensure long-term BMP performance.

### 2013 Progress

The Engineering Division continues to ensure that Maintenance Declarations are submitted prior to issuance of Certificate of Occupancy.

### 2014 Progress

The Engineering Division, Planning & Zoning, and Building Division continue to ensure that Maintenance Declarations are submitted prior to issuance of Certificate of Occupancy.

### 2015 Progress

The Engineering Division, Planning & Zoning, and Building Division continue to ensure that Maintenance Declarations are submitted prior to issuance of Certificate of Occupancy.

### 2016 Progress

The Engineering Division, Planning & Zoning, and Building Division continue to ensure that Maintenance Declarations are submitted prior to issuance of Certificate of Occupancy.

The Inland Wetlands and Watercourses Agency requires evidence of compliance with the SWMP as determined by DPW, with each application.

Stormwater system maintenance declarations must be filed on the land records prior to the commencement of any regulated activities.

A layperson-friendly guide to maintaining the approved stormwater system is provided to each permittee or end user.

Every five years after installation, the Inland Wetlands and Watercourses Agency requires a professional engineer inspect and certify the system. Letters are sent to homeowners to remind them of this responsibility



## BMP 5-3 BMP Strategy

### Description

The Town will develop a comprehensive system of standardized BMPs that can be applied in applications to all town agencies regulating development, designed to control the quality of discharges and, where appropriate, the quantity of discharges.

Existing stormwater management practices of land use permitting agencies will be codified for all construction activities that involve one-half acre or more of cumulative land disturbance or that are otherwise determined by permitting agencies to potentially affect sensitive receiving waters.

A mix of structural and non-structural BMPs will be identified and developed. This list will include BMPs suited for both redevelopment and new development. These BMPs may also be used in the 'Construction Site Runoff Control' minimum measure. The Town will publish BMP standards and make available to developers.

### Goals

- Development of standards for designing, installing and maintaining on-site stormwater quality systems
- Maintain pre-development stormwater runoff base flows through detention, infiltration, and reduction of impervious surfaces
- Require measures to reduce potential pollutants discharging to wetlands and watercourses and waters of the State
- Raise the awareness of developers, regulators and residents to the importance of controlling the quantity and quality of both point and non-point stormwater discharges
- Develop requirements for water quality treatment, including thermal pollution, of stormwater runoff from sites located along watercourses and Long Island Sound
- Require installation of water quality enhancement structures and site controls such as minimization of disturbance and imperviousness, buffer strips, and minimum overland flow requirements

### Schedule

2004.....Codify existing stormwater management practices  
2005.....Identify and publish BMP list  
2006-8 .....Annually revise list to maintain current standards

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Commissioner, Public Works
- Director, Inland Wetlands and Watercourses

### Assessment

Annual review and revisions of BMP list

### Record Keeping

Current BMP list will be kept on file in the Land Use Department.

### 2004 Progress

The town is currently reviewing existing stormwater quality practices as well as the newly released Connecticut Stormwater Quality Manual.

The revisions to Sections 6-183.1 to 6.183.10 of the Building Zone Regulations and presently being redrafted to provide for best management practices for regulating peak stormwater discharge and protect water quality from such discharge. These recommended practices include the referencing of the peak discharge standards for 1 five-year storm and other storm events as specified in Table II-1 of the Department of Public Works Drainage Manual, and the listing of ways to ensure the mitigation of the impacts of stormwater discharge by the following: structural means, use of erosion-resistant vegetation, or means as approved by the Department of Public Works Engineering staff. Specific practices are listed in both the Building Zone Regulations Sections 6-183.1 to 183.10 and the Department of Public Works Drainage Manual both undergoing revision.

Planning & Zoning Commission staff routinely reviews plans in the Coastal Overlay Zone, Subdivision Lots and Business Zones for compliance with the Town of Greenwich DPW Drainage Manual and the 2004 Connecticut Stormwater Quality Manual. Staff works with project engineers to develop plans that help to treat storm water and remove both hydrocarbons and coarse sediments. Both structural and non-structural solutions are employed to help preserve stormwater quality.

### 2005 Progress

Town land-use staff has begun using the Connecticut Stormwater Quality Manual for guidance.

Inland Wetlands and Watercourses initiated a workgroup to introduce and discuss the use of Low-impact development (LID) practices in town. The workgroup included representatives from Wetlands, Conservation, P&Z, Building Department and Engineering. The goal of the group will be to investigate LID practices and to begin to introduce these practices where applicable. The workgroup plans to meet periodically to develop an implementation plan.

### 2007 Progress

The Town is linking its efforts in this area with its work under BMP 5-5: Drainage (or Stormwater) Manual Revisions. Fuss and O'Neil is working with the Town on a major manual update which will incorporate BMP requirements, both structural and non-structural.

Inland Wetlands has begun to advocate for above-ground infiltration, use of permeable surfaces in lieu of asphalt and concrete, and a reduction in upland disturbance.

### 2010 Progress

Inland Wetlands increases emphasis on LID and alternate means of addressing stormwater and lot coverage. Also seminar for LID held.

DPW's updated draft Drainage Manual incorporates low impact development and related BMP's. Drainage Manual is expected to be implemented in 2011.

2011 Progress

The Engineering Division has completed the New Town of Greenwich Drainage Manual, which is effective May 1, 2012. The manual has incorporated low impact development as a major part of the stormwater management for site development as well as requiring maintenance declarations for all stormwater systems.

2012 Progress

IWWA continues its efforts to introduce LID concepts through educational outreach and presubmittal review of capital projects.

2013 Progress

The Engineering Division has completed an amendment for the Town of Greenwich Drainage Manual February 2014, which is effective March 1, 2014.

The Department of Public Works has installed a green roof and rain garden on a project at the Holly Hill Resource Recovery Facility. The Engineering Division will continue to monitor the effectiveness of these improvements.

2014 Progress

IWWA renews efforts to promote low impact development through the review of applications and scheduling of free training seminars for residents and professionals.

The completed amendment for the Town of Greenwich Drainage Manual February 2014 went into effect on March 1, 2014 as stated in 2013.

## BMP 5-4 Post-construction Inspection and Maintenance

### Description

The program will:

- Continue *existing program* of post-construction inspection, maintenance and enforcement of regulations,
- Develop an inspection checklist to assist town inspectors and contractors in compliance with the stormwater management practices, and

### Goals

The goal is to continue to provide a sufficient level of inspection and enforcement to ensure that stormwater control measures are maintained properly.

### Schedule

2004.....Develop an inspection checklist  
2005-8 .....Maintain established inspection processes

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Commissioner, Public Works
- Director, Inland Wetlands and Watercourses

### Assessment

- Annual review of inspection and maintenance history
- Evaluate effectiveness of maintenance program
- Document and investigate public complaints

### Record Keeping

Inspection records will be kept on file in the Land Use Department.

### 2004 Progress

Planning & Zoning staff conducts field reviews of completed projects and required certificate by a Professional Engineer prior to issuance of Certificate of Occupancy. Maintenance agreements and schedules and often-required on new projects to ensure future viability of the systems that are installed. Staff looks for things such as deep sumps, catch basin inserts, level spreaders, passive skimmers, etc.

Inspections will incorporate the use of a BMP checklist. This has yet to be finalized. Completion of the checklist will be in 2005. It is contingent upon completion of the town BMP strategy, updated Town Drainage Manual and the Connecticut Stormwater Quality Manual.

### 2005 Progress

No additional progress to report.

### 2007 Progress

Members of the Wetlands Agency will begin to schedule field visits to inspect complicated projects, and to study the success of regulatory oversight post project completion.

### 2009 Progress

IWWA scheduled field walk to witness a completed and active permit site to evaluate the effectiveness of the preapproval review process.

### 2010 Progress

The Inland Wetlands Agency again visited two project sites in various stages of completion for the purpose of study and evaluation of success.

### 2011 Progress

Agency staff initiated a five-year monitoring program for all IWWA permits involving the installation of stormwater infiltrators. The condition requires an environmental professional oversee the maintenance of these systems and a report certifying compliance upon completion.

The Engineering Division has completed the new Town of Greenwich Drainage Manual, which is effective May 1, 2012. The manual has incorporated minimum inspection requirements by the site engineer of record as well as certifications for the stormwater management systems.

### 2012 Progress

Planning & Zoning staff continues to conduct field reviews of completed projects and required certification by a Professional Engineer prior to issuance of Certificate of Occupancy. Maintenance agreements and schedules are now always required on new projects to ensure future viability of the systems that are installed and per the Town Drainage Manual, these documents are filed on the Greenwich Land Records. Staff looks for things such as deep sumps, catch basin inserts, level spreaders, passive skimmers, etc.

### 2013 Progress

The Engineering Division has completed an amendment for the Town of Greenwich Drainage Manual February 2014, which is effective March 1, 2014. The manual continues to incorporate minimum inspection requirements by the site engineer of record as well as certifications for the stormwater management systems.

Engineering staff continues to investigate post-construction complaints. Any violations are reported to the appropriate agency.

### 2014 Progress

The completed amendment for the Town of Greenwich Drainage Manual February 2014 went into effect on March 1, 2014 as stated in 2013. The manual continues to incorporate minimum inspection requirements by the site engineer of record as well as certifications for the stormwater management systems.

Engineering staff continues to investigate post-construction complaints. Any violations are reported to the appropriate agency.

Planning & Zoning staff continues to conduct field reviews of completed projects and required certification by a Professional Engineer prior to issuance of Certificate of Occupancy. Maintenance agreements and schedules are required on new projects to ensure future viability of the systems that are installed and per the Town Drainage Manual, these documents are filed on the Greenwich Land Records. Staff looks for things such as deep sumps, catch basin inserts, level spreaders, passive skimmers, etc.

### 2015 Progress

The completed amendment for the Town of Greenwich Drainage Manual February 2014 went into effect on March 1, 2014 as stated in 2013. The manual continues to incorporate minimum inspection requirements by the site engineer of record as well as certifications for the stormwater management systems.

Engineering staff continues to investigate post-construction complaints. Any violations are reported to the appropriate agency.

Planning & Zoning staff continues to conduct field reviews of completed projects and requires certification by a Professional Engineer prior to issuance of Certificate of Occupancy. Maintenance agreements and schedules are required on new projects to ensure future viability of the systems that are installed and per the Town Drainage Manual; these documents are filed on the Greenwich Land Records. Staff looks for things such as deep sumps, catch basin inserts, level spreaders, passive skimmers, and similar BMP's.

### 2016 Progress

The completed amendment for the Town of Greenwich Drainage Manual February 2014 went into effect on March 1, 2014 as stated in 2013. The manual continues to incorporate minimum inspection requirements by the site engineer of record as well as certifications for the stormwater management systems.

Engineering staff continues to investigate post-construction complaints. Any violations are reported to the appropriate agency.

Planning & Zoning staff continues to conduct field reviews of completed projects and requires certification by a Professional Engineer prior to issuance of Certificate of Occupancy. P&Z has hired a Part-time Planner I position who's job description included conducting said field reviews of completed projects. Maintenance

agreements and schedules are required on new projects to ensure future viability of the systems that are installed and per the Town Drainage Manual; these documents are filed on the Greenwich Land Records. Staff looks for things such as deep sumps, catch basin inserts, level spreaders, passive skimmers, and similar BMP's.

IWWA enforcement staff conducted an average of 100 compliance inspections per month

Every five years after installation, the Inland Wetlands and Watercourses Agency requires a professional engineer inspect and certify they system. Letters are sent to homeowners to remind them of this responsibility.

A layperson-friendly guide to maintaining the approved stormwater system is provided to each permittee or end user.

## BMP 5-5 Drainage Manual Revisions

### Description

The town Drainage Manual will be revised to include details for structural BMPs for stormwater quality.

### Goals

The goal is to review and update the Drainage Manual as a source of reference for applicants and reviewers.

### Schedule

2004-5 ..... Review available structural measures  
2006 ..... Incorporate changes  
2007-8 ..... Review and make revisions based on effectiveness

Lead Responsible Person: Commissioner, Public Works

### Other Responsible Person(s):

- Director, Conservation Commission
- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

Identification and incorporation of structural measures

### Record Keeping

Updated Drainage Manual will be kept on file with the DPW. Copies of pertinent structural details will be kept with the SWMP.

### 2004 Progress

The Town is currently working to revise the Town Drainage Manual using the following as references:

- Connecticut Department of Transportation – Drainage manual - 2000
- Connecticut Department of Environmental Protection – 2004 Connecticut Stormwater Quality Manual

### 2005 Progress

The Town and S E A Consultants are still currently working on the development of the Manual.

### 2006 Progress

The Town and S E A Consultants are still currently working on the development of the Manual.

### 2007 Progress

The Town has changed the Engineering Consultant for the Revision of the Town's Drainage Manual to Fuss & O'Neill, Inc. The project engineer for Fuss & O'Neill, Inc is Erik V. Mas. The project will consist of two phases. Phase I Tasks:

1. Review and Summarize Existing Town Regulations
  - a. Submit Draft Technical Memorandum for Town Review
  - b. Workshop Meeting #1
2. Develop Preliminary Recommendations for Revised Manual
  - a. Submit Draft Technical Memorandum for Town Review
  - b. Workshop Meeting #2
3. Prepare Revised Final Outline and Recommended Stormwater Standards
  - a. Submit Draft Technical Memorandum for Town Review
  - b. Workshop Meeting #3

Phase II will consist of Public Comment, Development of the Manual from the Outline and Recommendations, and Town RTM Approval for adoption by the Town.

Inland Wetlands has required all applicants to account for capture and the management of surface water discharge rates, and its effect on surrounding neighbors. The Agency has further supported similar verbiage in the soon to be amended drainage manual.

### 2008 Progress

The Town has issued Addendum #3 for the current Town of Greenwich Drainage Manual. The addendum was issued to improve all development plan requirements. All development is now required to meet the water quality standards of the 2004 Connecticut Stormwater Quality Manual.

Phase I of II has been completed for the new drainage manual. The final draft of the manual is expected to be completed by January 2009. The Town is working to complete and adopt the manual by January 2010.

#### 2009 Progress

The Town of Greenwich Stormwater and Drainage Manual is nearing completion for public review. It is expected the manual will be completed in 2010.

#### 2010 Progress

The Town of Greenwich Drainage Manual will be completed in 2011. The public review period has been completed and the final document will be presented to the Town of Greenwich Land Use Department, Commissions and the public in the spring of 2011.

#### 2011 Progress

The Engineering Division has completed the New Town of Greenwich Drainage Manual, which is effective May 1, 2012. The manual has incorporated low impact development as a major part of the stormwater management for site development as well as requiring site inspection standards, site certification standards, and a maintenance declaration for all stormwater systems.

#### 2012 Progress

The Engineering Division has been using the Town of Greenwich Drainage Manual that went into effective May 1, 2012 and the implementation has gone well. Currently an addendum for the Drainage Manual is being worked on to modify some sections.

#### 2013 Progress

The Engineering Division has completed an amendment for the Town of Greenwich Drainage Manual February 2014, which is effective March 1, 2014. The manual continues to incorporate low impact development as a major part of the stormwater management for site development as well as requiring site inspection standards, site certification standards, and a maintenance declaration for all stormwater systems.

#### 2014 Progress

The completed amendment for the Town of Greenwich Drainage Manual February 2014 went into effect March 1, 2014 as stated in 2013. The manual continues to incorporate low impact development as a major part of the stormwater management for site development as well as requiring site inspection standards, site certification standards, and a maintenance declaration for all stormwater systems.

#### 2015 Progress

The completed amendment for the Town of Greenwich Drainage Manual February 2014 went into effect March 1, 2014 as stated in 2013. The manual continues to incorporate low impact development as a major part of the stormwater management for site development as well as requiring site inspection standards, site certification standards, and a maintenance declaration for all stormwater systems.

#### 2016 Progress

The completed amendment for the Town of Greenwich Drainage Manual February 2014 went into effect March 1, 2014 as stated in 2013. The manual continues to incorporate low impact development as a major part of the stormwater management for site development as well as requiring site inspection standards, site certification standards, and a maintenance declaration for all stormwater systems.

The Inland Wetlands and Watercourses Agency requires evidence of compliance with the SWMP, as determined by DPW, with each application.

## **BMP 5-6 Plan Review**

### Description

A program will be instituted to ensure the review of plans for any construction activities greater than one-half acre. Town staff will review design plans and calculations for compliance with town regulations. Plan review will continue to be conducted during permit application process for Inland Wetlands permits, zoning compliance permits and site development planning & zoning permits.

### Goals

The goal is to review all design plans for consistency with the town and state stormwater management practices and to include BMPs as necessary.

### Schedule

2004-8 .....Examine and assess current review process

Lead Responsible Person: Director, Planning and Zoning

### Other Responsible Person(s):

- Commissioner, Public Works
- Director, Inland Wetlands and Watercourses

### Assessment

All construction plans requiring compliance with the Permit will be subject to review and approval process.

### Record Keeping

All review comments and approvals will be kept on file in the Land Use Department.

### 2004 Progress

Plan reviews currently check for compliance with town and state stormwater management practices. Reviews are based on Town Drainage Manual and Connecticut Stormwater Quality Manual.

### 2005 Progress

Town land-use staff has begun using the Connecticut Stormwater Quality Manual and also USDA-NRCS new publication on Soil Based Recommendations for Stormwater Management Practices.

### 2007 Progress

The Engineering Division reviews all Planning & Zoning Commission Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Planning & Zoning Administrative Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA staff.

The Town is working towards including the review of all Building Permits that don't require Planning & Zoning approval but this can't be accomplished until staffing issues are addressed.

Inland Wetlands commissioned the scanning and integration of archived data between the years 1974-2006 to the Town Geographic Information System (GIS). The information will be used for comparative analysis to aid with the review of current and future projects.

### 2009 Progress

The previously scanned IWWA archived material from years 1974 - 2006 was digitized and made available on the GIS as a means of better assisting the public and making all relevant development history readily available to staff during its evaluation of activities and its potential effect on a community.

IWWA began actively imposing Low Impact Development Concepts and practical management practices aimed at reducing disruption of earth, introduction of impermeable surfaces, and minimized use of engineered structures to accommodate adjustments in flow rates.

### 2010 Progress

The Inland Wetlands Agency contracted a consultant to provide advanced GIS training for the purpose of improving the software for the purpose of comprehensive analysis of target communities and watershed protection.

### 2011 Progress

The Engineering Division reviews all Planning & Zoning Commission Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Planning & Zoning Administrative Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA staff.

The Town is working towards including the review of all Building Permits that don't require Planning & Zoning approval but this can't be accomplished until staffing issues are addressed.

#### 2012 Progress

IWWA nearing completion of its digital document conversation, making project years 1974 – 2006 available for public viewing through a computer kiosk within the department, and a web portal for home/external office review.

The Engineering Division reviews all Planning & Zoning Commission Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Planning & Zoning Administrative Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA staff.

The Town is working towards including the review of all Building Permits that don't require Planning & Zoning approval but this can't be accomplished until staffing issues are addressed.

#### 2013 Progress

The Engineering Division reviews all Planning & Zoning Commission Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Planning & Zoning Administrative Reviews no matter the level of disturbance for the development.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA staff.

#### 2014 Progress

The Engineering Division reviews all Planning & Zoning Commission Reviews requiring a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

The Engineering Division reviews all Planning & Zoning Administrative Reviews requiring a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA staff and include a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

IWWA adds all applications reviewed in 2005 along with archived inspections and neighbor complaints to its online web portal.

#### 2015 Progress

The Engineering Division reviews all Planning & Zoning Commission Reviews requiring a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

The Engineering Division reviews all Planning & Zoning Administrative Reviews requiring a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA staff and include a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

#### 2016 Progress

The Engineering Division reviews all Planning & Zoning Commission Reviews requiring a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

The Engineering Division reviews all Planning & Zoning Administrative Reviews requiring a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA staff and include a full Drainage Summary Report as per the Town of Greenwich Drainage Manual February 2014.

The Engineering Division reviews all Inland Wetlands and Watercourses Agency Reviews that are requested by the IWWA Staff to ensure compliance with the SWMP.



## BMP 5-7 Staff Training

### Description

The Town will develop a training program for staff on the need for stormwater quality BMPs. Training opportunities on inspection of operation and maintenance of structural BMPs will also be provided to staff. These may be in house or outside programs.

### Goals

- Initial workshop training for targeted staff on non-point source pollution and the need for BMPs
- Assessment of additional training programs needed by staff and availability of programs in area.
- Annual training opportunities provided to all technical staff involved

### Schedule

2004.....Initial training workshop  
2005-8 .....External staff development opportunities identified and distributed  
2005-8 .....Staff attend training programs appropriate for related work

Lead Responsible Person: Director, Conservation Commission

### Other Responsible Person(s):

- Commissioner, Public Works
- Director, Inland Wetlands and Watercourses
- Director, Planning and Zoning

### Assessment

- % staff involved in training
- Training encouraged in annual personnel review for key employees

### Record Keeping

Training records will be maintained for all employees.

### 2004 Progress

All land-use staff attended a kickoff seminar in November 2002.

Conservation Commission staff attended CACIWC conference and attended Stormwater Manual session. Will invite DEEP/NEMO to conduct similar program for all staff on the new manual in 2005.

### 2005 Progress

Conservation Commission staff attended CACIWC Annual meeting and attended training on stormwater. Currently reviewing proposal to bring training on new manual to Town hall for all staff and commission members in 2006.

Conservation Commission staff attended professional conferences on forestry, water law in CT.

### 2006 Progress

Wetlands staff has attended DEEP Legal Training, DEEP training on indigenous vegetation and their distribution throughout the wetland, and have also attended the Westchester County Planning workshop on E&S Controls. Additionally, key staff members have attended the CACIWC Conference that had various workshops that included municipal ideas for the use of GIS, ways of securing open space, etc.; and the NEIWPCC Conference in Massachusetts.

### 2007 Progress

DPW has sent key staff to local seminars on stormwater quality BMPs, with particular attention to highway and stormwater structure maintenance and construction activities. Training will continue in future years.

Land use staff and commission members continued to attend various training sessions and conferences including:

- NACD Regional Meeting (August 2007)
- Urban Forestry Conference
- DEEP Session I
- DEEP Session II
- DEEP Session III
- CACIWC Annual Meeting
- Westchester County Planning Conference
- NEIWPCC Vulnerable Wetlands Conference
- CAWS
- Connecticut Land Use Law
- UMASS Hydric Soils

Materials received at conferences are shared with other staff, officials, and departments.

### 2008 Progress

Land use staff and commission members continued to attend various training sessions and conferences including:

- NACD Regional Meeting
- Urban Forestry Conference
- DEEP Session I
- DEEP Session II
- DEEP Session III
- CACIWC Annual Meeting
- CAWS
- APA Conference in Rhode Island
- Lorman – controlling Stormwater, New Haven, CT

### 2009 Progress

IWWA staff attended the following seminars: Connecticut Association of Wetland Scientists, DEEP Training Segment II (legal) and III (Forestry and Equine Science), Cornell Invasive Plants, Connecticut Association of Conservation and Inland Wetland Commissions, Long Horn Beetle Conference, NRCS Soil Survey Interpretations, Wet Weather Green Infrastructure, Lorman Stormwater Regulation and Training, and Westchester County Sustainable Strategies for Stormwater Planning and Design.

Land use staff and commission members continued to attend various training sessions and conferences including:

- NACD Regional Meeting
- Urban Forestry Conference
- DEEP Session I
- DEEP Session II
- DEEP Session III
- CACIWC Annual Meeting
- CAWS
- APA Conference at Mohegan Sun

### 2010 Progress

Inland Wetlands Training Sessions include the following:

- Segment I
- Segment II
- CAWS
- L.I.S.S. Greenspaces Blue Water
- Invasive Plant Removal
- NEIWPCC Forum, Plymouth Mass.
- Land Use Leadership Alliance Training Program
- N.E.M.O.

Engineering Division attended a seminar entitled “Engineering Rain Gardens & Bioretention for Sustainable Stormwater Management”.

Conservation Director participated in DEEP Low Impact Development workgroup during 2010 and will be working with DEEP in coming year to update Stormwater Manual and E&S Guidelines to include LID.

### 2011 Progress

The Engineering Division had Osprey Environmental Engineering give training for the assessment of stormwater outfalls with respect to issues of environmental concern, including sediment accumulation; scour concerns, evidence of oils/fuel/grease discharges, and other water quality degradation factors.

The Engineering Division and our consultant Fuss & O’Neill held Low Impact Development Workshops for the New Town of Greenwich Drainage Manual on November 15, 2011 and November 16, 2011.

Conservation Director participated in DEEP Low Impact Development workgroup during 2011 and will be working with DEEP with ongoing efforts to update Stormwater Manual and E&S Guidelines to include LID.

### 2012 Progress

Conservation staff is incorporating LID into all reviews and specifically is looking at during construction activities relating to E&S controls. Director participated in DEEP Low Impact Development workgroup during 2012 and is working with DEEP and ongoing efforts to update Stormwater Manual and E&S Guidelines to include LID.

### 2013 Progress

Conservation staff is incorporating LID into all reviews and specifically is looking at during construction activities relating to E&S controls. Conservation Staff participated in numerous workshops offered at state and local level. Director is working to ensure that the role of local government is part of state training. Director involved in review of new EPA guidelines for stormwater management and update of 319 program and the relationship between the MS4 permits and the 319 program.

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

### 2014 Progress

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Conservation staff continues to incorporate LID into all reviews and specifically is looking at during construction activities relating to E&S controls, which is an ongoing issue since many applicants are focused on final controls. Conservation Staff participated in numerous workshops offered at state and local level. Director is working to ensure that the role of local government is part of state training. Director involved in review of new EPA guidelines for storm water management and update of 319 program and the relationship between the MS4 permits and the 319 program.

### 2015 Progress

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Conservation staff continues to incorporate LID into all reviews and specifically is looking at during construction activities relating to E&S controls, which is an ongoing issue since many applicants are focused on final controls. Conservation Staff participated in numerous workshops offered at state and local level. Director is working to ensure that the role of local government is part of state training. Director involved in review of new EPA guidelines for storm water management and update of 319 program and the relationship between the MS4 permits and the 319 program.

2016 Progress

Engineer Division staff continued to attend educational sessions, webinars, and read published information to keep up on the latest developments in Stormwater Management.

Conservation staff continues to recommend the incorporation of LID into all reviews and specifically is looking at during construction activities relating to E&S controls. This has been identified as an area of concern as many applicants are focused on post-construction design for stormwater and are failing to adequately address E&S and stormwater management during construction. Conservation Staff participated in numerous workshops offered at state and local level.

# **6. Pollution Prevention and Good Housekeeping for Municipal Operations**

## BMP 6-1 Staff Training

### Description

The Town will develop a training program for pollution prevention techniques for municipal operations.

### Goals

- Ensure that all town employees are educated to recognize pollutant sources, prevent or reduce pollutant runoff from municipal operations, and implement erosion and sedimentation and stormwater controls to meet the requirements of the Permit
- Obtain information on existing O&M programs related to Good Housekeeping to reduce and eliminate Stormwater Pollution (i.e. materials handling procedures, floatable controls, etc)
- Obtain information on existing practices related to the use and disposal of pesticides, herbicides, winter de-icing material, hazardous waste, construction waste, waste oil, etc.)
- Obtain available training materials from other communities and other similar sources

### Schedule

2004.....Identify applicable town staff  
2005 .....Develop training  
schedule/program  
2006-8 .....Begin annual training

Lead Responsible Person: Commissioner, Public Works

### Assessment

Annual review of training attendance and program content

### Record Keeping

Training records will be maintained for all employees at each facility.

### 2004 Progress

Facility Managers, under the direction of their respective Department heads, are in the process of selecting the individuals applicable for training.

### 2005 Progress

No formal training has been provided as of yet. The Town has solicited a proposal from Osprey Environmental and S E A Consultants for performing training for various stormwater related activities, including pollution prevention.

S E A, Osprey and representatives from the Town met to approve scope of training and to identify applicable staff.

The BMP is on schedule to begin training in 2006.

### 2006 Progress

SEA and Osprey will be putting together a training program and performing training in 2007.

### 2007 Progress

Osprey performed annual BMP training for Highway and Fleet garage staff. Osprey also performed annual pollution prevention training for Parks and Recreation staff.

S E A and Osprey will be putting together a training program and performing training in 2008.

### 2008 Progress

Osprey performed annual BMP and pollution prevention training for Highway and Fleet garage staff. Osprey will begin pollution prevention training in 2009 for:

- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

Pollution prevention training will also continue for Highway and Fleet Garage.

### 2009 Progress

Osprey performed annual BMP and pollution prevention training for Highway and Fleet garage staff. Osprey will begin pollution prevention training in 2010 for:

- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

Pollution prevention training will also continue for Highway and Fleet Garage.

Osprey Environmental Engineering has completed the inspection policy and the training program will begin in 2010. The program will cover the assessment of stormwater outfalls with respect to issues of environmental concern, including sediment accumulation; scour concerns, evidence of oils/fuel/grease discharges, and other water quality degradation factors.

#### 2010 Progress

Osprey Environmental Engineers performed annual BMP and pollution prevention training for:

- Fleet Garage
- Highway Garage
- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

Osprey Environmental Engineering has completed the inspection policy.

#### 2011 Progress

Osprey Environmental Engineers performed annual BMP and pollution prevention training for:

- Fleet Garage
- Highway Garage
- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

Osprey Environmental Engineering has completed the inspection policy, outfall reconnaissance field sheet and the outfall inspection training. The program covered the assessment of stormwater outfalls with respect to issues of environmental concern, including sediment accumulation; scour concerns, evidence of oils/fuel/grease discharges, and other water quality degradation factors.

#### 2012 Progress

Osprey Environmental Engineers performed annual BMP and pollution prevention training for:

- Fleet Garage
- Highway Garage
- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

#### 2013 Progress

Osprey Environmental Engineers performed annual BMP and pollution prevention training for:

- Fleet Garage
- Highway Garage
- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

#### 2014 Progress

Osprey Environmental Engineers performed annual BMP and pollution prevention training for:

- Fleet Garage
- Highway Garage
- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

#### 2015 Progress

Osprey Environmental Engineers performed annual BMP and pollution prevention training for:

- Fleet Garage
- Highway Garage
- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

#### 2016 Progress

Osprey Environmental Engineers performed annual BMP and pollution prevention training for:

- Fleet Garage
- Highway Garage
- Holly Hill Transfer Station
- Grass Island WWTF
- Arch Street Maintenance Facility
- Town Marinas – Byram, Cos Cob, Grass Island, and Greenwich Point

## BMP 6-2 Annual Street Sweeping

### Description

Throughout the municipality:

- Expand current maintenance program to sweep all streets at least once a year as soon as possible after the snowmelt.

### Goals

- Document current level of activity
- Continue street/parking lot sweeping programs in accordance with the permit

### Schedule

2004-8 .....	Continue current maintenance program
2005.....	Coordinate cleaning records with inspections and mapping

Lead Responsible Person: Commissioner, Public Works

### Assessment

- Meeting goals and schedule set forth herein
- Monitoring and sampling of outfalls to reduce pollutants

### Record Keeping

Cleaning logs, sampling results will be kept with SWMP.

### 2004 Progress

All town streets are swept at least twice a year.

### 2005 Progress

All town streets are swept at least twice a year.

### 2006 Progress

All town streets are swept at least twice a year.

All streets in the downtown business areas of Byram, Greenwich, Cos Cob and Old Greenwich are swept once a week.

### 2007 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

### 2008 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

Osprey Environmental Engineers in 2009 will prepare a Best Management Practices Plan for street sweepings and catch basin cleaning wastes to include measures for stockpiling, analytical characterization, and disposal methods of the materials.

### 2009 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

Osprey Environmental Engineers in 2009 has completed the Best Management Practices Plan for street sweepings and catch basin cleaning wastes to include measures for stockpiling, analytical characterization, and disposal methods of the materials.

### 2010 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

The Highway Division has implemented the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

2011 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

2012 Progress

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2013 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

2014 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

2015 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.

2016 Progress

Town streets are swept at least twice a year. The downtown business areas Byram, Greenwich, Cos Cob, and Old Greenwich are swept once a week. The DPW Highway Division has been following the CTDOT recommendations and are expanding the use of salt and/or liquid de-icing agents. The use of sand has been greatly minimized; it is used only under very particular storm conditions.



## BMP 6-3 Evaluate Street Sweeping Program

### Description

#### Within the UA:

- Expand current maintenance program to evaluate and prioritize those streets that may require sweeping more than once a year.

### Goals

- Document current level of activity
- Continue street/parking lot sweeping programs in accordance with the permit
- Identify areas that may require more frequent maintenance schedules
- Obtain additional information BMPs on existing road maintenance practices
- Review and improve road-deicing procedures to minimize the use of sand/salt or the use of alternative compounds in watershed areas

### Schedule

2004-8 .....	Continue current maintenance program
2005 .....	Coordinate cleaning records with inspections and mapping
2005-8 .....	Identify critical areas of concern
2006-8 .....	Modify program to address areas of concern

Lead Responsible Person: Commissioner, Public Works

### Assessment

- Meeting goals and schedule set forth herein
- Monitoring and sampling of outfalls to reduce pollutants

### Record Keeping

Cleaning logs, sampling results will be kept with SWMP.

### 2004 Progress

All streets in the downtown business areas of Byram, Greenwich, Cos Cob and Old Greenwich are swept once a week.

The program will be developed to better document the current level of activity to ensure coordination with the illicit discharge detection BMPs.

### 2005 Progress

All streets in the downtown business areas of Byram, Greenwich, Cos Cob and Old Greenwich are swept once a week.

The program will be developed to better document the current level of activity to ensure coordination with the illicit discharge detection BMPs.

### 2006 Progress

A sample-sweeping log has been created to simplify record keeping requirements for the Highway Department. This will aid in the future evaluation of the program.

### 2007 Progress

As noted under BMP 6-2, the use of sand has been greatly minimized as the Town follows the CTDOT recommendations. This has helped reduce road sand cleanup efforts. Highway continues to manage its efforts to document and evaluate this work.

### 2008 Progress

As noted under BMP 6-2, the use of sand has been greatly minimized as the Town follows the CTDOT recommendations. This has helped reduce road sand cleanup efforts. Highway continues to manage its efforts to document and evaluate this work.

Osprey Environmental Engineers in 2009 will prepare a Best Management Practices Plan for street sweepings and catch basin cleaning wastes to include measures for stockpiling, analytical characterization, and disposal methods of the materials.

### 2009 Progress

As noted under BMP 6-2, the use of sand has been greatly minimized as the Town follows the CTDOT recommendations. This has helped reduce road sand cleanup efforts. Highway continues to manage its efforts to document and evaluate this work.

Osprey Environmental Engineers in 2009 has completed the Best Management Practices Plan for street sweepings and catch basin cleaning wastes to include measures for stockpiling, analytical characterization, and disposal methods of the materials.

DPW is in the process of implementing a Computer Maintenance Management System (GBA Master Series), which will allow the collection and recording of detailed maintenance information. The installation should be completed in 2010.

2010 Progress

As noted under BMP 6-2, the use of sand has been greatly minimized as the Town follows the CTDOT recommendations. This has helped reduce road sand cleanup efforts. Highway continues to manage its efforts to document and evaluate this work.

The Highway Division has implemented the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW has implemented a Computer Maintenance Management System (GBA Master Series), which will allow the collection and recording of detailed maintenance information. The installation was completed in 2010.

2011 Progress

The Highway Division is following the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2012 Progress

The Highway Division is following the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2013 Progress

The Highway Division is following the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2014 Progress

The Highway Division is following the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2015 Progress

The Highway Division is following the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2016 Progress

The Highway Division is following the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

## BMP 6-4 Stormwater Structure Cleaning Program

### Description

*Throughout the municipality:*

- Expand current maintenance program to evaluate and, if necessary, clean catch basins and other stormwater structures that accumulate sediment at least once a year, including a provision to identify and prioritize those structures that may require cleaning more than once a year.

### Goals

- Document current level of activity
- Continue catch basin cleaning program in accordance with the permit
- Identify areas that may require more frequent maintenance schedules
- Establish maintenance programs for stormwater quality structures
- Establish procedures for the proper disposal of waste removed from the drainage systems, including dredge spoils, accumulated sediments, floatables, and other debris

### Schedule

2004-8 .....	Continue current maintenance program
2005.....	Coordinate cleaning records with inspections and mapping
2005-8 .....	Identify critical areas of concern
2006-8 .....	Modify program to address areas of concern

*Lead Responsible Person:* Commissioner, Public Works

### Assessment

- Meeting goals and schedule set forth herein
- Monitoring and sampling of outfalls to reduce pollutants

### Record Keeping

Cleaning logs, sampling results will be kept with SWMP.

### 2004 Progress

The town goal is to seek to clean all town stormwater structures at least once per year.

### 2005 Progress

The town goal is to seek to clean all town stormwater structures at least once per year.

### 2006 Progress

The town goal is to seek to clean all town stormwater structures at least once per year.

### 2007 Progress

The Town goal is to seek to clean all town stormwater structures at least once per year. Activities planned for 2008-2009 include obtaining a new vactor truck for stormwater infrastructure cleaning and initial steps to implement a computerized maintenance management program to document infrastructure maintenance.

### 2008 Progress

The Town goal is to seek to clean all town stormwater structures at least once per year. The Town is in the process of budgeting funds to begin the implementation of a computerized maintenance management system to document infrastructure maintenance.

Osprey Environmental Engineers in 2009 will prepare a Best Management Practices Plan for street sweepings and catch basin cleaning wastes to include measures for stockpiling, analytical characterization, and disposal methods of the materials.

### 2009 Progress

The Town goal is to seek to clean all town stormwater structures at least once per year.

Osprey Environmental Engineers in 2009 has completed the Best Management Practices Plan for street sweepings and catch basin cleaning wastes to include measures for stockpiling, analytical characterization, and disposal methods of the materials.

DPW is in the process of implementing a Computer Maintenance Management System (GBA Master Series), which will allow the collection and recording of detailed maintenance information. The installation should be completed in 2010.

### 2010 Progress

The Town goal is to seek to clean all town stormwater structures at least once per year.

The Highway Division has implemented the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW has implemented a Computer Maintenance Management System (GBA Master Series), which will allow the collection and recording of detailed maintenance information. The installation was completed in 2010.

2011 Progress

The Towns goal is to seek to clean all town stormwater structures at least once per year.

The Highway Division is using the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2012 Progress

The Towns goal is to seek to clean all town stormwater structures at least once per year.

The Highway Division is using the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2013 Progress

The Towns goal is to seek to clean all town stormwater structures at least once per year.

The Highway Division is using the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2014 Progress

The Towns goal is to seek to clean all town stormwater structures at least once per year.

The Highway Division is using the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2015 Progress

The Towns goal is to seek to clean all town stormwater structures at least once per year.

The Highway Division is using the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

2016 Progress

The Towns goal is to seek to clean all town stormwater structures at least once per year.

The Highway Division is using the Best Management Practices Plan (Town of Greenwich Street Sweepings/Catch Basin Residues and Pavement Millings Reuse Policy) completed by Osprey Environmental Engineers in 2009.

DPW is using the Computer Maintenance Management System (Lucity), which allows the collection and recording of detailed maintenance information.

## BMP 6-5 Evaluate Stormwater System for Upgrade or Repair

### Description

*Throughout the municipality:*

- Expand current maintenance program to evaluate and, if necessary, prioritize for repairing, retrofitting or upgrading the conveyances, structures and outfalls of the MS4.

### Goals

- Document current level of activity
- Identify stormwater systems in need of maintenance and repair

### Schedule

2004-8 .....	Continue current maintenance program
2005-8 .....	Identify critical areas of concern through monitoring results
2006-8 .....	Implement repairs or upgrades

Lead Responsible Person: Commissioner, Public Works

### Assessment

- Meeting goals and schedule set forth herein
- Monitoring and sampling of outfalls to reduce pollutants

### Record Keeping

Cleaning logs, sampling results will be kept with SWMP.

### 2004 Progress

There have not been any improvements to the drainage system related to illicit discharge detection and elimination.

### 2005 Progress

There have not been any improvements to the drainage system related to illicit discharge detection and elimination.

### 2006 Progress

The town is currently working on a revised grading plan at the Holly Hill Waste Facility to improve runoff patterns.

### 2007 Progress

The Town has begun stormwater master planning efforts in three watersheds, as part of a plan to evaluate the entire Town over time. This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field. Work is also underway to evaluate the Town's Holly Hill transfer station site, including improved stormwater management at that location.

### 2008 Progress

The Town has continued the stormwater master planning efforts and currently has five watershed studies underway. Four of the five will be completed in 2009 and the Town is budgeting for two additional studies and the continuation of one. This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

### 2009 Progress

The Town has continued the stormwater master planning efforts and has completed four watershed studies and four storm drainage network studies. Two of the three remaining watershed studies have begun and the third is budgeted for next fiscal year. Also additional storm drainage network studies will continue to be budgeted in the future. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list will begin to be budgeted in 2010 and continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

#### 2010 Progress

The Town has continued the stormwater master planning efforts and has completed five watershed studies and six storm drainage network studies. Two of the three remaining watershed studies have begun and the third is budgeted for this fiscal year. Additional storm drainage network studies will continue to be budgeted in the future. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list have begun and will continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

#### 2011 Progress

The Town has completed all but one of the major watershed studies. Additional storm drainage network studies will continue to be budgeted in the future. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list have begun and will continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

#### 2012 Progress

The Town has completed all of the major watershed studies. Additional storm drainage network studies will continue to be budgeted in the future as needed. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list have begun and will continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

#### 2013 Progress

The Town has completed all of the major watershed studies. Additional storm drainage network studies will continue to be budgeted in the future as needed. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list have begun and will continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

#### 2014 Progress

The Town has completed all of the major watershed studies. Additional storm drainage network studies will continue to be

budgeted in the future as needed. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list have begun and will continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

#### 2015 Progress

The Town has completed all of the major watershed studies. Additional storm drainage network studies will continue to be budgeted in the future as needed. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list have begun and will continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

#### 2016 Progress

The Town has completed all of the major watershed studies. Additional storm drainage network studies will continue to be budgeted in the future as needed. From the studies the Town has developed a prioritization list for drainage projects. Projects from this list have begun and will continue to be budgeted in coming fiscal years.

This master planning will include creating hydraulic models for the watersheds to identify system capacity and provide initial recommendations for potential improvements. Ongoing work by the Highway Division also includes documenting and repairing stormwater infrastructure, with work including cleaning and condition assessment in the field.

## BMP 6-6 Inventory of Town Facilities and Procedures

### Description

This program will establish procedures at public facilities to prevent or reduce pollutant runoff.

### Goals

- Conduct an inventory of all town facilities, environmental inventory of potential pollutants and pollution migration pathways
- Develop stormwater management and pollution prevention practices for each facility in the form of SWMP or Spill Prevention and Control Plans
- Summarize practices in the form of a checklist for each facility
- Conduct inventory of town-wide practices such as recycling, road de-icing, salt/sand storage and pesticide applications
- Investigate alternative practices
- Review operations of bulk storage and drum storage at transfer station, DPW facilities, and other similar facilities
- Develop a Capital Improvement Plan (CIP) for identified improvements

### Schedule

2006-8 ..... Complete environmental inventory of all town facilities  
2006-8 ..... Update environmental inventory of all town facilities  
2006-8 ..... Develop town-wide and facility specific practices  
2006-8 ..... Update and develop SWMP and checklists for each facility  
2006-8 ..... Annual audit and CIP for each facility

Lead Responsible Person: Commissioner, Public Works

### Other Responsible Person(s):

- Director, Parks and Recreation
- Board of Education
- Facility Managers

### Assessment

- Annual audit of facilities by department head
- Maintain current inventory of materials and checklist of practices

### Record Keeping

An inventory and checklist will be maintained and kept at each facility.

### 2004 Progress

The updated environmental inventory of all town facilities has yet to be completed. The program, which was initiated in 2002, is scheduled to be completed in 2005. The schedule for completion of the remaining tasks for this BMP will not be changed.

### 2005 Progress

The updated inventory for this BMP has not been completed as of yet. The Town has solicited a proposal from Osprey Environmental for updating inventories for various facilities in Town.

S E A, Osprey and representatives from the Town met to discuss and identify the applicable facilities for this BMP.

The schedule for this BMP was revised to have the environmental audits completed and updated by the end of the first permit term.

### 2006 Progress

Osprey has completed audits of the Town Facilities.

In 2007, Osprey will:

- Prepare a program of best management practices for Town facilities addressing handling, storage, and disposal of heating fuels, motor vehicle fuels, pesticides, waste oils, and other waste products.
- Assist in the evaluation of alternative deicing procedures for the Highway Department that reduce the use of sand and/or makes use of alternative deicing chemicals.
- Conduct environmental audits of facilities inspected in 2006 and provide summaries of the facilities and meet with Town personnel to review the items and provide additional input with respect to action items as required.

### 2007 Progress

Osprey has completed audits of the Town Facilities and will begin working on Stormwater Management and Pollution Prevention Practices for each facility in 2008.

The Town's Highway Division has been following the CTDOT recommendations, which have resulted in a significant decrease in sand use during storms. Alternative chemical use, including the use of liquid de-icing agents is part of the current program. Town facilities have the results of their audits and will be continuing work on any areas for improvement identified in the audits. Additional audits are planned for 2008, incorporating training in BMPs as needed.

### 2008 Progress

The Town didn't perform any audits for 2008 but will have Osprey Environmental Engineering perform audits for all Town Facilities in 2009.

### 2009 Progress

Osprey has completed a second round of audits of the Town Facilities following the Stormwater Management and Pollution Prevention Practices of each facility.

Town facilities have the results of their audits and will be continuing work on any areas for improvement identified in the audits. The next round of audits are planned for 2011.

2010 Progress

The Town didn't perform any audits for 2010 but will have Osprey Environmental Engineering perform audits for all Town Facilities in 2011.

2011 Progress

Osprey has completed a third round of audits of the Town Facilities following the Stormwater Management and Pollution Prevention Practices of each facility.

Town facilities have the results of their audits and will be continuing work on any areas for improvement identified in the audits. The next round of audits are planned for 2013.

2012 Progress

The Town didn't perform any audits for 2012 but will have Osprey Environmental Engineering perform audits for all Town Facilities in 2013.

2013 Progress

Osprey has completed a fourth round of audits of the Town Facilities following the Stormwater Management and Pollution Prevention Practices of each facility.

Town facilities have the results of their audits and will be continuing work on any areas for improvement identified in the audits. The next round of audits are planned for 2015.

2014 Progress

The Town didn't perform any audits for 2014 but will have Osprey Environmental Engineering perform audits for all Town Facilities in 2015.

2015 Progress

Osprey has completed a fifth round of audits of the Town Facilities following the Stormwater Management and Pollution Prevention Practices of each facility.

Town facilities have the results of their audits and will be continuing work on any areas for improvement identified in the audits. The next round of audits are planned for 2017.

2016 Progress

The Town didn't perform any audits for 2016 but will have audits for all Town Facilities included in the 2017 General Permit.



# Monitoring

## BMP S-1 Wet-weather Outfall Monitoring

### Description

The Town will develop a stormwater structure and outfall inspection program to identify non-stormwater and illicit discharges throughout town.

### Goals

- Conduct wet weather sampling and monitoring.
- Perform wet weather sampling and testing of outfalls at locations as required by the permit: At least two (2) outfalls apiece will be monitored from areas of primarily industrial development, commercial development and residential development, respectively, for a total of six (6) outfalls monitored.

### Schedule

2004-8 .....Perform wet weather sampling and monitoring in accordance with the Permit

Lead Responsible Person: Commissioner, Public Works

Other Responsible Person(s):

### Assessment

- Meeting DEEP schedule

### Record Keeping

Monitoring results will be sent to DEEP and kept on file with DPW.

### 2004 Progress

Sampling and testing of outfalls (FY2004) is currently being performed. No results are available at the time of preparing the draft of the 2004 Annual Report. Testing results will be forwarded to DEEP when they have been completed.

### 2005 Progress

FY2004 sampling results were forwarded to DEEP in October 2005.

Sampling and testing of outfalls (FY 2005) is currently being performed. No results are available at the time of preparing the draft of the 2004 Annual Report. Testing results will be forwarded to DEEP when they have been completed.

### 2006 Progress

FY2005 sampling results were forwarded to DEEP in May 2006.

FY2006 sampling was performed in September 2006. Results are attached to this report.

### 2007 Progress

FY2007 sampling was performed in August 2007. Results are attached to this report.

### 2008 Progress

FY2008 sampling was performed in July 2008. Results are attached to this report. The sampling was performed on the watercourses at the following locations:

- Binney Park Brook at Sound Beach Avenue
- Byram River at Powell Street
- Strickland Brook at Bible Street
- Horseneck Brook at Field Point Road
- East Branch Byram River at Riversville Road
- Greenwich Creek at Brookridge Drive

### 2009 Progress

FY2009 sampling was performed in July 2009. Results are attached to this report. The sampling was performed on the watercourses at the following locations:

- East Branch Byram River @ Riversville Road
- Greenwich Creek (East Branch Brothers Brook) @ Brookridge Drive
- Byram River @ Powell Street
- Strickland Creek (Brothers Brook) @ Bible Street
- Horseneck Brook @ Field Point Road
- Binney Park Brook @ Sound Beach Avenue

### 2010 Progress

FY2010 sampling was performed in July 2010. Results are attached to this report. The sampling was performed on the watercourses at the following locations:

- East Branch Byram River at Porchuck Road
- Greenwich Creek (East Branch Brothers Brook) at Fairfield Road

- Byram River at Deep Gorge Road
- Strickland Brook at Pine Ridge Road
- Horseneck Brook at Glenville Road
- Binney Park Brook at Mary Lane

#### 2011 Progress

FY2011 sampling was performed in August 2011. Results are attached to this report. The sampling was performed at the following locations:

- Sound Beach Avenue
- 10 Hamilton Avenue 12" Pipe
- 10 Hamilton Avenue Main Culvert
- Comly Avenue
- Arch Street
- Juniper Lane

#### 2012 Progress

FY2012 sampling was performed in June 2012. Results are attached to this report. The sampling was performed at the following locations:

- Shore Acre Drive
- Meadow Place
- Sound Beach Avenue
- Brookside Drive
- Lake Avenue
- West Putnam Avenue

#### 2013 Progress

FY2013 sampling was performed in May 2013 and October 2013. Results are attached to this report. The sampling was performed at the following locations:

- Delwood Lane
- North Street at Cotswood Road
- Halsey Drive
- Strickland Road
- Rex Street
- Richland Road

#### 2014 Progress

FY2014 sampling was performed in August 2014. Results are attached to this report. The sampling was performed at the following locations:

- Davis Avenue
- Fairfield Road
- Halsey Drive
- Booth Place
- Sherwood Avenue
- Nutmeg Drive

#### 2015 Progress

FY2015 sampling was performed in August 2015. Results are attached to this report. The sampling was performed at the following locations:

- Hamilton Avenue
- Hamilton Avenue
- Comly Avenue
- Brookside Drive
- West Putnam Avenue
- Arch Street

#### 2016 Progress

FY2016 sampling was performed in October 2016. Results are attached to this report. The sampling was performed at the following locations:

- Horseneck Lane
- Arch Street
- Steamboat Road
- Bible Street
- Orchard Street
- River Road