

# Town of Old Saybrook, Connecticut

2016 Annual Report

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

Permit Number GSM000078

### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### **Stormwater Management Plan**

### 2016 Annual Report

#### Town of Old Saybrook, Connecticut

#### Permit Number GSM000078

### **Chief Elected Official:**

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### MCM No. 5 and MCM No. 6 BMP Implementation:

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86 Main Street, P.O. Box 337 Chester, CT 06412-0337 A pdf of the Town of Old Saybrook MS4 General Stormwater Permit Stormwater Management Plan and the MS4 General Stormwater Permit 2015 Annual Report is available for public inspection and printing on the Town of Old Saybrook website to meet FOI requirements.

A draft of the MS4 General Stormwater Permit 2016 Annual Report will be made available for public review and comment for a minimum of 30 days prior to submission to the CTDEEP to meet FOI requirements.

The Town of Old Saybrook MS4 Stormwater General Permit Stormwater Management Plan (SMP) for the modified MS4 General Stormwater Permit, Effective July 1, 2017 will be made available for public review and comment before April 1, 2017 to meet FOI requirements.

# April 29, 2016 CTDEEP 2014 MS4 General Permit Compliance Review

Carl Fortuna, First Selectman received a MS4 Stormwater General Permit Compliance Review Letter dated April 29, 2016, from Kim Hudak, P.E. Assistant Director of the CT DEEP Water Permitting & Enforcement Division. The 2014 Annual Report was ranked. The compliance review was based on the review of the 2014 Annual Report. Each of the six Minimum Control Measures (MCM) tasks received rankings from 1 denoting Poor to 5 denoting Excellent. The town received an average rating of 2.6 which was considered Good. No MCM task lacked a rating.

In review of the compliance review it is noted that once a MCM task is completed is should remain in the annual reports through the duration of the permit as the preparer assumed each annual report was reviewed and removed the MCM task from the annual report once completed

This Annual Report addresses some of the compliance review comments.

# 2016 Minimum Control Measure Summary

The Town of Old Saybrook has several Qualifying Local Programs in most of the six Minimum Control Measures.

# Minimum Control Measure No. 1 - Public Education and Outreach

The following information is available to the public on the Town Website:

http://www.oldsaybrookct.org :

Board & Commissions Directory:

Aquifer Protection Agency Conservation Commission Inland Wetlands & Watercourses Commission Planning Commission Water Pollution Control Authority Zoning Commission

Aquifer Protection Agency links: Aquifer Drawing **Aquifer Protection Regulations Aquifer Protection Map CT DEEP Link Conservation Commission links: Programs**: **Aquifer Protection Connecticut River Gateway Commission** Improvements Low Impact Development (LID) Atlas in Old Saybrook Plans: 2006 Stewardship Plan 2006 Conservation & Open Spaces Plan Resources: Open Space Map Guides: The Backyard Water Resources Guide **Organizations**: Connecticut River Coastal Conservation District **Connecticut River Watershed Council** The Nature Conservancy in The Lower Connecticut River **Old Saybrook Land Trust** Sustainable Saybrook Inland Wetland and Watercourses Commission links: **Regulations**: **Effective Wetlands Regulations Resources:** CT DEEP Inland Wetlands and Watercourses Program CT Association of Conservation and Inland Wetlands Commissions (CACIWC) ConnDOT - General Wetlands Information EPA Wetlands Nonpoint Education for Municipal Officials (NEMO) Planning Commission links: **Regulations**: **Subdivision Regulations Regulations for Public Improvements Programs: Connecticut River Gateway Commission** Plans: Water Resources Plan Supplemental Plans, Studies & Reports of the Town of Old Saybrook 2004 CTDEEP MS4 Stormwater General Permit

### CT DEEP MS4 Stormwater Management Plan

Zoning Commission links: 2016 Zoning Regulations 2016 Zoning Map

Department Directory:

Transfer Station: 2016 Household Hazardous Waste and Paper Shredding Schedule

Water Pollution Control Authority:

Wastewater Management District

The following information is available to the public on the Water Pollution Control Agency tab

http://www.oldsaybrookct.org/Pages/OldSaybrookCT\_WPCA/index :

WPCA Official Site
A Homeowner's Guide to Septic Systems
The Rain Garden: A Runoff Solution
Ordinance #75: Management of On-Site Sewage Disposal Systems
WPCA Official Site <a href="http://www.oswpca.org/">http://www.oswpca.org/</a>
Ordinances, Legal Docs, Statutes
Ordinance 75
Codified WWMD Ordinance: Chapter 173 Sewage Disposal Systems
Septic Service Providers
Septic System Information
What Can I Do For My Beach?

Rain Garden: Runoff Solutions with the following links:

http://www.raingardennetwork.com/ (Rain Garden Network)

http://www.nemo.uconn.edu/raingardens/index.htm (UConn Rain Garden Design)

http://clear.uconn.edu/webinars/CLEARseries13/RGapp.htm (UConn Rain Garden Design)

The following information is available to the public on the Town of Old Saybrook main page Boards & Commissions Inland Wetlands & Watercourses Commission tab:

State and Federal Links:

CTDEEP Inland Wetlands Army Corps CT PGP Permit Connecticut Association of Conservation and Inland Wetlands Commissions (CACIWC) ConnDOT - General Wetlands Information EPA Wetlands NRCS Web Soil Survey CT Statutes 22a Chapter 440 (Wetlands and Watercourses)

### Additional Links of Interest

Society of Soil Scientists of Southern New England NEMO (Nonpoint Education for Municipal Officials) Low Impact Development (LID) Center LID Information from the National Association of Home Builders (NAHB)

Consider adding a stormwater link to the RiverCOG website so that member towns may utilize the RiverCOG website as a component of Minimum Control Measure No. 1 - Public Education and Outreach and Minimum Control Measure No. 2 - Public Participation/Involvement compliance with the MS4 program. The stormwater link would serve as an extremely efficient outreach to the public.

The following public information is available on the RiverCOG website:

Quick Links tab:

2016 Household Hazardous Waste Schedule and Information

Waste Management and Recycling tab: 2016 Household Hazardous Waste and Paper Shredding Location Map of Recycling 1 Recycling List of Accepted Materials Consumer Electronics Transfer Stations in the RiverCOG Region

Environment tab

Connecticut Environmental Headlines Connecticut Fund for the Environment Environment Connecticut Listing of Connecticut Environmental Organizations Connecticut Coalition for Environmental Justice

On November 16, 2016 a CTDEEP MS4 Informational Meeting was held at Old Saybrook Town Hall with the Old Saybrook Planning Commission members, Amanda Ryan, Nonpoint Education for Municipal Officials (NEMO) Municipal Stormwater Educator, Sandy Prisloe, Environmental Planner / Inland Wetlands Agent, Christine Costa, CZEO, Enforcement Officer,. Larry Bonin, Director of Public Works, and Wade Thomas, Associate of Nathan L. Jacobson & Associates, Inc. The modified MS4 Stormwater General Permit, Effective July 1, 2017 was discussed with special emphasis on how the new MS4 Stormwater General Permit regulations affect land use review and stormwater quality design considerations.

### Minimum Control Measure No. 2 - Public Participation/Involvement

The Town of Old Saybrook Water Pollution Control Authority was established by Town Ordinance in 1980. In 1995 the town created a Sewer Avoidance Program. The WCA developed and supports a Decentralized Wastewater Management District which has focused on 15 areas to upgrade approximately 2,000 subsurface sewage disposal systems to the current Connecticut Public Health Code.

The WPCA goals and objectives are as follows:

Develop and implement a Wastewater Management District to upgrade non-code compliant subsurface sewage disposal systems;

Monitor and manage the septic tank pumpout program;

Provide public education with an emphasis on reducing use of fertilizers and pesticides, controlling polluted stormwater runoff, providing maintenance guidelines for subsurface sewage disposal systems and encourage water conservation;

Continue to support Town departments and land use commissions in creating an integrated approach to stormwater runoff and subsurface sewage disposal system management.

The WPCA website has the following links:

Lawn Reduction Suggestions What is a Rain Garden? Long Island Sound Study: Impact of Septic Systems on Environment Nutrient Pollution Article entitled What Can you Do? September 13<sup>th</sup> Protect your Groundwater Day Septic Tank Pumpout Program Updates

Continued to involve Town residents in the Household Hazardous Waste, Electronics Collection, Recycling Program and the Bulky Waste Programs.

Continued to involve Town Residents in the Leaf Collection Program.

The Old Saybrook Land Trust sponsored a new nature club for Old Saybrook Grades K-9 children entitled Outdoor Education Kids which encourages children to connect with nature and of the fun of being outside.

The Old Saybrook Land Trust conducts Stewardship Work Parties on the third Saturday of every month.

# Minimum Control Measure No. 3 - Illicit Discharge Detection and Elimination

The majority of the MS4 outfall mapping for the entire town was conducted during the 2012 calendar year and a draft copy of the Stormwater Infrastructure Mapping Project was completed in August 2012. A 1'' = 750' scale drawing of stormwater infrastructure was compiled.

A quality control check of the mapping is anticipated to be completed in the future.

An IDDE Ordinance was adopted by the Town of Old Saybrook on June 26, 2012 at a Town Meeting.

IDDE measures implemented included the ongoing repairs to approximately 2,000 non-code compliant subsurface sewage disposal systems by the Old Saybrook PCA Decentralized Wastewater Management District working with the Connecticut River Area Health District (CRAHD).

Continued to enforce the Animal Waste Ordinance.

Continued to maintain the WPCA five year septic tank pumpout program.

# Minimum Control Measure No. 4 - Construction Site Runoff Control

Following are the Subdivision Regulations of the Town of Old Saybrook, Connecticut, Section 4, Specification for Application Submittal, 4.3.5 Sedimentation and Erosion Control Plan:

# 4.3.5 Soil Erosion and Sediment Control Plan

- A. A soil erosion and sediment control plan will be submitted with the subdivision application in the following cases:
  - 1. When the disturbed area of such subdivision is cumulatively more than one half  $(\frac{1}{2})$  acre, or contains inland wetlands or watercourses;
  - 2. For any lot within the Lower Gateway Conservation Zone; or
  - 3. For any lot within a proposed subdivision that is within fifty feet (50') of coastal resources, including rocky shorefront, coastal bluffs and escarpments, beaches, dunes and tidal wetlands, as defined in the Connecticut Coastal Management Act.
- B. The plan will include a map showing existing and proposed topography; location of any areas proposed to be cleared, stripped of vegetation or graded, or otherwise altered; location and design of structural control measures, including diversions, waterways, grade stabilization structures, debris basins and other measures; re-vegetation plans; and a schedule of operations including sequencing of clearing, grading, installation of control measures and re-vegetation. Design of control measures and operations will be consistent with principles, methods and practices found in the "Connecticut Guidelines for Soil Erosion and Sediment Control", (2002), as amended from time to time.

- C. The applicant will provide a written narrative describing the project, the schedule of conservation practices, design criteria, construction details and the maintenance program for any erosion and sediment control facilities that are installed.
- D. All development will comply with the following guidelines:
  - 1. Development will be fitted to the topography and soils to create the least erosion hazard;
  - 2. Natural vegetation will be retained and protected wherever feasible;
  - 3. Only the smallest practical area of land will be exposed at any one time during development;
  - 4. When land is exposed during development, the exposure will be kept to the shortest practical period;
  - 5. Temporary vegetation or mulching will be used to protect exposed areas during development;
  - 6. Sediment basins (debris basins, desilting basins or silt traps) will be installed and maintained to remove sediment from runoff waters and from land undergoing development where feasible and practical; and
  - 7. Permanent final vegetation and structural erosion control measures will be installed as soon as practical in the development.
- E. The soil erosion and sediment control plan may be incorporated on the Detailed Layout Map or Construction Plans.

# 4.3.6 Grading Plan.

In the event that any, cuts, fills or soil or rock removal is proposed in the subdivision, a grading plan will be submitted as follows:

- A. The area shown on the grading plan may be limited to the portion of the subdivision affected by the proposed grading, cuts, fills, or soil or rock removal;
- B. The grading plan will be shown at a scale of one inch equal to forty feet (1"=40') and will be prepared to similar standards of accuracy;
- C. Existing and proposed contours at intervals of two feet (2') are required. If requested by the Commission, cross-sectional drawings of the area to be re- graded will be provided; and
- D. The plan will indicate the total volume and nature of material to be removed or deposited.

Following are the Zoning Regulations of the Town of Old Saybrook, Connecticut, Article VI, Townwide Requirements, Section 67, Soil Erosion and Sediment Control:

### SECTION 67 Soil Erosion & Sediment Control

### 67.0 [Reserved]

67.1 General

When any use, building or structure or site development that is subject to these regulations involves a disturbed area of one-half (1/2) acre or more, or otherwise when provision for soil erosion and sediment control is required by these regulations, a certified Soil Erosion & Sediment Control Plan ("control plan") in connection therewith will be in effect prior to, during and upon completion of construction. The control plan may be integrated with plot plans, Site Plans, other maps and plans and Statements of use required by these regulations and will cover all construction, clearing, grading and site development locations that constitute a disturbed area. A control plan certified by the Planning Commission in connection with approval of a subdivision under the Subdivision Regulations and in effect for the lot where the disturbed area is located, may constitute the control plan required by these regulations.

### 67.2 Special Definitions

Certain words used in this Section are defined as follows:

- 67.2.1 Disturbed Area. An area where the cover is destroyed or removed leaving the land subject to accelerated erosion.
- 67.2.2 Erosion. The detachment and movement of soil or rock fragments by water, wind, ice and gravity.
- 67.2.3 Inspection. The periodic review of sediment and erosion control measures shown on the certified Control Plan.
- 67.2.4 Soil Erosion & Sediment Control Plan. A plan for minimizing soil erosion and sedimentation, consisting of no less than a map and narrative as follows:
  - A. A narrative describing the project, the schedule of conservation practices, design criteria, construction details and the maintenance program for any erosion and sediment control facilities that are installed; and
  - B. A map showing topography, cleared areas and graded areas, proposed area alterations and the location of and detailed information concerning erosion and sediment measures and facilities.
- 67.2.5 Sediment. Solid material, either mineral or organic, that is in suspension, is transported, or has been moved from its site of origin by erosion.
- 67.2.6 Soil. Any unconsolidated mineral and organic material of any origin.

### 67.3 Control Plan.

To be eligible for certification, a Soil Erosion & Sediment Control Plan will contain proper provision adequate to control accelerated erosion and sedimentation and reduce the danger from storm water runoff on the lot based on the best available technology. The principles, methods and practices necessary for certification are found in the most recent version of the Connecticut Guidelines for Soil Erosion & Sediment Control, published by The Connecticut Council on Soil & Water Conservation. Alternative principles, methods, and practices may be used with prior approval of the Enforcement Officer. The control plan will contain the following to the extent applicable to the particular use, building, structure, and site development.

67.3.1 Narrative. A narrative, describing elements, such as the following:

- A. The use, building, structure, and site development;
- B. The schedule for grading and construction activities, including:
  - 1. Start and completion dates;
  - 2. Sequence of grading and construction activities;
  - 3. Sequence for installation or application of soil erosion and sediment control measures; and
  - 4. Sequence for final stabilization of the project site;
- C. The design criteria for proposed soil erosion and sediment control measures and storm water management facilities;
- D. The construction details for proposed soil erosion and sediment control measures and storm water management facilities;
- E. The installation or application procedures for proposed soil erosion and sediment control measures and storm water management facilities; and
- F. The operations and maintenance program for proposed soil erosion and sediment control measures and storm water management facilities.

67.3.2 Map. A site plan map at a sufficient scale to show the following:

- A. The location of the proposed use, building, structure, and site development and adjacent properties;
- B. The existing and proposed topography including soiltypes, wetlands, watercourses and water bodies;
- C. The existing structures on the lot, if any;

- D. The proposed area alterations, including cleared, excavated, filled or graded areas, and proposed buildings, structures, utilities, roads and, if applicable, new property lines;
- E. The location of and design details for all proposed soil erosion and sediment control measures and storm water management facilities;
- F. The sequence of grading and construction activities;
- G. The sequence for installation or application of soil erosion and sediment control measures;
- H. The sequence for final stabilization of the development site, and
- I. The name address and telephone number of the person designated by Applicant for the use, building, other structure or site development to be responsible for supervision of installation and completion of the control plan. Any other information deemed necessary and appropriate by the Applicant or requested by the Enforcement Officer may be made part of the control plan.

# 67.4 Minimum Standards

The following are minimum standards applicable to Soil Erosion & Sediment Control Plans required by these regulations, and the preparer of the control plan will certify that the Plan complies with the minimum standards:

- 67.4.1 Plans for soil erosion and sediment control will be developed using the principles as outlined in the most recent version of the Connecticut Guidelines for Soil Erosion & Sediment Control. The Soil Erosion & Sediment Control Plan will result in a development that minimizes erosion and sedimentation during construction, is stabilized and protected from erosion when completed, and does not cause off-site erosion or sedimentation.
- 67.4.2 The minimum standards for individual measures will be those in the most recent version of the Connecticut Guidelines for Soil Erosion & Sediment Control. The Enforcement Officer or the Connecticut River Coastal Conservation District may approve alternate standards if the Applicant presents technically sound reasons.
- 67.4.3 The appropriate method from the most recent version of the Connecticut Guidelines for Soil Erosion & Sediment Control will be used in determining peak flow rates and volumes of runoff unless the Enforcement Officer approves an alternative method.

# 67.5 Certification

The Soil Erosion & Sediment Control Plan will in effect when certified as follows:

- 67.5.1 The Enforcement Officer or the Connecticut River Coastal Conservation District, if so requested, will certify that the Soil Erosion & Sediment Control Plan, as filed, complies with the requirements and criteria of this section or will deny certification when the control plan does not comply. Certification may be incorporated in the approval of a Site Plan, Special Exception or other action by the Commission, Planning Commission or Board of Appeals and otherwise will be incorporated in the approval of an application for Certificate of Zoning Compliance by the Enforcement Officer.
- 67.5.2 The Enforcement Officer will coordinate certification of the control plan with related actions of other agencies, such as the Board of Selectmen, Planning Commission or the Inland Wetlands & Watercourses Commission.

# 67.6 Conditions

The Soil Erosion & Sediment Control Plan will be certified, subject to the following:

- 67.6.1 The estimated cost of measures and facilities to control erosion and sedimentation will be guaranteed by a cash or savings account bond in form acceptable to and in amount deemed sufficient by the Commission, Planning Commission or Board of Appeals in connection with their actions under these regulations or otherwise acceptable to and deemed sufficient by the Enforcement Officer. It is not intended, however, that the bond duplicate similar bonds required by other agencies.
- 67.6.2 No site development will commence unless the Soil Erosion & Sediment Control Plan is certified, the bond has been posted, and the control measures in the Plan, scheduled for installation prior to site work, have been installed and are functional.
- 67.6.3 Planned soil erosion and sediment control measures and facilities will be installed as scheduled according to the certified control plan.
- 67.6.4 All control measures and facilities will be maintained in effective condition to ensure compliance with the certified control plan.

# 67.7 Inspection and Orders

Soil erosion and sediment control measures of the certified control plan are subject to inspection. The Enforcement Officer may require the Applicant under these regulations to verify through progress reports that soil erosion and sediment control measures and facilities have been performed or installed in accordance with the certified control plan and are being operated and maintained.

Following are the *Town of Old Saybrook, Connecticut Regulations for Public Improvements,* Section 110, Soil Erosion and Sediment Control Criteria:

### SECTION 110 - SOIL EROSION AND SEDIMENT CONTROL CRITERIA

### 110A - SOIL EROSION AND SEDIMENT CONTROL PLANS & PERMITS

### 110A.1 General

No construction shall be undertaken unless an erosion and sediment control plan, which explains and illustrates the measures which will be taken to control erosion and sediment transport, is submitted to and approved by the Town of Old Saybrook. Plans shall be prepared in accordance with the requirements and standards outlined in the most current edition of the "Connecticut Guidelines for Soil Erosion and Sediment Control".

### 110A.2 Stormwater General Permits

When a project requires a Connecticut Department of Environmental Protection "General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities", copies of the registration form and Stormwater Pollution Control Plan submitted to the State shall also be submitted to the Town of Old Saybrook prior to the start of any activity.

### 110B - CONSTRUCTION & MAINTENANCE PROCEDURES

### 110B.1 General

The practices and measures included in the approved erosion and sediment control plan shall be implemented during the entire construction period and maintained until adequate permanent vegetation is established. Erosion control measures shall be supplemented as field conditions require, or as directed by the Town of Old Saybrook.

### 110B.2 Contact Person

Prior to the start of any roadway construction, the name, address and day/night telephone numbers of the person designated by the owner to be responsible for the implementation of erosion and sediment control practices and measures shall be provided to the Director of Public Works.

### 110B.3 Final Site Clean-up

Following the permanent stabilization of all disturbed areas, all remaining temporary erosion control measures that are not biodegradable, as well as all accumulated sediments, shall be removed from the site and disposed of in a lawful manner. In addition all accumulated sediments remaining in permanent facilities such as plunge pools, drainage channels, detention areas and catch basins, shall be removed and disposed of in a lawful manner. The removal of temporary erosion control measures and accumulated sediments

shall be conducted in a manner so as not to disturb existing permanent vegetation. All exposed areas remaining after the removal of erosion control measures shall be immediately seeded and mulched.

Continued to make applicants aware of the need to register for the *CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities* when the total land disturbance is one or more acres of land disturbance, regardless of project phasing, and the application is not subject to local land use review and approval and when the total land disturbance is five or more acres of land disturbance, regardless of project phasing and the application is subject to local land use review and approval and when the total land disturbance is five or more acres of land disturbance, regardless of project phasing and the application is subject to local land use review and approval.

Continued to make recommendations to the land use commissions in engineering review letters that proof of registration for the *CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities* be made a Condition of Approval, where applicable.

Continued with the Qualifying Local Program with respect to Construction Site Runoff Control as contained in the land use regulations.

Continued to incorporate the *Aquifer Protection Area Regulations of the Town of Old Saybrook, Connecticut* into land use development applications. The regulations were developed by the Old Saybrook Aquifer Protection Agency of the Zoning Commission and were adopted and effective in January 2008.

# Minimum Control Measure No. 5 - Post-Construction Site Runoff Control

Following are the Subdivision Regulations of the Town of Old Saybrook, Connecticut, Section 5, Design Requirements:

# 5.7 STORM DRAINAGE

Storm drainage will be designed and constructed to provide for the efficient drainage of the property and surrounding lands that normally drain across the area of the proposed subdivision, including drainage from any streets that may reasonably be expected to be constructed at some future date on adjoining property. If in its judgment there will be no substantial danger from soil erosion to the public health and safety, the Commission may permit on lots of one acre or larger the discharge of storm water in open ditches, swales or detention basins, except that such structure will not be located in that portion of the lot customarily used for front or side yards or which might be used for on-site sewage disposal or water supply systems.

# 5.7.1

The discharge of all water from the subdivision will be into suitable streams or rivers or into town or state drains, ditches or other town or state drainage facilities. Where the discharge will be into private property adjoining the proposed subdivision, drainage easements with discharge rights will be secured by the applicant before approval of the subdivision plan. Discharge will be done in a manner that protects streams and wetlands from pollution and flooding due to increase in runoff.

All stormwater discharge will conform to the drainage design criteria in Section 90 of the Regulations for Public Improvements.

# 5.7.2 Channel Lines.

Channel and building lines will be provided along any major stream or river for the purpose of preventing encroachment upon or constriction of the natural water channel by buildings, filling operations or other facilities and construction. The width of the channel will be based on sound engineering calculations anticipating long range storms (100 year frequency) and flow potentials and recognizing proper alignment and gradients of the channel. A note, approved by the Commission's Legal Counsel, will be placed on the subdivision plan explaining the channel, building lines and the restrictions against encroachment upon the channel.

5.7.3 Additional Requirements.

Additional requirements for control of stormwater runoff are set forth in Section 6.10 and the Regulations for Public Improvements.

Following are the *Subdivision Regulations of the Town of Old Saybrook, Connecticut,* Section 6, Improvements:

# 6.10 STORM DRAINAGE

Stormwater drainage will be installed in accordance with the Regulations for Public Improvements, and provisions of Section 5.7 of these Regulations.

Following are the *Town of Old Saybrook*, *Connecticut Regulations for Public Improvements*, Section 90, Drainage Design Criteria:

# SECTION 90 - DRAINAGE DESIGN CRITERIA

# 90A - DESIGN CRITERIA

90A.1 General

Proposed drainage facilities shall be designed to accommodate surface runoff from proposed land development as well as the entire upstream drainage area and to protect wetlands, watercourses and water bodies from the adverse impacts of post construction stormwater runoff. It is the policy of the Town of Old Saybrook to minimize the use of drainage structures and piping, to the extent that is reasonably possible, by using appropriate low impact development techniques.

# 90A.2 Analysis

Computations, conforming to the requirements outlined in this section, shall be submitted for sizing all proposed storm drainage facilities as well as the analysis of any existing off-site facilities required by the Commission. In addition, computations shall be submitted for both predevelopment and post-development conditions for the 2, 10, 25, 50 and 100-year frequency twenty-four (24) hour duration Type III storm events at each location from which storm water discharges will exit the property under development.

# 90A.3 Potential Overload

Where the proposed land development, including roadway and drainage facility construction, is likely to cause an increase in the rate of stormwater runoff such as to hydraulically overload or cause damage to existing downstream drainage structures, facilities, or watercourses, and/or cause flooding which would likely result in physical damage of land and improvements adjacent thereto, adequate stormwater runoff control measures shall be designed and constructed to prevent or alleviate such harmful effects.

# 90A.4 Stormwater Runoff Control

Where stormwater runoff control measures are required by the Commission, they may include, but not be necessarily limited to, retention and/or detention with controlled release of increased flows, increasing the hydraulic capacity of downstream drainage facilities, erosion protection measures, stormwater treatment or any combination of the above.

# 90A.5 Stormwater Quality

Best Management Practices shall be used to enhance the removal of both particulate and soluble pollutants during storm events so as to improve the quality of stormwater runoff discharged to receiving waters both during and after construction. In this regard, the information and recommendations included in the Connecticut Stormwater Quality Manual should be used as a guide.

# 90A.6 Stormwater Detention

When stormwater detention facilities are required, they shall be sized such that the peak discharge after development shall not exceed the peak discharge prior to development for each of the storm frequencies identified in Section 90A.2. Design and construction of surface stormwater detention facilities shall conform to the requirements for "Detention Basin" as outlined in the "Connecticut Guidelines for Soil Erosion and Sediment Control", with the exception that basin side slopes shall not exceed 4H:1V, and the maximum basin depth (as measured from the bottom of basin to the top of berm) shall not exceed six (6) feet. In addition, detention basins shall be located no closer than one hundred fifty (150) feet from an existing or proposed residential dwelling, or active recreation area. To the maximum extent possible, detention basins shall be designed as extended detention ponds or wet ponds, or used in conjunction with other stormwater treatment practices to provide water quality benefits; shall be irregular in shape and landscaped with native non-invasive species so as to enhance the appearance of the surrounding environment; shall be screened; and, shall be designed to minimize future maintenance. All detention basins shall be readily accessible for maintenance purposes via an improved access drive. In addition, unless specifically waived by the Commission, fencing (refer to Section 80J) shall be required around the perimeter of all detention basins. In granting any requests for a waiver of this requirement, the Commission shall consider the proximity of the basin to adjacent residential dwellings; future population density in the general vicinity; and, the size and depth of the proposed basin.

Detention basins shall be located on land to be conveyed to a Homeowners Association, which shall be established by the applicant and whose members shall be jointly and severally liable for costs associated with the maintenance of such detention basins(s) and the appurtenant system. When applicable, a permanent right to drain surface or subsurface drainage systems from any existing or future town lands or roadways shall be granted to the Town of Old Saybrook. However, it shall be the Homeowners Association's sole responsibility to maintain and repair all detention basins and appurtenant structures. Such obligation shall be established within a Declaration of Covenants and Restrictions which shall be submitted for review by the Town, and when approved, filed on the Old Saybrook Land Records. Such document shall provide the right, but shall not in any way obligate, the Town of Old Saybrook to enter upon the property to make inspections and to make emergency repairs, should the Homeowners Association, after proper notice from the Town, fail to execute their responsibilities. This document must also include all of the Town's other "Standard Provisions and Requirements for Maintenance and Repair of Detention Basins".

# 90A.7 Discharge

Unless otherwise approved by the Commission, the discharge of all stormwater shall be into established watercourses, wetlands, or Town/State Highway drains having adequate capacity to accommodate such discharges.

# 90A.8 Drainage Easements and Rights to Discharge

Where the discharge of stormwater shall be onto or through private property, perpetual drainage easements and discharge rights, in favor of the owner of the road, shall be secured by the applicant. Where drainage easements are required, they shall have a minimum width of thirty (30) feet. For open drainage channels, flared end sections/headwalls, and other outlet protection measures, they shall extend a minimum of fifteen (15) feet beyond the outside edge of such measures. Where open drainage channels are used along roads, and the horizontal extent of the design flow plus freeboard specified in Section 90A.13 extends beyond the road right-of-way line, then an additional drainage easement shall be provided beyond the edge of the road right-of-way line.

# 90A.9 Diversion

The diversion of stormwater runoff from one watershed or watercourse to another shall normally be avoided. Where it is necessary to create such a diversion, special provisions shall be made to minimize the potential damages which may occur as a result of such diversion.

# 90A.10 Existing Wetlands and Watercourses

All activities that are regulated by the Wetlands Commission shall be accomplished in such a way as to minimize the effects which would be adverse to the regimen of such watercourse.

Adequate provisions shall also be made to prevent or minimize scour or erosion in the adjacent upstream and downstream reaches of the watercourse.

# 90A.11 Capacity within Roadway

Storm drainage systems within the roadway, exclusive of culverts and bridges carrying flows under the road, shall be designed to safely accommodate flows resulting from storms of the maximum intensity which can be expected to occur on an average of once in ten (10) years (10-year storm) without being surcharged.

# 90A.12 Capacity under Roadways

Culverts crossing under roadways shall be designed to accommodate the following flows:

(A) <u>Minor Structures</u>

These shall include pipe, box culverts or bridges providing for the drainage of adjacent lands less than one (1) square mile in area in which there is no established watercourse. These structures shall be designed to pass a twenty-five (25) year frequency discharge without flooding or damaging the highway or adjacent property.

### (B) <u>Small Structures</u>

These shall include pipe, box culverts or bridges providing for the drainage of adjacent lands less than one (1) square mile in area in which there is an established watercourse. These structures shall be designed to pass a fifty (50) year frequency discharge with one (1) foot of freeboard, and without flooding or damaging adjacent property. The effects of a discharge equal to the one hundred (100) year frequency storm shall be checked. Where such effects are likely to cause damage to persons or property, structures shall be designed to alleviate these problems.

# (C) Large Structures

These shall include pipe, box culverts or bridges for the drainage of adjacent lands one (1) square mile or larger in area. These structures shall be designed to pass a one hundred (100) year frequency discharge with a minimum one (1) foot under clearance, relative to the low chord of the upstream face of the structure, and shall not create a backwater which will flood or endanger property or roads upstream.

90A.13 Capacity within Open Drainage Channels

New open channels and existing open channels into which a new or expanded storm drainage system is proposed to discharge shall be designed to accommodate flows resulting from storms of the maximum intensity which can be expected to occur on an average of once in twenty-five (25) years with a minimum freeboard of six (6) inches.

### 90A.14 Municipal Improvements

The requirements specified in Section 90 are not intended in any way to preclude the Old Saybrook Public Works Department from making storm drainage improvements on existing public roadways. Such improvements, including, but not limited to the conversion of road side ditches to piped drainage systems, the extension, repair, or replacement of existing storm drainage systems, and the installation of new storm drainage systems, shall be permitted provided that a determination is made by the Director of Public Works that such improvements will not result in significant adverse impacts.

# 90B - COMPUTATION OF STORMWATER FLOWS

### 90B.1 General

Stormwater flows for sizing storm drainage systems within and under the roadway as defined in Sections 90A.11, 90A.12 and 90A.13, may be computed by use of the Rational Method or by use of the methods described in the most current edition of the U.S. Soil Conservation Service Technical Release No. 20, or Technical Release No. 55. The use of the Rational Method shall not be used for computing flows from drainage areas in excess of two hundred (200) acres, or for computing flows from one hundred (100) year frequency storms. Stormwater flows used for sizing stormwater detention facilities, as well as small and large structures as defined in Section 90A.12, shall be computed using methods described in the most current edition of the U.S. Soil Conservation Service Technical Release No. 20 or Technical Release No. 55.

Regardless of the method that is utilized, all computations shall include a Drainage Analysis Map which clearly delineates the drainage area and flow path used for determining the time of concentration to each proposed drainage facility and each existing downstream drainage structure that may become hydraulically overloaded or damaged. The drainage analysis map shall show existing topography of the drainage areas (based on the best available existing mapping), existing and proposed roads, watercourses, wetlands, flood hazard zones, existing and proposed vegetation (woods, fields, lawns, etc.), existing and proposed drainage facilities and structures, and the proposed area of development. When U.S. Soil Conservation Service methods are used, the drainage analysis map should also show soil types as shown on the most currently available soils maps as prepared by the Natural Resource Conservation Service.

# 90B.2 Rational Method Computations

Where the Rational Method formula is used, computations shall conform with the following guidelines:

# (A) <u>Runoff Coefficients</u>

Where the Rational Method formula is used, the following runoff coefficients ("C" values) shall be the minimum values utilized for each type of surface, and a composite "C" value computed for each tributary drainage area. In any case, a composite "C" value of less than 0.30 shall not be used for single family residential developments.

Type of Surface	Runoff Coefficient "C" (1) (10-year Storm)
Pavement, roofs and impervious surfaces	0.90
Embankment Slopes (cuts and fills)	0.40
Lawns:	
Flat Slope (2% or less)	0.17
Average Slope (2% to 7%)	0.22
Steep Slope (7% or greater)	0.35
Cultivated Fields	0.45
Pasture	0.30
Meadows (moist, level grassland)	0.10
Forested Areas	0.20

For twenty-five (25) year storm increase runoff coefficients by twenty percent (20%), for fifty (50) year storm increase by thirty-five (35%), and for one hundred (100) year storm increase by fifty-five percent (55%) (except for pavement, roofs and impervious surfaces).

# (B) <u>Time of Concentration</u>

Time of concentration (t) shall be determined by the Technical Release No. 55 Method.

# (C) <u>Rainfall Intensities</u>

Rainfall intensities (i) shall be determined using the frequency/intensity/duration curves for Hartford, Connecticut. The minimum allowable time of concentration shall be five (5) minutes.

Continued to make Design Engineers and Developers aware of stormwater quality management by referencing the CTDEP publication 2004 Connecticut Stormwater Quality Manual as well as other low impact development best management practices.

Continued to encourage Design Engineers and Developers to utilize water quality basins, primary and secondary stormwater treatment practices and/or infiltration facilities for stormwater quantity and quality management, where appropriate.

# Minimum Control Measure No. 6 - Pollution Prevention/Good Housekeeping

Road deicing consists of a mixture of one part sand to one part salt (sodium chloride). Mixing is done on a bituminous concrete pavement surface in front of the building with a front end loader and the deicing mixture is stored in a roofed storage shed with a concrete floor and no floor drains.

The road deicing mixture is spread with nine snow plow/spreaders. Four of the snow plow/spreaders were purchased new in the late 2000s and were equipped with Epoke Sirius

Combination Bulk Spreaders with a ground speed related delivery of deicing material to the spreader disc. The automated road deicing mixture application allows the road deicing mixture to be uniformly applied at a minimum rate of 100 pounds per lane mile to a maximum of 900 pounds per lane mile. The road deicing mixture application rate is storm dependent and typically ranges from a minimum application rate of 150 pounds per lane mile to a maximum application rate of 300 pounds per lane mile. The other five snow plow/spreaders have been retrofitted with the Epoke Sirius Combination Bulk Spreader.

The Department of Public Works has experienced a noticeable reduction in sand and salt costs as opposed to the older manually operated deicing material spreading method.

Road sweeping of all municipal roads is completed on all town roads ay least once every year with a town owned Gradall Industries, Inc. VACALL<sup>™</sup> AllSweep High-Performance Sweep / Vacuum Truck.

Road sweeping began in April and was typically completed approximately five to six weeks later. Roads that were more prone to sediment or debris accumulations (low points and/or sag vertical curves) were swept at least twice. Main Street, despite the fact it is a State owned road and Elm Street are typically swept three times per year as the streets are the main parade route for town events.

Approximately 95 percent of the approximately 850 municipal catch basins and storm manholes in town were vactored utilizing the owned Gradall Industries, Inc. VACALL<sup>™</sup> AllSweep High-Performance Sweep / Vacuum Truck. The municipal catch basins and storm manholes are vactored after the road sweeping is completed.

Continued with developing and implementing an operation and maintenance program that included a training component for municipal employees and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

Larry Bonin, Director of Public Works was a graduate of the CT Technology Transfer Center Connecticut Transportation Leadership Program in 2014.

The Town of Old Saybrook, through the Zoning Commission established the Aquifer Protection Agency Aquifer Protection Area Regulations on January 24, 2008. The Aquifer Protection Area Regulations were amended March 7, 2011 and effective April 1, 2011. The area was identified as a critical water supply aquifer and the regulation were enacted to protect the aquifer from pollution by establishing the Aquifer Protection Overlay Area.

# **Stormwater Sampling**

One round of six stormwater samples were obtained from two (2) commercial zone MS4 outfalls, two (2) industrial zone MS4 outfalls and two (2) residential zone MS4 outfalls by Eastern Analytical Laboratory on November 15, 2016 to fulfill the stormwater sampling requirements for the 2016 calendar year.

The MS4 stormwater outfalls are further detailed as follows:

Zone B-2 Commercial N 41.29150° W -72.38820° Outfall to Tidal Wetlands Drainage Basin No. 5101 - Oyster River

Zone B-4 Commercial N 41.28653° W -72.41131° Culvert on Boston Post Road and Center Road Drainage Basin No. 5000 - South Central Shoreline

Zone I-1 Industrial N 41.30220° W -72.38420° Mill Rock Road East at Mill Meadow Pond Drainage Basin No. 5101 - Oyster River

Zone I-1 Industrial N 41.28998° Donnelly Road Parking Lot Easterly Pond Outfall Drainage Basin No. 5101 - Oyster River

Zone A Residential N 41.27930° W -72.41523° North of Beach Road West of Westview Drainage Basin No. 5000 - South Central Shoreline

Zone AA Residential N 41.29930° W -72.41650° East of School House Road North of Park Drainage Basin No. 5101 - Oyster River

Rainfall from the November 15, 2016 precipitation event was reported to be 0.52"

The previous rainfall event of at least 0.10" was reported to have occurred on October 30, 2016.

The six Stormwater Monitoring Report Forms were filled out by Eastern Analytical Laboratory and forwarded to Larry Bonin, Director of Public Works to be signed and dated. The six Stormwater Monitoring Report Forms were mailed to the office of Nathan L. Jacobson & Associates, Inc.

The six Stormwater Monitoring Report Forms were scanned and the scans of the six signed and dated MS4 Stormwater Monitoring Report Forms for the November 15, 2016 sampling event were forwarded to Chris Stone, CTDEEP MS4 Stormwater Coordinator, on December 12, 2016.

Following is a MS4 stormwater sampling chronology:

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Sampling Date
06/28/05
Not Sampled
05/18/10 & 07/13/10

Permit Year	Sampling Date
2011	06/22/11
2012	11/27/12
2013	12/23/13
2014	11/17/14
2015	12/22/15
2016	11/15/16

### **Electronic Annual Report Certification Form**

It is anticipated that the 2015 Electronic Annual Report Certification Form will be forwarded to the CTDEEP in March 2017 as a pdf of the signed and dated form.

It is anticipated that the 2016 MS4 Annual Report Transmittal Form, a hard copy of the 2016 MS4 Annual Report and the \$187.50 Annual Report Review Fee will be mailed to the CTDEEP in March 2017 subsequent to meeting FOI requirements.

An electronic copy of the 2016 MS4 Annual Report will be forwarded to the CTDEEP Stormwater Staff in late March 2017 subsequent to meeting FOI requirements.