STORMWATER MANAGEMENT PLAN©

PUTNAM, CONNECTICUT

July 1, 2017 - June 30, 2022

J & D Civil Engineers, LLC

401 Ravenelle Road
Thompson, CT
860-923-2920

Background

The *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems* (MS4 General Permit) is the product of a mandate by the U.S. Environmental Protection Agency (USEPA) as part of its Stormwater Phase II rules in 1999. This general permit requires each municipality to take steps to keep the stormwater entering its storm sewer systems clean before that stormwater enters water bodies.

The Town of Putnam registered under the original General Permit in 2004 and developed a Stormwater Management Plan as required. The Stormwater Management Plan is the cornerstone of the MS4 general permit. It is a document prepared by the MS4 that contains information on its stormwater and municipal infrastructure along with Best Management Practices (BMPs) to reduce and/or eliminate the discharge of pollutants through the storm sewer system to the Maximum Extent Practicable (MEP). MEP is the standard promulgated in EPA's Phase II rule that MS4s are required to meet. The definition of MEP is "to reduce and/or eliminate to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice." EPA states that the MEP standard for MS4 discharges is an "iterative process consisting of a municipality developing a program consistent with specific permit requirements, implementing the program, evaluating the effectiveness of BMPs included as part of the program, then revising those parts of the program that are not effective at controlling pollutants, then implementing the revisions and evaluating again," This process continues until the goal of meeting water quality requirements is achieved.

Introduction

This Stormwater Management Plan is developed pursuant to the General Permit issued for the time period July 1, 2017 through June 30, 2022.

Part of this permit requires that municipalities adopt certain Best Management Practices (BMP) for six Minimum Control Measures (MCM) including:

1. Public Education and Outreach
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination (IDDE)
4. Construction Site Stormwater Runoff Control
5. Post Construction Stormwater Management in New Development or Redevelopment
6. Pollution Prevention/Good Housekeeping

For each Minimum Control Measure the permittee shall:

- Define appropriate BMPs
- Designate a person(s) and job title responsible for each BMP
- Define a time line for implementation of each BMP
- Where appropriate, identify the location, including the address and latitude and longitude for each BMP
- Define measurable goals for each BMP

Format

This stormwater management plan is divided into six sections each of which corresponds to one of the six Minimum Control Measures listed above. The last two sections of the report deal with monitoring and reporting requirements.

Acronyms and Abbreviations

SSO – Sanitary Sewer Outflow
CIP – Catchment Investigation Procedure
MS4 –Municipal Separate Storm Sewer System
SVF – System Vulnerability Factor
IDDE- Illicit Discharge Detection Elimination
TMDL- Total Maximum Daily Load
BMP – Best Management Practice
MCM – Minimum Control Measure
LID – Low Impact Development
DCIA – Directly Connected Impervious Area – the impervious area from which stormwater runoff discharges directly to water of the state or directly to a storm sewer system
WQV – Water Quality Volume – volume of runoff generated by one inch of rainfall
Urbanized Area – the areas of the State of Connecticut so defined by the U.S. Census Bureau for the 2000 or 2010 census
Stormwater Pollutant of Concern – phosphorus, nitrogen, bacteria, mercury

Watershed Boundaries

The 6 subregional watershed boundaries in the Town are summarized in the following table and are shown in Figure 1 on the following page.

Watershed	ID	Comment
French River	3300	No stormwater discharge
Five Mile River	3400	
Mary Brown Brook	3402	
Cady Brook	3403	
Quinebaug River	3700	
Little River	3708	

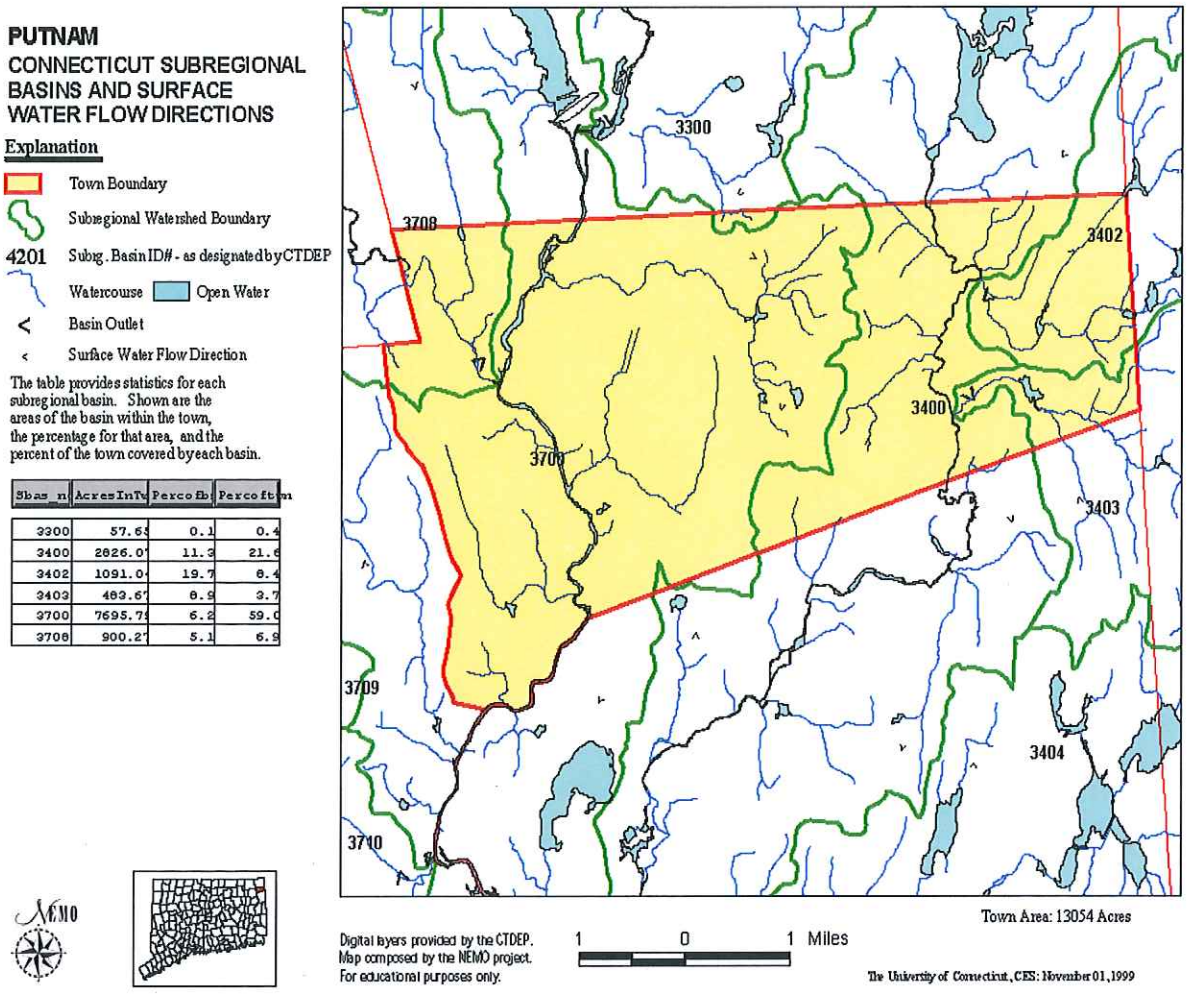

Figure 1 – Subregional Basin IDs

Figure 2-Impaired Waters List - 2016 IWQR

CT3208-00_01	Sawmill Brook (Mansfield)-01	Recreation	Escherichia coli	Potential sources include stormwater, insufficient on-site treatment/ septic systems, agricultural activities
CT3208-02_01	Conantville Brook (Mansfield)-01	Recreation	Escherichia coli	Potential sources include stormwater, insufficient on-site treatment/ septic systems, agricultural activities
CT3700-00_01	Quinebaug River (Lisbon/ Griswold)-01	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include stormwater, remediation sites, spills, groundwater impacts, industrial discharges, landfills, municipal discharges, salt storage facilities
CT3700-00_04	Quinebaug River (Putnam)-04	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include stormwater, remediation sites, groundwater impacts, salt storage facilities, industrial discharges, municipal discharges
CT3700-00_05	Quinebaug River (Putnam/ Thompson)-05	Habitat for Fish, Other Aquatic Life and Wildlife	Cause Unknown	Potential sources include stormwater, remediation sites, groundwater impacts, landfills, salt storage facilities, municipal discharges, industrial discharges

able 3-4. Connecticut Impaired Waters List (EPA Category 5)

Waterbody Segment ID	Waterbody Name	Impaired Designated Use	Cause	Comment
CT3700-00_05	Quinebaug River (Putnam/ Thompson)-05	Recreation	Escherichia coli	Potential sources include stormwater, illicit discharges, insufficient on-site treatment/ septic systems, agricultural activities
CT3700-00-2+L1_01	West Thompson Lake (Thompson)	Habitat for Fish, Other Aquatic Life and Wildlife	Chlorophyll-a	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-2+L1_01	West Thompson Lake (Thompson)	Habitat for Fish, Other Aquatic Life and Wildlife	Excess Algal Growth	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-2+L1_01	West Thompson Lake (Thompson)	Habitat for Fish, Other Aquatic Life and Wildlife	Nutrient/ Eutrophication Biological Indicators	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-2+L1_01	West Thompson Lake (Thompson)	Recreation	Chlorophyll-a	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-2+L1_01	West Thompson Lake (Thompson)	Recreation	Excess Algal Growth	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-2+L1_01	West Thompson Lake (Thompson)	Recreation	Nutrient/ Eutrophication Biological Indicators	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-5+L4_01	Aspinook Pond (Canterbury/ Griswold/ Lisbon)	Recreation	Chlorophyll-a	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-5+L4_01	Aspinook Pond (Canterbury/ Griswold/ Lisbon)	Recreation	Excess Algal Growth	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-5+L4_01	Aspinook Pond (Canterbury/ Griswold/ Lisbon)	Recreation	Excess Algal Growth	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-00-5+L4_01	Aspinook Pond (Canterbury/ Griswold/ Lisbon)	Recreation	Nutrient/ Eutrophication Biological Indicators	Potential sources include stormwater, upstream sources, agricultural activities
CT3700-17_01	Durkee Brook (Pomfret)-01	Recreation	Escherichia coli	Potential sources include stormwater, illicit discharges, insufficient on-site treatment/ septic systems, agricultural activities
CT3708-00_01	Little River (Putnam/ Woodstock)-01	Recreation	Escherichia coli	Potential sources include stormwater, illicit discharges, insufficient on-site treatment/ septic systems, agricultural activities

A segment of the French River Watershed, Long Branch Brook which is acutally in Thompson is listed in the 2014 IWQR as impaired (for recreation, due to bacteria,) but is proposed for delisting in the 2016 IWQR

The two impaired segments within the Little River Watershed, Muddy Brook and Peckham Brook, are in Woodstock. They are impaired for recreation.

MCM 1 - Public Education and Outreach

Goals

- To raise awareness that polluted stormwater runoff is the most significant source of water quality problems
- To motivate residents to use Best Management Practices (BMPs) which reduce polluted stormwater runoff
- To reduce polluted stormwater runoff as a result of increased awareness and utilization of BMPSs

The following Best Management Practice (BMP) is adopted for this measure:

BMP 1: Public Education Program

The town will use the materials developed under the 2004 MS4 permit and update or modify as necessary with materials which will become available at the DEEP stormwater webpage and UConn's NEMO site. These will be printed and placed in the Town Hall and library. If possible, a link to the NEMO site will be placed on the Town's website.

Specific areas to be targeted include:

- Pet waste
- Septic systems
- Fertilizer, pesticide and herbicide application
- Discharge of sediment from construction sites

Specific groups to be target included;

- Pet owners
- Users of the various walking trails
- Residents of the special services district (which has the most storm drainage facilities but no septic systems)
- Farming populations
- Resident outside the special services district (septic systems, but no storm drainage facilities)

For waters within the Quinebaug and Five Mile Rivers, where phosphorus is a Stormwater Pollutant of Concern, the educational materials shall be specifically tailored and targeted to educate on the sources, impacts and available pollution reduction practices from the following:

- Septic systems
- Fertilizer use
- Grass clippings and leaf management

- Detergent use
- Discharge of sediment (to which phosphorus binds) from construction sites
- Other erosive surfaces

Timeline

This activity will commence in year one of the permit (2017) and continue until its expiration (2022).

Responsible Party

Town Administrator

MCM 2 - Public Involvement/Participation

Goal

- To involve the community in both the planning and implementation process of improving water quality.

The following Best Management Practice (BMP) is adopted for this measure:

BPM 1: Publish a public notice

The town will public a notice on its website or in a local newspaper to inform the public of the stormwater plan and the Annual Report. The notice will provide a contact name (phone number, address and email) to whom the public can send comments (typically this will be the Public Works Director) and a publicly accessible location or URL where the plan and annual report are available for public review.

Timeline
The notice will be published annually, no later than January 31st.
Responsible Party
Town Administrator

MCM 3 - Illicit Discharge Detection & Elimination

Goals

- Develop a written Illicit Discharge Detection and Elimination (IDDE) program
- Provide the legal authority to prohibit and eliminate illicit discharges
- Find the source of any illicit discharges
- Eliminate those illicit discharges
- Ensure ongoing screening and tracking to prevent and/or eliminate future illicit discharges

The following Best Management Practices (BMPs) are adopted for this measure:

- BMP 1: Citizen Reporting Program
- BMP 2: Develop Outfall/Interconnection Inventory
- BMP 3: Develop System Mapping
- BMP 4: Sanitary Sewer Overflows
- BMP 5: Written IDDE Program
- BMP 6: Indicators of IDDE Program Progress
- BMP 7: Training

These elements are applicable within the urbanized area and those catchment areas with Directly Connected Impervious Areas (DCIA) of greater than 11%. Each of these BMPs will be discussed in detail on the following pages.

BMP 1: Citizen Reporting Program

The Town will add instructions for reporting illicit discharges to its municipal website. It is anticipated that the phone number will the Department of Public Works and the email of the Director of Public Works.

The Town will investigate and eliminate any illicit discharges reported to it

The Town will maintain a record of all reports received, the description, dates of inspection, sampling data, actions taken, date of removal or repair and responsible parties. This information will be included in the annual report.

Timeline
July 1, 2018
Responsible Party
Website – Town Administrator
Reporting, Investigating, Record keeping – DPW Director

BMP 2: Develop Outfall/Interconnection Inventory

This is a new list which must include for each outfall or interconnection the following information:

- Unique ID
- Date of most recent inspection
- Dimensions
- Shape
- Material
- Latitude and Longitude (+/-30')
- Physical conditions
- Indicators of non-stormwater discharges

Timeline
Complete by end of Permit Year 2 (June 30, 2019)
Update annually
Responsible Party
DPW Director

BMP 3: Develop System Mapping

Update the outfall mapping previously completed to comply with the new requirements and supply in GIS format if practicable. Update the Excel spreadsheet previously prepared to conform to the new requirements.

The revised mapping applies to the Urbanized Area and catchment areas with either DCIA greater than 11% or which discharge to impaired waters ("priority areas").

The following information must be added to the existing storm sewer mapping:

- Open channel conveyances (swales, ditches, etc.)
- Catch basins
- Manholes
- Interconnections
- Catchment delineations
- Waterbodies identified by name and indication of all use impairments

Timeline
Completed by the end of Permit Year 3 (June 30, 2020), updated as necessary with newly discovered information. Report on progress of map in each annual report.
Responsible Party
DPW Director

BMP 4: Sanitary Sewer Overflows (SSOs)

The DPW Director will review by pass reports from the Wastewater Treatment Plant from the last 5 years. These reports typically indicate if the discharge was to the MS4. The director will compile a list of those and prepare an inventory showing:

- Location (approximate street address and receiving water, if any)
- A clear statement of whether the discharge entered a surface water directly or entered the MS4
- Date and time of each known SSO (i.e. beginning and end of any known discharge)
- Estimated volume of the occurrence
- Description of the occurrence indicating known or suspected causes
- Mitigation and corrective measures completed with dates implemented
- Mitigation and corrective measures planned with implementation schedules

Update and include the inventory in each annual report

Eliminate any SSO as expeditiously as possible. If elimination within 60 days is not possible, the Town will establish a schedule for its elimination not to exceed 180 days.

Timeline

- Complete inventory by the end of permit year 1 (June 30, 2018)

- Eliminate any SSO as expeditiously as possible. If elimination within 60 days is not possible, the Town will establish a schedule for its elimination not to exceed 180 days.

Responsible Party

DPW Director

BMP 5: Written IDDE Program

Prepare a written document addressing the following elements (by the end of permit year 1)

a. Legal Authority
The Town passed an IDDE ordinance pursuant to the previous MS4 permit. The Town will check it for conformity with the current requirements and update as necessary by end of Year 1.

b. Statement of Program Responsibilities
The Town will establish a written statement that clearly identifies responsibilities with regard to eliminating illicit discharges. The statement shall identify the lead permittee as well as any other agencies, departments or personnel that may have responsibilities for aspects of the program.

c. Assessment and Priority Ranking of Catchments

The Town shall assess and priority rank the catchments, delineated pursuant to **BMP 3: Develop System Mapping** described above. This rank will determine the priority order for screening of outfalls, catchment investigations and provides the basis for determining permit milestones.

The Town will classify each catchment into one of the following categories:

- Excluded Catchments- this category is limited to roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services; cross country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments through undeveloped land.

- Problem Catchments: Catchments with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Catchments. This will include any catchment where previous outfall screening indicates sewer input based on olfactory/visual evidence or sampling results as specified on page 6 of Appendix B of the General Permit. Problem Catchments need not be screened and shall be scheduled for catchment investigation.

- High Priority Catchments: Catchments that have not been classified as Problem Catchments and that are discharging to an area of concern to public health due to proximity of public beaches, recreational areas,

drinking water supplies or shellfish beds; catchments determined by the permittee as high priority based on outfall/interconnections screening and catchment characteristics assessment. Any catchments where screening indicates sewer input based on olfactory /visual evidence or sampling results specified in Appendix B of the General Permit shall be ranked at the top of the High Priority Catchments category and scheduled for catchment investigation.

- Low Priority Catchments: Catchments determined as low priority based on outfall/interconnection screening.

The town shall then priority rank the catchments within each category noted above except for Excluded Catchments. The following screening factors shall be used for the ranking:

- Past discharge complaints and reports
- Poor dry weather receiving water quality
- Density of generating sites
- Age of surrounding development and infrastructure
- Sewer conversion
- Historic combined sewer systems
- Density of aging septic systems
- Culverted streams

Timeline

- Complete the assessment and ranking within 2 years using existing information.
- Update annually based on catchment delineations screening results and other relevant new information
- For each catchment the Annual Report shall address:
    - Summary of evidence of known or suspected illicit discharges and SSOs
    - Completed, ongoing or planned corrective measures addressing confirmed illicit discharges and SSOs
    - A schedule for completing and verifying measures correcting the confirmed illicit discharges and SSOs.

Responsible Party

Town Administrator

d. Outfall and Interconnection Screening and Sampling

The IDDE program shall include a written procedure for screening and sampling of outfalls and interconnections from the MS4 in dry and wet weather for

evidence of illicit discharges and SSOs. The screening procedures shall include procedures for sample collection, use of field kits, storage and conveyance of samples (including relevant hold times)

Dry Weather Screening and Sampling shall proceed only when no more than 0.1" of rainfall has occurred in the previous 24 hour period. When a flow is observed, a sample of the flow shall be collected and analyzed for:

- Ammonia
- Chlorine
- Conductivity
- Salinity
- E. coli
- Surfactants
- Temperature

All analyses, except bacteria can be performed with field test kits or field instrumentation. If the discharge is to water quality limited water or a water subject to an approved TMDL, the sample shall also be analyzed for the pollutants identified as the cause of the impairment.

Wet Weather Screening and Sampling shall proceed during or after a storm event of sufficient depth or intensity to produce a stormwater discharge but only during the spring, (March to June) when groundwater levels are high.

Timeline

- Begin investigations within 3 months of procedure finalization but not later than 15 months from July 1, 2017.
- Complete dry weather screening and sampling of every MS4 outfall and interconnection by the end of permit year 3 (June 30, 2020).

Responsible Party

DPW

e. Catchment Investigation Procedure (CIP)

The Town shall develop a written systematic procedure for catchment investigation that includes:

- A review of mapping and historic plans and records for the catchment
- A manhole inspection methodology
- Procedures to isolate and confirm sources of illicit discharges

Review Procedures

For each catchment being investigated the Town shall review relevant mapping and historic plans and records with the intent of identifying any of the following System Vulnerability Factors (SVF):

- History of SSOs
- Sewage pump stations or known sewer restrictions
- Inadequate sanitary sewer level of service (LOS) resulting in surcharging, customer back ups or frequent customer complaints.
- Common or twin invert manholes serving storm and sanitary sewer alignments
- Common trench construction serving both storm and sanitary sewer alignments
- Crossing of storm and sanitary sewer alignments
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
- Sanitary sewer infrastructure defects
- Areas formerly served by combined sewer systems
- Any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas
- Widespread code required septic system upgrades required at property transfers
- History of multiple local health department or sanitarian actions

Where System Vulnerability Factors (SVF) are present the catchment shall be investigated in accordance with the wet weather investigation as described below.

Manhole Inspection Methodology

Starting at the outfall:
Dry weather Investigation

- Open key manholes and examine for visual and olfactory evidence of illicit connections
- If flow observed, sample and test for ammonia, chlorine and surfactants (using field kits)

Wet Weather Investigation

- If SVFs are present the Town shall also inspect and sample under wet weather conditions.

The Town shall also conduct at least one wet weather screening and sampling at the outfall for any catchment where one or more SVFs are present.

Isolation and Source Verification Procedures

The Town shall develop procedures to be used to isolate and confirm sources where manhole investigation or screening has identified MS4 alignments to be influence by illicit discharges or SSOs. These shall include:

- Isolation of the drainage area for implementation of more detailed investigations, inspection of additional manholes along the alignment to refine the location of potential contaminant sources
- Methods such as caulk dams, targeted internal plumbing inspections, dye testing video inspection or smoke testing to isolate and confirm the sources.

Timeline

- Complete CIP in a minimum of 80% of the MS4 area served by Problem Catchments within 3 years.
- Complete CIP in 100% of Problem Catchments within 5 years
- Complete CIP in every catchment of the MS4 where information indicates sewer input within 5 years
- Complete CIP in 40% of the area served by all MS4 catchments within 5 years.
- Complete CIP in 100% of the area served by all MS 4 catchments within 10 years.

Track progress in each annual report
Responsible Party
DPW

f. Removal and Confirmation

When the source of an illicit discharge or SSO is identified and confirmed, the Town shall exercise its authority to require its removal. For each case the Town shall describe in the annual report.

Within one year of removal of all identified illicit discharge and SSO sources within a catchment area, confirmatory outfall or interconnection screening shall be conducted. The confirmatory screening shall be conducted in dry weather unless SVFs has been identified, in which case both dry and wet weather confirmatory screening shall be conducted.

g. Follow Up Screening

Upon completion of catchment investigation and illicit discharge removal and confirmatory screening, the outfall shall be scheduled for follow up screening within five years

h. Illicit Discharge Prevention Procedures

The Town will develop and implement mechanisms and procedures designed to prevent illicit discharges and SSOs such as spill response and prevention

procedures including identification of spills, reporting procedures, containment procedures and documentation.

Timeline
Written Program complete by June 30, 2018
Responsible Party
Town Administrator

BMP 6: Indicators of IDDE Program Progress

The Town will define or describe indicators for tracking program success.

Timeline
Evaluate in each annual report
Responsible Party
Town Administrator

BMP 7: Training

The Town will provide training to employees involved in the IDDE program, including how to recognize illicit dischargers and SSOs.

Timeline
Annually, report on status in annual report
Responsible Party
Town Administrator

MCM 4 - Construction Site Stormwater Runoff Control

Goal

- To implement and enforce a program to control stormwater discharges to its MS4 associated with land disturbance or development (including redevelopment) activities with more than 1 acre of soil disturbance.

The following Best Management Practices (BMPs) are adopted for this measure:

BMP 1: Legal Authority

The Town will establish an ordinance, bylaw, regulation, standard condition of approval or other appropriate legal authority that requires:

- Developer and contractors to maintain consistency with the 2002 Guidelines for Soil Erosion and Sedimentation Control and all stormwater permits issued by DEEP
- The Town to conduct inspections to inventory the number of privately owned retention ponds, detention ponds and other stormwater basins that discharge to or receive drainage from the Town's MS4
- The owner of a site to provide and comply with a long term maintenance plan and schedule to ensure the performance and pollutant removal efficiency of privately owned retention ponds, detention ponds and other stormwater basins that discharge to or receive discharge from the Town's MS4
- The Town to control, through interagency or inter-jurisdictional agreements, the contribution of pollutants between the Town's MS4 and MS4s owned by others.

Timeline
The end of permit year 2 (June 30, 2019)
Responsible Party
Town Administrator in conjunction with Planning, Zoning and Inland Wetlands

BMP 2: Interdepartmental Coordination

The Town will develop and implement a plan outlining how all municipal departments and boards with jurisdiction over the review, permitting or approval of land disturbance and development projects within the MS4 will coordinate their function with one another.

Timeline
July 1, 2017
Responsible Party
Town Administrator

BMP 3: Site Review and Inspection

The Town will conduct site plan reviews that incorporate consideration of stormwater controls or management practices to prevent or minimize impacts to water quality.

The Town will conduct site inspection(s) and enforcement to assess the adequacy of the installation, maintenance, operation and repair of construction and post construction control measures.

Timeline
July 1, 2017
Responsible Party
The Town currently does not have a Town Planner or Engineer. Therefore site inspections will have to be performed by the Inland Wetlands agent and the Building Inspector. Site plan reviews may have to be done by these parties or contracted to an outside agent.

BMP 4: Public Involvement

The Town will implement a procedure for receipt and consideration of information submitted by the public concerning proposed and ongoing land disturbance and development activities.

Timeline
July 1, 2017
Responsible Party
Town Administrator

BMP 5: State Notification

The Town will implement a procedure for notifying developers or contractors of their potential obligation to obtain authorization under the DEEP's General Permit for Discharge of Stormwater and Dewatering Wastewater Associated with Construction Activities if their development disturbs one or more acres of land.

Timeline
July 1, 2017
Responsible Party
Town Administrator

MCM 5 - Post Construction Stormwater Management in New Development or Redevelopment

Goal

- To mitigate the long term impacts of new and redevelopment projects on water quality through proper use of low impact development and runoff reduction practices.

BMP 1: Runoff Reduction/Low Impact Development (LID) Measures

The Town will establish an ordinance, regulation or other appropriate legal authority to require a developer or contractor to adhere to the following standards:

- For sites that are currently developed with DCIA of 40% or more, retain half the water quality volume (WQV) for the site on site.

- For all new development and for redevelopment of sites with less than 40% DCIA, retain the water quality volume for the site on site.

In cases where these quantities cannot be retained on site, the Town shall require additional treatment, stormwater mitigation project on another site or a fee to be deposited into a dedicated account of the Town, all in accordance with and as described in the General Permit.

- Consider limitation of turf areas to those areas necessary to construct buildings utilities, stormwater management measures, parking access ways, reasonable lawn areas and contouring necessary to prevent future site erosion.

- Maintain consistency with the CT Stormwater Quality Manual

- Coordinate with Northeast District Department of Health (NDDH) to confirm that infiltration measures are consistent with CT DOHS "Technical Standards for Subsurface Sewage Disposal Systems."

Timeline

- Develop legal authority - By the end of permit year 4 (June 30, 2021)
- Enforce the above requirements – by the end of permit year 2 (June 30, 2019)

Responsible Party

Planning or Zoning Board will be the agent in charge. However there will have to be regulations that require the developer proposing a project to submit documentation proving that the required WQV has been retained and this documentation should be reviewed by an expert in the employ of the Town.

If WQVs cannot be retained, the additional treatment, mitigation on another sire or fees will have to be negotiated between the developer and the appropriate Board, subject to the input of experts such as engineers, attorneys and financial experts

BMP 2: Directly Connected Impervious Areas

The Town shall calculate the Directly Connected Impervious Area (DCIA) that contributes stormwater runoff to each of its MS4 outfalls (i.e. catchment area) using option 1 as specified in Appendix 3: Impervious Cover in CT Municipalities.

Timeline
By the end of permit year 3.
Progress shall be documented in each annual report.
Revise DCIA continuously.
Responsible Party
DCIAs will be calculated by J & D Civil Engineers, as directed by the DPW

BMP 3: Long Term Maintenance

The Town will implement a maintenance plan for ensuring the long term effectiveness of retention or detention ponds located in the Urbanized Area and those catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters and which discharge to or receive stormwater from its MS4.

At a minimum all ponds shall be inspected annually and accumulated sediment removed where found to be in excess of 50% of design capacity.

The town will implement a maintenance plan for ensuring the long term effectiveness of stormwater treatment structures or measures (such as oil/grit separators, water quality wetlands or swales, etc.) located in the Urbanized Area and those catchment areas of the MS4 with either DCIA of greater than 11% or which discharge to impaired waters and which discharge to or receive stormwater from its MS4.

At a minimum all structures/measures shall be inspected annually and accumulated pollutants removed where found to be in excess of 50% of design capacity.

Timeline
By the end of permit year 2 (June 30, 2019)

Responsible Party
DPW

BMP 4: Additional Measures for Discharges to Impaired Waters

For waters for which nitrogen, phosphorus or bacteria is a Stormwater Pollutant of Concern the town shall develop, fund, implement and prioritize these problems under the Retrofit program specified in Section 6(a)(6)(B) to correct the problems in a specific timeframe and to establish short term and long term maintenance.

Per Appendix D, the following water bodies are affected:

Phosphorus
- Fiver Mile River Watershed
- Quinebaug river Watershed

Nitrogen
- Entire State of CT

Mercury
- Entire State of CT (except that there are no further requirements for discharges to waters for which mercury is a Stormwater Pollutant of Concern

Timeline
See retrofit BMP in next section (MCM 6)
Responsible Party
DPW

MCM 6 – Pollution Prevention/Good Housekeeping

Goal

- Prevent or reduce pollutant runoff as a result of municipal operations.

The following Best Management Practices (BMPs) are adopted for this measure:

BMP 1: Employee Training

The town will continue its employee training program to provide key staff with topical training regarding standard operating procedures. The training program shall include:

- establishing an awareness of the general goals and objectives of the Plan identification and reporting of illicit discharges
- spill response protocols
- responsibilities of involved personnel.

Timeline
On going
Responsible Party
DPW Director (J & D will assist the town in identifying and obtain appropriate training resources)

BMP 2: Infrastructure Repair, Rehabilitation and Retrofit

Fund and implement a program to repair and rehabilitate its MS4 infrastructure to reduce or eliminate the discharge of pollutants form its MS4 to receiving water.

Timeline
"in a timely manner"
Responsible Party
DPW Director

DCIA Disconnection Tracking

- Effective July 1, 2017 the town will keep track of individual redevelopment/retrofit projects that eliminate DCIA.

Timeline
Begin July 1, 2017
Responsible Party
DPW Director

Retrofit Program

- The town shall develop a plan to implement retrofit projects. The town shall identify and prioritize sites that may be suitable for retrofit.

Timeline
Retrofit Planning

- by the end of year 3

Retrofit Schedule

- the town will be well into the implementation of the retrofit program by the end of year 5.

Responsible Party
DPW Director

BMP 3: MS4 Property and Operations Maintenance

Parks and Open Space
The Town shall optimize the application of fertilizers by municipal employees, institutional staff or private contractors on lands and easement for it is responsible. Optimization procedures include:

- Soil testing
- Reduction or elimination of fertilizers
- Reduction of usage
- Usage of alternative fertilizer forms
- Application practices
- Timing
- Evaluate lawn maintenance and landscaping activities to promote water quality
- Establish procedures for management of trash containers at parks
- Proper disposal of grass clippings and leaves

Timeline
On going
Responsible Party
Town Administrator, School Superintendent, Rec and Park Director, DPW Director

Pet Waste Management

- Identify locations where inappropriate pet waste management practices are apparent and pose a threat to water quality
- In such areas implement targeted management efforts such as public education and enforcement
- In town owned areas install signage and pet waste baggies

Timeline
On going
Responsible Party
Town Administrator, Police Department

Waterfowl Management

- Identify lands where waterfowl congregate and feeding by the public occurs
- Install signage to educate the public about detrimental impacts of feeding waterfowl
- Implement practices that discourage the undesirable congregation of waterfowl in these areas

- Isolate the direct drainage from these areas away from the storm sewer and waters.

Timeline
On going
Responsible Party
Town Administrator

Buildings and Facilities

- Evaluate the use, storage and disposal of both petroleum and non-petroleum products
- Ensure that those handling products know proper procedures
- Ensure that Spill Prevention Plans are in place
- Develop management procedures for dumpsters and other waste management equipment
- Sweep parking lots
- Ensure that all interior building floor drains are not connected to MS4

Timeline
On going
Responsible Party
Town Administrator, School Superintendent, Chief of Police, Fire Chiefs

Vehicles and Equipment

- Establish procedures for the storage of town owned or operated vehicles
- Require vehicles with fluid leaks to be stored indoors or in contained areas until repaired
- Evaluate fueling areas, place fueling areas under cover
- Establish procedures to ensure that vehicle wash waters are not discharged to the MS4 or surface waters.

Timeline
On going
Responsible Party
DPW Director, School Superintendent, Chief of Police, Fire Chiefs

Leaf Management

- Establish and implement procedures to minimize or prevent the deposition of leaves in catch basins, streets, parking lots, driveways, sidewalks or other paved surfaces that discharge to the MS4.

Timeline
On going
Responsible Party
DPW

BMP 4: Street, Parking and MS4 Maintenance

Sweeping

- Sweep all streets and parking lots within the UA and outside the UA within catchment areas of with DCIA greater than 11% or which discharge to impaired waters once per year.

Timeline
On going
Responsible Party
DPW

Catch Basin Cleaning

- Inspect all catch basins within the UA and outside the UA within catchment areas of with DCIA greater than 11% or which discharge to impaired waters by the end of the third year.
- Prioritize inspection and maintenance for town owned catch basins located near impaired waters and construction activities.
- Establish a schedule such that the frequency of routine cleaning will ensure that no catch basin at any time will be more than 50% full.
- If a catch basin is more than 50% full during two consecutive inspections the town shall investigate the reasons and abate the contributing sources.

Timeline
On going
Responsible Party
DPW

Snow Management Practices

- Develop and implement standard operating practices for the use, handling, storage, application and disposal of deicing products.
- Implement and refine standard operating procedures to minimize the discharge of sand and de-icing agents.
- Establish goals of the optimization of sand and chemical application rates.
- Maintain records of the application of sand and chemicals.

- Ensure the proper training of use of chemicals for municipal employees, institutional employees or private contractors.
- Manage and dispose of snow accumulations in accordance with DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots, revised 2/4/11 and as amended.

Timeline
On going
Responsible Party
DPW

Interconnected MS4s

- Coordinate with operators of interconnected MS4s regarding the contribution of potential pollutants form the storm sewer systems, contributing land use areas and stormwater control measures.

Timeline
On going
Responsible Party
DPW

Sources Contributing Pollutants to the MS4

- Develop and implement a program to control the contribution of pollutants to its MS4 from commercial, industrial, municipal, institutional or other facilities not otherwise authorized by permit.

Timeline
On going
Responsible Party
DPW

BMP 5: Additional Measures for discharges to impaired waters

Nitrogen or Phosphorus

- Implement a turf management practices and procedures policy which includes procedures for proper fertilizer application and the planting of native plant materials to lessen the amount of turf area requiring mowing and the application of chemicals for waters for nitrogen or phosphorus is a Stormwater Pollutant of Concern

The Five Mile River Watershed and Quinebaug River Watershed are included per Appendix D.

Bacteria

- Develop, fund, implement and prioritize a retrofit of source management program to correct the problems.
- Prohibit the feeding of geese or waterfowl and implement a program to manage geese and waterfowl populations.

Putnam does not currently have any waterbodies subject to a TMDL

Timeline
On going
Responsible Party
DPW

Monitoring

Impaired Waters

Inventory
Create an inventory of all outfalls that discharge to impaired waters – Quinebaug River, Little River.

Timeline
within 2 years
Responsible Party
DPW

Screening
Screen those outfalls for the pollutant identified as the pollutant of concern for the impairment.

Nitrogen
- Screen outfalls that discharge to impaired waters for nitrogen.
- Sample at the outfall during any rain event that results in a discharge.
- Use a portable nitrogen meter to take a field reading.
- If total nitrogen > than 2.5 mg/l perform follow up investigation.

Phosphorus
- Screen outfalls that discharge to impaired waters for phosphorus.
- Sample at the outfall during any rain event that results in a discharge.
- Use a portable phosphorus meter to take a field reading.
- If phosphorus > than 0.3 mg/l perform follow up investigation.

Bacteria
- Screen outfalls that discharge to impaired waters for bacteria.
- Sample at the outfall during any rain event that results in a discharge.
- Analyze sample for E. coli and total coliform for discharges to class AA, A and B surface waters.
- Analyze sample for fecal coliform and enterococci for discharges to class SA and SB surface waters.
  - If E. coli > 235 col/100 ml (swimming areas) and >410 col/100 ml or
  - Total coliform > 500 col/100ml or
  - Fecal coliform > 31 col/100 ml for class SA and > 260 col/100 ml or
  - Enterococci > 104 col/100 ml (swimming) and >500 col/100ml
- then perform follow up investigation.

Other Pollutants of Concern

- Screen outfalls that discharge to impaired waters for other pollutants of concern.
- Sample at the outfall during any rain event that results in a discharge.
- Use a field turbidity meter to take a field reading.
- If turbidity > than 5.0 NTU perform follow up investigation.

Timeline

- Begin within 1 year.
- Complete 50% by the end of the third year.
- Complete 100% by end of the fifth year.

Responsible Party

DPW

Follow Up Investigations

Drainage Area Investigation

- Investigate activities within the drainage area contributing to each outfall identified for follow up investigation. The investigation shall include factors such as:
    - Land use or development patterns
    - Industrial activities
    - DCIA
    - Natural contributors
    - Potential MS4 maintenance issues
    - Residential activities

Control Measure Implementation

- In each outfall drainage area identified for follow up investigation implement a BMP program focusing on the impaired waters provision of each of the Control Measures.

Prioritized Outfall Monitoring

- Select 6 of the highest contributors of any of the pollutants of concern and sample annually.
    - Samples shall be collected from discharges resulting from any rain storm that produces a discharge form the outfall that occurs at least 48 hours after any previous rain storm that produced a discharge.
    - Monitoring shall consist of a single grab sample taken within the first six hours of discharge.
    - Date collected shall include: date, temperature, time of the start of the discharge, time of sampling and magnitude (in inches) of the rain event.

- The duration between the rain event sampled and the end of the previous measurable (greater than 0.1 inch) rain event.

Schedule

- Commence follow up investigations no later than 2 years following effective date of the permit.
- Commence annual monitoring of the six outfalls identified no later than the beginning of the fourth year.

Responsible Party

DPW

Annual Report

An annual report will be provided to DEEP which contains a written discussion of the status of compliance with this general permit including but not limited to:

- A listing and brief description of all BMPs within each MCM
- Any reporting requirements enumerated in the controls measures section
- An implementation schedule for each BMP and an indication of whether or not the BMP was scheduled to be implemented during the year covered by the annual report.
- The status of implementation for each BMP scheduled to be completely or partially implemented during the year covered by the annual report, including as assessment of the appropriateness of the BMP and progress towards achieving the implementation dates and measurable goals for that BMP.
- For any portion of a BMP implementation scheduled for year covered by annual report that was not completed as scheduled, a discussion of the circumstances and reason for non implementation, a modified implementation schedule and if necessary a modified or alternate BMP to replace the BMP not implemented including the rationale for such modification or alternate BMP.
- The overall status of each of the six categories of the Minimum Control Measures and a discussion of the effectiveness of each category in achieving its goals
- A discussion of any changes to personnel responsible for the Plan or BMP implementation.
- A description of any new BMPs added to the plan during the year including a description of the BMP, the reason or rationale for adding the BMP, the timeline for implementation, the party responsible for implementation and the measurable goal for the BMP.
- A discussion of the progress and status of the IDDE program including the outfall screening, mapping, drainage area evaluation and prioritization, illicit discharge tracking activities, IDDP field monitoring results, number

and type of illicit discharges detected and number of illicit discharges eliminated.

- A discussion of measures included in the plan for the control of discharges to impaired waters.
- A discussion of the MS4's stormwater monitoring program.
- A discussion of any planned BMP implementation in the coming year.
- Document results of sweeping program, including curb miles swept, dates of cleaning, volume or mass of material collected and methods or reuse or disposal.
- Document the plan for optimizing catch basin cleaning.
- Report the total number of catch basins, number inspected, number cleaned, total volume or mass of material removed from each catch basin.
- Document the types and quantities of deicing materials used; lane-miles treated;
- All monitoring date collected and analyzed including a listing of the outfalls screened during the year, number of outfalls identified for follow up investigations, progress of drainage area investigations, description of the control measure implementation for the different impairments, and identification of the six outfalls to be monitored.
- All other information specifically listed under each BMP for reporting.

This information along with a plan review fee of $187.50 will be electronically submitted in MS Word or Adobe Acrobat to the DEEP Commissioner in accordance with instruction provided on the website.

Timeline
April 1st of second year following the effective date of this permit and annually thereafter by April 1st.
Responsible Party
Town Administrator

Aquifer Protection Areas

The Town has an aquifer protection area as shown on Figure 2. The basic stormwater principles for Aquifer Protection Areas are to prevent inadvertent pollution discharges/releases to the ground, while encouraging recharge of stormwater where it does not endanger groundwater quality. Measures include:

- Prevent illicit discharges to storm water, including fuel/chemical pollution releases to the ground
- Minimize DCIA and disconnect large areas of DCIA with natural or landscape areas
- Direct paved surface runoff to above ground type land treatment structures
- Provide necessary impervious pavement in high potential pollutant release areas
- Only use subsurface recharge structures to directly infiltrate clean runoff
- Restrict pavement deicing chemicals or use an environmentally suitable substitute such as sand only or alternative deicing agents such as calcium chloride or calcium magnesium

Infiltration of stormwater should be restricted under the following site conditions:

- Land uses or activities with potential for higher pollutant loads (see figure 3)
- Subsurface contamination(infiltration of stormwater in areas with soil or groundwater contamination such as brownfield sites and urban redevelopment areas can mobilize contaminants)
- Groundwater supply and wellhead areas

Figure 2 – Aquifer Protection Area Map

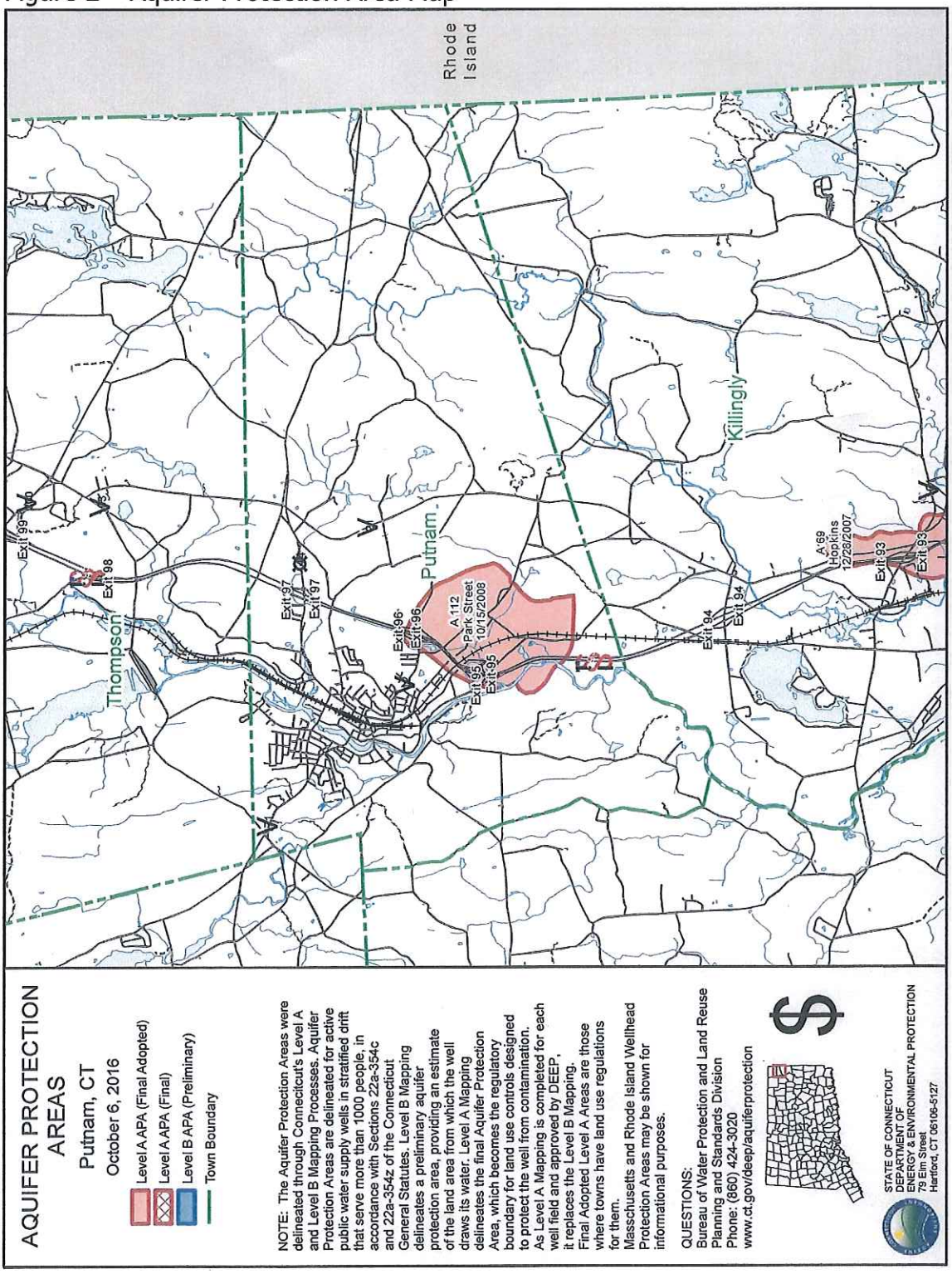

Figure 3 – Land Uses or Activities with Potential for Higher Pollutant Loads

Land Uses or Activities with Potential for Higher Pollutant Loads
Table 7-5 of the 2004 Stormwater Quality Manual

Land Use/Activities	
☐ Industrial facilities subject to the DEEP Industrial Stormwater General Permit or the U.S. EPA National Pollution Discharge Elimination System (NPDES) Stormwater Permit Program	☐ Road salt storage facilities (if exposed to rainfall)
☐ Vehicle salvage yards and recycling facilities	☐ Commercial nurseries
☐ Vehicle fueling facilities (gas stations and other facilities with on-site vehicle fueling)	☐ Flat metal rooftops of industrial facilities
☐ Vehicle service, maintenance, and equipment cleaning facilities	☐ Facilities with outdoor storage and loading/unloading of hazardous substances or materials, regardless of the primary land use of the facility or development
☐ Fleet storage areas (cars, buses, trucks, public works)	☐ Facilities subject to chemical inventory reporting under Section 312 of the Superfund Amendments and Reauthorization Act of 1986 (SARA), if materials or containers are exposed to rainfall
☐ Commercial parking lots with high intensity use (shopping malls, fast food restaurants, convenience stores, supermarkets, etc.)	☐ Marinas (service and maintenance)
☐ Public works storage areas	☐ Other land uses and activities as designated by the review authority

For further information regarding the design of stormwater collection systems in Aquifer Protection Areas, contact the Aquifer Protection Area Program at (860) 424-3020 or visit www.ct.gov/deep/aquiferprotection.

I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigations, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute.

_____ _____

Anthony Falzarano, Mayor Date

_____ _____

Dennis R. Blanchette, PELS Date