

Municipality/Organization: City of Woburn, Massachusetts
EPA NPDES Permit Number: MAR041073
MassDEP Transmittal Number: W-041026
Annual Report Number & Reporting Period: Year 15
April 1, 2017 – March 31, 2018

NPDES PII Small MS4 General Permit Annual Report (Due: May 1, 2018)

Part I. General Information

Contact Person: John Duran Title: Superintendent of Public Works
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Certification:

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

Signature: 

Printed Name: Scott D. Galvin

Title: Mayor

Date: 4/30/2018

Part II. Self-Assessment

During Permit Year 15 (April 1, 2017 through March 31, 2018), the City of Woburn continued to implement its Stormwater Management Program. As required by Part II.D.1 of the 2003 General Permit, as part of developing this Annual Report, the City of Woburn evaluated compliance of the City's Stormwater Management Program with the conditions of the 2003 General Permit. **The City has made substantial progress completing the Best Management Practices (BMPs) and measurable goals defined in our written Stormwater Management Plan, and our municipality is in compliance with the 2003 General Permit.** The City plans to reevaluate all BMPs when preparing the Notice of Intent and Stormwater Management Plan for compliance with the final 2016 General Permit requirements and will identify suitable BMPs at that time.

The following program highlights demonstrate Woburn's comprehensive local program and may not have been described under the City's BMPs for each Minimum Control Measure in previous Permit Years.

Programmatic Achievements

- Woburn's Stormwater Management Program interns have been working diligently throughout Permit Year 15, completing outfall screening and preparing for the final 2016 General Permit requirements. During this past year, outside consultants were engaged to help the City comprehensively evaluate the City's entire Stormwater Management Program to prepare Woburn for meeting the next General Permit requirements. The City is waiting on final recommendations from the consulting firm and will adjust our intern program and BMP's accordingly.
- The City Engineer is an active member of the Mystic River Watershed Initiative Municipal Subcommittee and has participated in many multi-community events and cooperative efforts.
- The City Engineer participated in a small roundtable, called "Engaging Your Community in Stormwater Funding", run by the Consensus Building Institute and EPA which began in January 2017 and ended in May 2017 with a total of four sessions and four webinars. The EPA created this pilot group to teach communities about different types of funding mechanisms as well as different tools and methods for gaining residents' and businesses' support for funding stormwater programs. As a result of participating in this program, the Engineering Department has begun to investigate the feasibility of establishing a Stormwater Enterprise Fund, develop the framework for the design and implementation of a stormwater utility, and discuss the proposed program with key stakeholders.
- During Permit Year 15 Woburn Engineering Department Staff had several opportunities to share information regarding their successful intern program:
 - On February 15th, 2018, Woburn Engineering Department staff presented information on their program at the UMass Transportation Center Stormwater Management Course held at the Acton Public Safety Facility. GIS Coordinator, Matt Barrett, and Engineering Department Intern, Alexander Candiloro, delivered a presentation entitled "Woburn Engineering Department's Efforts to Meet MS4 Permit Requirements".
 - Intern Alexander Candiloro has presented about this program to Civil and Environmental Engineering students and faculty at the University of Massachusetts at Lowell during his tenure at the school.

- The City Engineer also represents the New England Chapter – American Public Works Association (NEAPWA) on the Working Committee for the New England Stormwater Collaborative.¹ The New England Stormwater Collaborative was formed by the New England Water Works Association (NEWWA), New England Water Environment Association (NEWEA), and NEAPWA in 2013 with the conceptual drivers of EDUCATION, UNDERSTANDING, and ACTION. The collaborative works to engage the stormwater community, provide a forum for information and education exchange and advocate sound stormwater management practices.
- Additionally, as a member of the Mystic River Watershed Association (MyRWA), the City has coordinated with MyRWA Executive Director Patrick Herron, to enhance public education and outreach. The City has provided funding to the MyRWA that will be used to develop public education and outreach materials for students, as well as other applicable audiences.
- The City has continued to tailor the PeopleGIS Stormwater Suite to fit their needs. The City is continually refining and personalizing this database to assist the City in complying with the 2016 General Permit. The City is working toward posting this interactive map on their website to allow anyone, including Woburn residents and business owners, to view the progress of the City’s Stormwater Management Program.

¹ More information about the New England Stormwater Collaborative can be found here: <http://www.nestormwater.org/>

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

Note that the “Planned Activities” column has been deleted from this Annual Report. In Fiscal Year 2019, the City of Woburn will focus on compliance with the new requirements of the 2016 MA Small MS4 General Permit, including assessment of existing stormwater practices, policies, and City-wide stormwater-related programs, preparation of the Notice of Intent, and implementation of Best Management Practices to address the permit requirements for each Minimum Control Measure.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)
1-1	Hold Earth Day Celebration	Conservation Commission	Hold event annually	There have been several Earth Day events since 2003, but due to constraints on budget and staff time, no formal Earth Day events were held by the City during PY15. The intent of this BMP is being met through BMP 1-2.
1-2	Hold Conservation Day Event	Conservation Commission	Hold event annually	<p>Woburn holds an annual Conservation Day event in the spring. The City notifies the public about the event through newspapers, on the City’s website, and with flyers about 2 weeks prior to the event. In Permit Year 15, Conservation Day was held on Saturday, May 6th, 2017 at Horn Pond. Approximately 100 volunteers helped clean up various Conservation Areas of trash and winter debris, maintained trails by cutting back overhanging brush and removing hazardous limbs overhanging trails. Additionally, volunteers repaired footbridges and handrails, planted flowers and native species, and removed invasive species. A bench was installed on Conservation Day at the Cranberry Bog Conservation Area to celebrate the 350th Anniversary of Woburn.</p> <p>The stormwater program posters developed as part of BMP 6-8 have also been displayed at previous Conservation Day events.</p> <p>In addition to annual events, Woburn Residents’ Environmental Network (WREN) publicizes their Weekly Horn Pond Walks. Every Saturday morning members walk around the pond and clean up trash. More info here: http://www.gowren.org/</p>
1-3	Continue Pet Waste Disposal Practices	Dept. of Public Works	Maintain signs and doggie mitts	Pet waste bag (“doggie mitts”) supplies were checked and restocked if needed during Permit Year 15. Pet waste disposal signs and waste bins were checked daily from April 1st through November 30th.
1-4	Maintain Environmental Awareness Brochures	Dept. of Public Works and Conservation Commission	Brochures available	Environmental Awareness Brochures were made available in 2012. These brochures were restocked once during Permit Year 9. New brochures are currently being developed and the Mystic River Watershed Association is furnishing some of these materials as noted in Part II “Self-Assessment”.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)
1-5	Develop Stormwater Brochure	Dept. of Public Works	Brochure developed by May 1, 2004	BMP completed. Brochures were developed in May of 2004.
	Brochure Available for Distribution	Dept. of Public Works	Distribute brochure via mass mailing once during permit term	BMP Completed. The brochures developed under BMP 1-5 were distributed in February of 2005.
1-6	DPW staff available for classroom discussions/tours	Dept. of Public Works	Schools aware of opportunity for speakers each fall and spring	Schools are regularly notified of this opportunity. After speaking with the City Engineer in fall 2016, the High School's science department has expressed interest in creating a small stormwater initiative where students will learn about stormwater, how it affects their community and how they can help. The City Engineer and science department contact continue to work through the logistics of creating the initiative and incorporating it into the school's curriculum. The Massachusetts Water Resources Authority has also been involved at the middle school level giving stormwater presentations in previous Permit Years.
1-7	Stormwater bulletins added to Kiosks at Horn Pond	Dept. of Public Works	Bulletin posted on kiosks by May 1, 2004	BMP Completed. No goals for this BMP were planned for Permit Year 15.
1-8	Stormwater Information added to DPW's Website	Dept. of Public Works	Stormwater information added to website by May 1, 2005	The City developed multiple stormwater web pages to supplement its public education program in 2005. The City website was overhauled during Permit Years 14 and 15. The stormwater website is accessible from the Department of Public Works (DPW) page on the City's website (https://www.woburnma.gov/government/public-works/stormwater/). The site provides educational information to residents, informing them of the impact of stormwater discharges on waterbodies and contains links to EPA/MassDEP and other websites that discuss steps/activities the public can take to reduce the pollutants in stormwater runoff. The site also includes information on the MS4 permit, the City's stormwater management program and links to environmental groups in the City and the Mystic River Watershed Association (MyRWA).

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	Maintain/update information on DPW Website	Dept. of Public Works	Maintain/update website as necessary	The City website was recently updated. DPW, Conservation Commission and Engineering collaborated on the development of new, updated, educational materials. Additional information on the City's street sweeping schedule is now on the DPW page and a drainage location map is on the Engineering page. The City will continue to update the website as needed.

2. Public Involvement and Participation

Note that the “Planned Activities” column has been deleted from this Annual Report. In Fiscal Year 2019, the City of Woburn will focus on compliance with the new requirements of the 2016 MA Small MS4 General Permit, including assessment of existing stormwater practices, policies, and City-wide stormwater-related programs, preparation of the Notice of Intent, and implementation of Best Management Practices to address the permit requirements for each Minimum Control Measure.

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2-1	Comply with State Public Notification Guidelines	Planning Board and Any City Department	Post notices on all applicable meetings and environmental awareness events	The City complied with MGL Ch. 39 S 23B (state) and local meeting notification requirements during Permit Year 15.
2-2	Used Oil Collection Program	Board of Health	Collection held monthly	Murphy’s Waste Oil accepts waste oil, oil filters, and anti-freeze from Woburn residents on the first Saturday of each month from 8:00 AM until 12:00 PM. Information is provided on the City’s Trash and Recycling Calendar, which is mailed to residents annually and posted on the City’s website.
2-3	Hold Household Hazardous Waste/Tire Collection Days	Board of Health	Collection held every three months	Woburn residents are provided multiple opportunities to dispose of hazardous waste, including items such as automobile batteries, propane tanks, batteries, fluorescent lights and various chemicals and solvents; these collections take place once per month April through November. The City’s Board of Health collects any mercury-bearing waste, such as thermometers, button batteries, and fluorescent lighting, from residents at any time. In addition, Waste Management picks up appliances and CRT screens from residents for a small fee.
2-4	City-Wide Recycling Program	Board of Health	Recyclables collected every two weeks	The City offers single-stream recycling, which is collected every other week by a subcontractor. Christmas trees are collected for two weeks after Christmas during the weekly trash pickups. Yard waste is picked up one week per month from April through September and twice per month during October and November. This information is also included on the City’s Trash and Recycling Calendar.
2-5	Street Tree Planting Program	Dept. of Public Works	Maintain tree-planting program	Under the direction of the Tree Warden, the City maintains the public shade trees within the City right of way. The City also offers a street tree planting program whereby residents may request that the City install a public shade tree near their property within the public right of way. Twelve public shade trees were planted during Permit Year 15.

3. Illicit Discharge Detection and Elimination

Note that the “Planned Activities” column has been deleted from this Annual Report. In Fiscal Year 2019, the City of Woburn will focus on compliance with the new requirements of the 2016 MA Small MS4 General Permit, including assessment of existing stormwater practices, policies, and City-wide stormwater-related programs, preparation of the Notice of Intent, and implementation of Best Management Practices to address the permit requirements for each Minimum Control Measure.

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3-1	Continue to inspect new sewer connections	Engineering Department	Continue inspection of all new sewer connections	During PY15, the City inspected 23 new or updated sewer connections to confirm that they connect to the sewer system and not the MS4. This is an annual, ongoing effort.
3-2	Map Outfalls/Receiving Waters	Engineering Department	Map completed by May 1, 2005	<p>BMP Completed. The City’s robust IDDE Program has been ongoing since 2003. Woburn has met the requirements of the 2003 General Permit to map outfalls and receiving waters.</p> <p>The City had no substantial mapping available of the existing drainage pipe system at the start of the permit in 2003 and undertook a comprehensive field inspection program to compile the drainage database. A map of the drainage system, including catch basins, manholes, outfalls, receiving waters, and some connectivity, was completed by May 2005. Mapping is available in ArcGIS, and is updated as drain pipes are replaced or added to the system. Additionally, the City has made progress in delineating tributary areas. The City has located and inventoried 743 outfalls. As of the date of this report 238 outfalls are private, 13 are state-owned and 492 are MS4/City owned outfalls. The City will continue to confirm which outfalls are not a part of the MS4 and adjust their maps accordingly to show both public and private. The City has inspected all known municipal outfalls for the presence of illicit discharges during dry weather. See BMP 3-3 for more information about dry weather inspections.</p> <p>To date more than 2,400 drain manholes, 6,800 catch basins, and approximately 94 miles of drain pipe are mapped. Drain system manhole and pipe information is collected during the inspections and is incorporated into the GIS system to locate and record all drainage system physical features.</p> <p>During the inspections, cleaning needs for manholes, catch basins and drain lines are identified. The City has followed up on nearly all of the recommended system cleaning. See BMP 6-2.</p>
3-3	Complete dry weather screening of outfalls	Engineering Department	All outfalls screened once during permit	BMP Completed. Woburn has inspected all mapped public outfalls during dry weather at least once during the permit period. In Permit Year 15, 298 dry weather and 10 wet weather inspections were performed. 20 outfall monitoring samples were collected, all of which were during dry weather

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			period	inspections. Reports summarizing mapping and IDDE investigations are available from the Engineering Department. A summary of these ongoing efforts is included in <i>Part IV. Summary of Information Collected and Analyzed</i> .
3-4	Stormwater Ordinance	Engineering Department	Stormwater ordinance adopted January 2007	BMP Completed. The City adopted a drainage system ordinance (Title 1 <i>Public Services, Section IV Stormwater, Illicit Discharge/ Connection and Construction Site Management</i>) on January 22 nd , 2007 that regulates flows entering the municipally owned storm drainage system. This ordinance defines prohibited activities and the enforcement authority for the Superintendent of Public Works.
3-5	Develop and implement system for elimination of illicit discharges	Dept. of Public Works	Based on prioritized results in BMP #3-3, determine procedures to identify and remove illicit connections to drain; maintain records.	BMP Completed. Woburn adopted the <i>Illicit Discharge Detection and Elimination – A Guidance Manual for Program Development and Technical Assessments</i> prepared by the Center for Watershed Protection and Robert Pitt (October 2004) for its IDDE program. During PY 13, in preparation for the City’s stormwater program with UMass Lowell student interns, the City worked with a consultant to refine IDDE procedures for outfall monitoring based on the 2016 General Permit and EPA Region 1 guidance, including a field protocol and inventory field form (through PeopleGIS), a Site Safety Plan, and watershed-based monitoring requirements and benchmarks based on the General Permit. These procedures will be refined to meet the requirements of the reissued General Permit once in effect.

4. Construction Site Stormwater Runoff Control

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4-1	Continue to apply Standard 8 of MA Stormwater Policy	Conservation Commission	Standard 8 of the MSP applied during the permit term	City applied Standard 8 of the Massachusetts Stormwater Policy, Erosion and Sediment Controls, as necessary to all relevant development projects. Approximately 27 development plans were reviewed by the Conservation Commission during Permit Year 15.
4-2	Procedures for Collection of Public Comments	Engineering Department	Maintain existing procedure throughout permit term	Public comments are received/reviewed and filed accordingly.
4-3	Continue inspections for erosion control measures at construction sites within Conservation Commission review	Conservation Commission	Maintain existing policy throughout permit term. Number of construction sites inspected each year	The City completed construction site inspections for erosion and sediment control at 15 sites during Permit Year 15. This count does not include re-inspections at the same site.
4-4	Procedure for Control of Discarded Building Materials	Board of Health and Building Department	Maintain existing procedure throughout permit term. Number of demolition permits issued each year.	26 demolition permits were issued by the City during Permit Year 15. Every applicant is required to complete a debris disposal form, which includes the location of the facility that will be accepting the debris.
4-5	Amend Subdivision Regulations to Require Erosion and Sediment Control Plan for Sites Disturbing More than 1-acre	Engineering Department	Draft amendment to regulations by May 1, 2005.	The City adopted Title 13 <i>Public Services</i> , Section IV <i>Stormwater, Illicit Discharge/Connection and Construction Site Management</i> , which regulates new development and redevelopment that disturbs 20,000 square feet or more of land. The ordinance defines performance standards (Massachusetts Stormwater Management Standards), the enforcement authority (Building Commissioner and Police Department), and requires the control of waste. During Engineering Department review of Subdivisions, the City requires submittal of NOI and a Stormwater Pollution Prevention Plan when the NPDES Construction General

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)
				Permit is required.
4-6	Amend Zoning Ordinance to Require Erosion and Sediment Control Plan for Sites Disturbing More than 1-acre	Engineering Department	Draft amendment to regulations by May 1, 2005.	BMP Completed. The City addressed this BMP through the adoption of a General Ordinance instead of by amending Zoning ordinances. See BMP 4-5 above for more information about the Stormwater Ordinance.

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

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BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)
5-1	Continue to implement City's Planning Board Rules and Subdivision Regulations	Engineering Department	Continue enforcement of existing regulations throughout permit term. Number of subdivisions reviewed each year.	The City has enforced Planning Board Rules and Regulations for all projects that have come under its review. The City reviewed nine site and subdivision plans during Permit Year 15.
5-2	Maintain Policy Ensuring Long-term Maintenance of Private Structural BMPs	Engineering Department	Maintain existing policy throughout permit term. Number of private structural BMP O&M plans submitted by developers each year.	There were nine projects reviewed during Permit Year 15 that required private structural BMPs with long-term operation and maintenance. Site plans include specific stormwater maintenance requirements for most projects. Separate “Stormwater O&M Plans” are generally required for larger projects. The Conservation Commission requires the submittal of an annual report as a standard condition.
5-3	Adopt Massachusetts Stormwater Policy Standards #,2, 3, 4, 7, and 9 in City ordinances	Engineering Department	Draft amendment to regulations by May 1, 2005	The City adopted Title 13 <i>Public Services, Section IV Stormwater, Illicit Discharge/Connection and Construction Site Management</i> , which regulates post-construction stormwater management in new development and redevelopment that disturbs 20,000 square feet or more of land. The ordinance defines performance standards (Massachusetts Stormwater Management Standards) and the enforcement authority (Building Commissioner and Police Department). In addition, the City regulates post-construction stormwater runoff from new and re-development through its Wetlands Ordinance and its Subdivision Rules & Regulations Section III Design Standards. The Board of Health, Conservation Commission, Engineering Department, and Planning Board review components of proposed development/redevelopment projects and, as applicable, perform inspections after construction to assure that stormwater systems are functioning as designed.

6. Pollution Prevention and Good Housekeeping in Municipal Operations

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BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)
6-1	Continue Street Sweeping Program	Dept. of Public Works	Sweep all streets in the City twice annually	All City streets are swept twice each year, and the sweeper is in use constantly during the summer.
6-2	Continue Catch Basin Cleaning Program	Dept. of Public Works	Clean 75% of catch basins in City each year. All CBs cleaned on a three year rotating schedule.	<p>2,100 of the approximately 3,900 municipally owned/operated catch basins were cleaned by the City from May 2016 through January 2017. The DPW uses an iPad to record key data at each catch basin when cleaned (e.g., evidence of an illicit discharge, % full, and maintenance needs). The volume of the material removed from the catch basins is recorded and disposed of at a MassDEP-approved solid waste facility.</p> <p>Since the inception of the stormwater program, the City has cleaned and CCTV inspected miles of drain pipe. During the three-year Main Street rehabilitation project, which finished in late 2016, DPW cleaned and TV'd the entire drain line (10,000+ linear feet) on Main Street (Route 38). As a result of this effort, a number of defects were found within in the system and were repaired or piping was replaced. These areas are tributary to both the Middlesex Canal and Cranberry Bog Conservation Area.</p> <p>The City has a Vactor Truck discharge station at a location separate from the DPW yard (adjacent to the former landfill in North Woburn). The Vactor truck residuals are temporarily stored in a lined container until removed for final disposal at a MassDEP-approved solid waste facility.</p>
6-3	Continue Salting/ Snow Removal Practices	Dept. of Public Works	Continue existing practices throughout permit term.	In 2009, the DPW constructed a covered storage shed that houses road salt. During Permit Year 15, spreaders were calibrated as needed to limit salt dispersion into the environment. Records of the amount of deicer used are kept by the DPW. Alternative environmentally friendly deicing methods were used where practical and near sensitive receptors to reduce salt.
6-4	Hazardous Waste Response Program	Dept. of Public Works	Continue existing program throughout permit term	The City maintained spill kits during Permit Year 15 and continued to follow its established Spill Prevention Control and Countermeasure (SPCC) Plan. Spill kits are kept at the DPW building, safety trailer and are present in many of the frequently used vehicles. Fire also keeps spill kits at the stations and in their trucks. Improved drainage system mapping accessible on mobile devices makes it

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				easier to respond to spills impacting the MS4. When DPW personnel perform stream maintenance, or other activities in environmentally sensitive areas, City equipment is supplied with spill kits.
6-5	Continue Vehicle Washing Practices	Dept. of Public Works	Continue existing practices throughout permit term	As part of the DPW Facility (North Warren Street) improvements completed in 2014, a number of water quality inlets and oil-absorbent pillows (all MassDEP approved) were installed throughout the site to reduce pollutants discharged to the MS4. Engineering and DPW are working together to address “vehicle washing” according to EPA requirements and MassDEP policy. The City is reviewing whether it is possible to create a truck wash station connected to the sanitary sewer system. No detergents are used when rinsing salt, sand, and debris off City trucks and equipment.
6-6	Continue Vehicle Maintenance Practices	Dept. of Public Works	Continue existing practices throughout permit term	Municipal vehicle maintenance, including police vehicles, was performed in a garage that has oil and grease traps and an oil/water separator.
6-7	Park and Landscape Maintenance	Dept. of Public Works	Continue existing practices throughout permit term	The City does not use fertilizers or pesticides near Horn Pond or the Aberjona River, which are sensitive receptors within the City.
6-8	Develop/Implement Employee Education/Training Program	Dept. of Public Works	Stormwater related training during permit term for each appropriate employee	DPW supervisors and employees are up to date on all training, including illicit discharges and pollution prevention in municipal operations. Public Works and Highway personnel attend various seminars each year sponsored by APWA, Baystate Roads, and other regional organizations. The City developed posters presenting efforts by DPW and the City on the stormwater program that are on display in the DPW lobby and are used to increase awareness of stormwater issues for all DPW employees. The City Engineer is an active member of the Mystic River Watershed Initiative Municipal Subcommittee and has participated in many multi-community trainings and cooperative efforts.

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA)

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)
	Not Applicable			
Revised				

Part IV. Summary of Information Collected and Analyzed

The following summarizes Woburn’s outfall inventory, dry weather screening, and follow up activities completed and planned under the City’s Illicit Discharge Detection and Elimination Program during the permit term. More detailed summary reports and laboratory data are available at the Engineering Department. Additionally, special public education and outreach components have been added to this summary that may not have been described under the City’s BMPs for each Minimum Control Measure in previous Permit Years.

- A comprehensive field program was undertaken in Fall/Winter 2003 to walk along the banks of all water bodies (Horn Pond and other ponds) and rivers and streams (Aberjona River, Middlesex Canal, Shaker Glen Brook, etc.) to locate and inspect stormwater outfalls. This field program consisted of a substantial effort to locate the outfalls and was required because the City had limited mapping of the existing outfalls. As a result, over 600 outfalls were located and the physical features and status of each was recorded on a field inspection sheet. Each outfall was photographed and the data was summarized in the April 2005 Camper Dresser McKee (CDM) Inc. report “Phase II NPDES General Stormwater Permit Drainage System Outfall Inventory” in two large binders and an electronic database. Approximately 1/3 of the outfalls listed in this report are actually outfalls from private property and are not owned by the City. During Permit Year 14, interns began to examine this list of outfalls to confirm whether or not they are private and therefore not part of the MS4.
- On August 9, 2006, the DPW, in conjunction with Camp Dresser and McKee, Inc. (CDM), and the Woburn Residents’ Environment Network (WREN), sponsored an event to install markers at approximately 100 catch basins around Horn Pond. The markers were used to promote public involvement and raise awareness about the City’s stormwater management program. In addition, a video was prepared in conjunction with the City’s Local Access Channel (LAC) to discuss stormwater impacts and the catch basin marking program. This video has run periodically on the LAC.
- Follow-up field inspections of the outfalls were performed between 2004 and fall 2009 to identify any outfalls with dry weather flow. At the end of these follow-up field inspections each city owned outfall had been inspected at least twice.
- Approximately forty-five (45) outfalls had dry weather flow during the comprehensive dry weather outfall screening program conducted by the City and CDM between 2004 and 2009. Most of the outfalls that have had dry weather flow during these inspections have been sampled at least three times. Laboratory analysis of the flow has shown that most of the outfalls have no evidence of contamination from illicit sewer connections. At many of the outfalls, the existence of dry weather flow from the outfall is not consistent from inspection to inspection and laboratory sampling indicates no presence of any significant bacteria. Thus, these outfalls have been eliminated from further study.

- Ten (10) outfalls with consistent dry weather flow during most of the inspection periods had been identified during CDM's 2004-2009 follow up inspections. Laboratory analyses results indicated the presence of some level of bacterial contamination at these outfalls. However, based on repeated testing results of these outfalls coupled with the lack of other illicit discharge indicators (i.e., surfactants, odors, floatables, etc.) and field inspections, the City has concluded that (with one exception) the presence of coliform in the dry weather flow from these outfalls is probably caused by background contamination from the watershed related to animal feces and is not evidence of bacteriological contamination from a potential illicit sewer connection. Some of the background animal contamination has been confirmed by TV inspections of the pipe and visual observations of animal feces around catch basins that contribute to the outfalls, as described below, and are detailed in the CDM Memorandum titled "Phase II NPDES Stormwater Program Illicit Discharge Detection and Elimination Program, October 30th, 2009 Progress Meeting" and dated November 2nd, 2009.
 - OF-028 was found to have a raccoon inhabiting it. A screen was placed over the outfall to prevent the raccoon or other animals from re-inhabiting the outfall. **This outfall was tested again in the Spring of 2016 and had no significant levels of bacterial concentrations or other illicit discharge indicators (i.e. surfactants, odors, etc.).**
 - OF-029 on Morrow Drive had animal waste in the catch basins leading to the outfall, which indicated that a resident had been disposing of their pet waste in the catch basin. This practice has since stopped. **This outfall was tested again in the Spring of 2016 and had no significant levels of bacterial concentrations or other illicit discharge indicators (i.e. surfactants, odors, etc.).**
 - The remaining outfalls are still being monitored but have low bacterial levels, surfactants, ammonia, etc. The one dry weather flow that was associated with an illicit sewer connection was found and removed from #385 Main Street as described below.
- One outfall had consistent dry-weather flow and consistently high bacteria concentrations and was suspected to have an illicit connection. The City repaired the failing sewer adjacent to this drain line. Outfall sampling in the Fall of 2008 indicated a presence of bacterial contamination, however there were no signs of an illicit connection (i.e., odor, solids, floatables, surfactants, etc.). During the Main Street drain cleaning and TV inspections (see BMP 6-2) the City identified a possible cross-connection from a private property. A sewer service was found connected to a drain manhole in front of #385 Main Street. This service connection to the drain has been removed.
- Ongoing efforts are being made by the Department of Public Works to identify and remove illicit connections that may be impacting outfalls OF-119, OF-118 and OF-120. Major sewer system improvements are also being performed within these tributary areas for infiltration/inflow reduction which could have a beneficial impact on the water quality of these outfalls.
 - An illicit connection was discovered at Lannan Chevrolet on Winn Street during the construction of a building addition. The sewer service connection for the building was found to be connected to an onsite catch basin which discharged to OF-118. **During the Fall of 2015, after this connection was removed, this outfall was retested and indicator parameter concentrations were not high. This indicates that the illicit connection found was the major source of contamination at this outfall. This outfall has been periodically checked throughout the year and indicator parameter concentrations have been low.**
 - OF-119 had high E. coli counts during one wet weather flow in the Spring of 2016. A drain manhole (DMH) was opened upstream of this outfall and there were visual indications of an illicit connection. Further testing is being done on this outfall and DMH, and the surrounding homeowners have been contacted requesting permission for the City to perform dye testing. **The outfall has regularly been tested since Spring 2016. Recent test results and observations indicate no sign of an illicit discharge.** Investigations are ongoing.

- OF-120 has been checked multiple times during 2016 and early 2017; each time the outfall has been visited **there is no flow and no indications of illicit discharges** (i.e., staining, odor, excessive vegetation growth, etc.).
- In the Summer of 2015, a partnership developed between the City of Woburn and the University of Massachusetts-Lowell to assist the City in meeting aspects of the General Permit. Beginning in the Fall of 2015, student volunteers have field tested and sampled at outfalls and assisted in completing the drainage system map, as well as delineating tributary areas.
 - The City hired two UMass Lowell intern project managers who have overseen eight student volunteers during the Fall 2015 semester, six volunteers during the Spring 2016 semester and four volunteers during the Fall 2016 semester.
 - During January 2016, one of the UMass Lowell volunteers who has been with the program since its inception, was hired to take over the project as the original intern project managers have now graduated.
 - During Permit Year 15, seven UMass Lowell volunteers spent approximately 28 hours performing outfall inspections.
 - Three high school interns and two college interns were employed by the City to perform outfall inspections, complete the drainage system map and assist the Engineering Department with other duties during Permit Year 15. The interns' schedules varied based on availability.
 - To date, the student volunteers have performed 448 dry weather inspections and 39 wet weather inspections, collecting a total of 82 samples. BMPs, culverts and other drain structures that were incorrectly mapped as outfalls have been removed from the MS4. Culverts that were originally mapped as outfalls and have since been removed from the inventory, are shorter than a simple road crossing in length and/or have been confirmed to be free of any connections and convey only waters of the U.S.
 - The City has also begun a partnership with the high school. In the Fall of 2016, the City Engineer met with Woburn Memorial High School's Principal, Jessica Callanan, where the City Engineer proposed hiring junior and senior students interested in engineering and environmental science. These high school interns would work alongside the UMass Lowell students and the City Engineer in meeting different components of the MS4 permit. The Principal agreed it would be a good way to introduce more students to STEM concepts and approved, notifying the science teachers to inform their students of this program. Two students were hired and trained. This summer, the Engineering Department will hire more high school and college students for a summer internship that focuses on IDDE. Additionally, the City Engineer and high school science teachers are in the preliminary stages of organizing classroom talks, demonstrations and activities regarding stormwater. For example, this initiative will include studying things such as "what cleaning products can be used for high school car washes that have minimum nutrient loading" in the hopes of making more students environmentally aware.
- The Woburn MS4 Stormwater Management Intern program will continue their IDDE work throughout the Summer of 2018 with the goal of checking all publicly owned outfalls not yet investigated by this student group for dry weather flow.
- As of the date of this annual report, the only potential IDDE issues outstanding are with OF-119, as detailed above. The City is working to isolate possible sources of illicit discharges or nonpoint source pollution.