

Municipality/Organization: Town of Andover

EPA NPDES Permit Number: MAR041178

MassDEP Transmittal Number: W-041021

**Annual Report Number
& Reporting Period: No. 14: May 1, 2016-April 30, 2017**

NPDES PII Small MS4 General Permit Annual Report

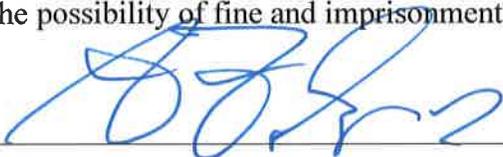
Part I. General Information

Contact Person: Andrew Flanagan Title: Town Manager

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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: Andrew Flanagan

Title: Town Manager

Date: 4/20/17

Part II. Self-Assessment

The Town of Andover has completed the required self-assessment of the annual compliance review for the Phase II Stormwater Program. In accordance with the NPDES Phase II Stormwater requirements, the following topics were evaluated for the completion of the Annual Report:

1. Compliance with the Phase II Permit Conditions
2. Appropriateness of the Selected BMPs
3. Progress Towards Achieving the Program's Measurable Goals
4. Results of Any Information that has been Collected and Analyzed
5. Activities for the Next Reporting Cycle
6. Changes in Identified BMPs or Measurable Goals

The Town has determined that our municipality is in compliance with all permit conditions.

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
1A	Develop Stormwater Section of Town Website	Dept. of Public Works/Engineering Dept., Water Dept., and Town Website Manager(s)	Measure number of hits over permit term.	The “Stormwater Management” section of the Town’s website was maintained and updated as necessary. Information provided includes an overview of the NPDES Phase II program, stormwater pollutant information, and illicit discharge information, as well as links to additional resources were provided. There were 548 visitors to the stormwater section during this reporting period.	Continue to track website hits and update with pertinent information and links.
Revised					
1B	Distribute Brochures and Fact Sheets to Businesses and Residents	Department of Public Works/Engineering Dept., and Water Dept.	Number of articles and copies of materials.	A section on stormwater management was published in the annual “Recycling and Trash Collection Guide for Residents”, which was made available to the public via the Town website and email. Approximately 2,000 additional printed copies were made available for pickup at various public buildings during Permit Year 14. Publications generally discussed the Town’s requirements on recycling, household hazardous waste, yard waste, and illicit discharge information, as well as providing general information on the NPDES Phase II program. Stormwater Pollution Prevention information was included in the	Continue providing informational brochures and materials for pickup at public locations. Continue to update and direct interested residents to the Stormwater Management section of the Town website. Andover has recently partnered with the Greenscapes North Shore Coalition, and one component includes assistance on the Outreach and Education requirements of the Notice of Intent required under the newly published 2016 Phase II permit. Cooperation will be ongoing during the next permit year, with the community beginning to develop a targeted approach towards the required four audiences (residential, commercial, developers, and industrial).
Revised				(continued on next page)	

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
1B				<p><i>(continued)</i></p> <p>annual Consumer Confidence Report (i.e., Water Quality Report) of which approximately 200 copies were made available at town offices, public library, and water treatment plant, as well as made available for download via the Town’s website. Topics included general stormwater information, pet waste, lawn care, and recycling. The Town partnered with the Greenscapes North Shore Coalition to cooperate on public education and outreach materials. Deliverables during Permit Year 14 included a “Keeping Water Clean” school program, printing of 500 stormwater brochures, a “Greenscapes 101” presentation, Greenscapes website, and emailed newsletters as noted under BMP 2C and 2E. General information provided covers water conservation, environmentally friendly yard care and landscaping information and services, information on hazardous waste disposal events, low impact development techniques for homeowners and green landscape tips.</p>	

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1C	Submit Advertisements/Articles on Stormwater Protection for Local Newspaper	Department of Public Works/Engineering Dept., and Water Dept.	Clippings of articles and advertisements printed in local newspaper.	Two educational videos were shown on the public DPW Facebook page, “Reduce Your Pollution and Decrease Polluted Stormwater” posted on April 4, 2017, and “Why Stormwater is a Threat to Clean Water” posted on March 27, 2017. These videos are also periodically posted to the public News Feed. Two education videos were also posted on the DPW Public Twitter feed, “Reduce your Pollution and Decrease Polluted Stormwater” (Think Blue MA) posted on April 4, 2017, and “Why Stormwater is a threat to clean water” (Greenscapes Coalition) posted on March 27, 2017. “Re-Tweets” from other sources are also utilized when relevant, such as from EPA on October 28, 2016. A section on Stormwater Management was published in the Municipal Services 2017 Spring Newsletter which is posted on the town webpage. Links to the newsletter are also posted on the Andover Municipal Services Facebook page and on the Andover DPW Twitter page. In June 2016, the online news source “Andover Patch” published the 2015 Andover Water Quality report, which included a section on Stormwater Management.	Continue to inform residents of upcoming activities in conjunction with Minimum Measures 1 and 2 by publishing articles in the newspaper and online sources. Continue to take advantage of social media for information distribution.
Revised					

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
2A	Establish a Pesticide Reduction Task Force (PRTF)	Committee of Town Staff, League of Women Voters, and Residents	Copies of mailers, meeting minutes, list of attendees.	During past permit years, the Pesticide Reduction Task Force was joined with the Fish Brook Watershed Advisory Committee (FBWAC). The FBWAC created a Pesticide Use Policy that was adopted by the Town for use in the watershed to help protect water quality. During Permit Year 8, the FBWAC issued its final report as outlined in BMP 2E, and has since disbanded. The Pesticide Use Policy remains in effect as part of the school IPM Plan, as well as mosquito control response, and is available from the Health Department and on the Town website.	Continue to enforce the Pesticide Use Policy under existing regulatory methods. Provide education to residents and businesses about proper pesticide usage and potential water quality impacts under BMP 1B.
Revised	Reduce Pesticide Usage in the Fish Brook Watershed	Town Departments and Residents	Implement a Pesticide Use Policy		
2B	Establish a Stormwater Telephone Hotline	Department of Public Works/Engineering Dept., Water Dept., and Town Website Manager(s)	Record number of phone calls to hotline, copies of articles.	7 calls and complaints were received by the Engineering Dept. and 18 by Health Dept. These were logged as part of the Stormwater Call Directory as outlined in BMP 3F and 4B, set up through the DPW Engineering Division and advertised on the Town website. Complaints pertained to	Continue to receive calls made to the Stormwater Call Directory and take corrective actions. Continue to document the complaint in the log including investigation findings, actions taken, and follow-up actions.

Revised	Establish a Stormwater Call Directory		Record number of calls to each Department	<p>various stormwater issues, generally including: stormwater ponding, drainage system maintenance, illegal dumping, overflowing dumpsters, possible septic overflow, excess debris stored on properties, sewer line surcharging, improper dumping of medical waste, sewer problems such as grease buildup, trash and hazardous material releases, and improper material storage. Each location was investigated and documented in the complaint log as part of the process. The log includes investigation findings, actions taken, and follow-up actions.</p>	
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BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
2C	Establish Classroom Education/Field Trip Program	Department of Public Works/Engineering Dept. Water Dept., and Education Department	Field Trip Curriculum, # of field trips organized each year.	A Greenscapes-sponsored educational event was held for three 5 th -grade classrooms at the Sanborn Elementary School on February 7, 2017 as noted under BMP 1B. The program, called “Keeping Water Clean” was a hands-on event, designed to introduce concepts of the water cycle, stormwater, wastewater, drinking water, and the local watershed. Personal tours of the water treatment plant are no longer offered due to security issues; however a virtual tour is available to schools and other interested parties through the Town’s website. Merrimack College has begun a classroom exercise concerning eutrophication of Field Pond at Harold Parker State Forest. They conducted limited water quality analysis and weed control, and have presented some preliminary findings to Health & Conservation.	Continue to visit classrooms and explore expanding future programs to other schools. Encourage class projects and activities related to stormwater issues. Continue to use the Virtual Tour of the water treatment plant. Merrimack College will perform additional testing and land use review of Field Pond at Harold Parker State Forest.
Revised			Host one annual classroom educational event or field trip		
2D	Install Storm Drain Markers or Stencils	Department of Public Works/Engineering Dept., Water Dept., and Volunteers	50% of storm drains marked by year 5 with door hangers placed in associated neighborhoods.	A goal of marking 50% of storm drains was met in year 5. Through collaboration between Town employees and other volunteers, an additional 1,720 markers were installed at catch basins during Permit Years 9 and 10, completing town-wide coverage, with additional minor changes occurring since. 24 additional markers were installed on new or reconstructed catch basins on three streets accepted by the Town during Permit Year 14.	Goal of 50% of the catch basins was completed in Year 5, and the DPW continues to mark storm drains throughout the watersheds as new developments occur and refresh markers as needed through the use of Town personnel and volunteers. Additional marking and door hanger distribution will be performed as volunteers and materials become available in the future.
Revised			100% of storm drains marked, with door hangers placed in associated neighborhoods.		

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
2E	Work With Watershed Organizations to Incorporate Stormwater Information into Their Programs	Department of Public Works/Engineering Dept., Water Dept., and Conservation Commission	Document quarterly meeting topics. Agenda, meeting notes, and attendance sheets.	The Town has partnered with the Greenscapes North Shore Coalition, Salem Sound Coastwatch, Ipswich River Watershed Association, the Great Marsh Committee, and Eight Towns to offer an educational program “Keeping Water Clean” school program, printing of brochures, website information, etc.	Continue working with local watershed groups and residents to discuss stormwater concerns.
Revised				as outlined in BMP 1B. Andover has joined with 14 other municipalities in the area through the Merrimack Valley Planning Commission (MVPC) to form the Merrimack Valley Stormwater Collaborative (MVSC). Meetings are held monthly and public information, tools, and events are posted on the MVPC and MVSC websites. The Department of Municipal Services and Greenscapes North Shore presented a free public workshop titled “Why Stormwater Matters” on April 25, 2017 to educate the community about the importance of controlling stormwater runoff. The Town has partnered with a new watershed organization known as the Shawsheen River Greenway Assoc. and together with Conservation staff have a station in place at Marland Place to study certain river parameters including water quality, fish counts, etc.	

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
3A	Develop Primary Town Storm Drain System Map	Department of Public Works/Engineering Dept., Consultant	90% of system mapped on GIS.	90% of the drainage system was mapped during Permit Year 1 using existing plans. Through subsequent mapping efforts, >99.9% of the drainage system has now been mapped. 21 additional outfalls were mapped as outlined in BMP 3B during Permit Year 14.	Continue to map newly installed or located structures as necessary. Delineate catchments to outfalls based on existing system information and topography.
Revised					
3B	Complete Storm Drain System Map	Department of Public Works/Engineering Dept., Consultant	Outfalls map completed.	Storm drain pipes, structures and outfalls were continually added to the GIS drainage map from new subdivisions and site developments, as well as newly located infrastructure. Additional stormwater infrastructure has been added through research of existing records and through field inspections with GPS equipment during Permit Year 14 as follows: 8,886 l.f. of pipe (2,274 l.f. Town, 6,590 l.f. private, 22 l.f. unknown); 62 catch basins (8 Town, 54 private); 56 manholes (6 Town, 50 private); 21 outfalls (3 Town, 18 private); 7 inlets (1 Town, 6 private); and 5 grit/oil separators (all private). The GIS base map was updated to reflect all new information. Finally, a buried outfall (OUT-1692) at 34 Chandler Rd. was located by excavating. Additional work performed at this location includes installation of a 15" pipe, raising the outlet, and installation of a sediment trap.	Continue verifying the location of the drainage system as mapped under BMP 3A and incorporate changes as funds, manpower, and equipment are available. The Town will also update the GIS map as new drainage systems and new roads and developments are constructed. Excavation and flushing will likely be required to find remaining outfalls.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
3C	Develop Illicit Discharge Prohibition Ordinance	Planning Board, Board of Health, and Selectmen	Obtain authorization to control inputs to the municipal drainage system.	Illicit Discharge Rules and Regulations were adopted by the Board of Health on July 9, 2007. Enforcement is ongoing.	Continue to enforce the Illicit Discharge Rules and Regulations. Review bylaw for compliance with the new permit and make changes as needed.
Revised					
3D	Develop Illicit Discharge Detection and Elimination Plan and Implement Activities	Department of Public Works/Engineering Dept., Water Dept., Board of Health, and Consultant	All outfalls examined. Sources traced and results documented within one year of discovery.	An IDDE plan was established in Permit Year 1 and continues to be used during IDDE investigations. As possible illicit discharges are located, Health works with DPW to conduct water testing and trace lines. During Permit Year 14, 6 new outfalls were found and inspected, with 3 exhibiting dry weather flows: OUT-1566, OUT-1403 and OUT-1412. Dry weather samples were collected and sampled for E.coli, with results of 20, 100, and 370 from OUT-1566, OUT-1403, and OUT-1412, respectively. Additional reinspection and sampling was performed at 3 previously identified outfalls: OUT-1013 behind 11 Lupine Road, OUT-689 behind 28 Foster Circle, and OUT-103 behind 236 Haggetts Pond Road. Dry weather samples were collected and sampled for E.coli, with results of 340, <10, and 30 from OUT-1013, OUT-689, and OUT-103, respectively. Outfalls OUT-689 and OUT-103 were below acceptable limits and will no longer be monitored.	Continue work on locating remaining outfalls and inspecting for signs of illicit discharges as funding is available. Continue follow up on suspect outfall locations identified during previous permit years as necessary and obtain necessary funding. As dry weather screening at OUT-1412 and OUT-1013 showed E.coli results of 370 and 340, these outfalls will continue to be monitored. Evaluate connections for future dye testing or additional inspection if required.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
3E	Incorporate Information on Illicit Discharges into Public Education and Outreach Topics	Department of Public Works/ Engineering Dept., Water Dept., and Board of Health	Copies of materials.	General information on illicit discharges is posted on the Stormwater Management section of the Town website as outlined in BMP 1A. A link to an interactive “Illicit Discharge Interactive Demonstration” was also made available to residents via the Town website. Stormwater management information was included in the annual Consumer Confidence Report (i.e., Water Quality Report) distributed by Health, of which approximately 200 copies were made available at town offices, public library, and water treatment plant, as well as made available for download via the Town’s website as noted under BMP 1B. A section on IDDE was published in the annual “Recycling and Trash Collection Guide”, dated July 2016-June 2017 and was made available at various town buildings, through the Town’s website/emails, and at various events.	Continue incorporating information on illicit discharge into public education and outreach topics.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
3F	Setup and Advertise a Hotline for Illicit Discharges	Department of Public Works/ Engineering Dept., and Board of Health	Log of complaints and actions taken.	18 complaints were received and logged as part of the Stormwater Call Directory as outlined in BMP 4B, set up through the DPW Engineering Division and advertised on the Town website. Calls were generally related to illegal dumping, overflowing dumpsters, possible septic overflow, excess debris stored on properties, sewer line surcharging, improper dumping of medical waste, sewer problems such as grease buildup, trash and hazardous material releases, and improper material storage. All complaints were investigated and actions taken to alleviate the problem, including performing site/area cleanup, repair and replacement of sewer connections, and additional public education as necessary. All non-illicit discharge calls were addressed as outlined in BMP 4B. A link was provided from the Health Division website to the stormwater website and call directory.	Continue to receive complaints and take corrective actions based on calls to the Stormwater Call Directory outlined in BMP 2B.
Revised	Establish a Procedure to Receive Calls				Continue to document the complaint in the log including investigation findings, actions taken, and follow-up actions. As maintain the illicit discharge compliant log separately from the municipal work order system has proved time consuming, the Town will evaluate the feasibility of transferring to the Maint Star System where much of this information is already documented.

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
4A	Develop Erosion Control Bylaw	Planning Board and Selectmen	Bylaw at Town meeting by year 3.	The Stormwater Management & Erosion Control Bylaw was adopted at the 2008 Annual Town Meeting. The Planning Board adopted Stormwater Management Rules and Regulations in February of 2009. Enforcement is ongoing.	Continue to enforce the Stormwater Management & Erosion Control Bylaw and accompanying Stormwater Management Rules and Regulations. Review bylaw for compliance with the new permit and make changes as needed.
Revised					
4B	Establish a Procedure for the Receipt of Information Submitted by the Public	Planning Board and Department of Public Works/ Engineering Dept.	Record number of phone calls, copies of articles.	7 calls were received by the Engineering Dept. and logged as part of the Stormwater Call Directory as outlined in BMP 2B, set up through the DPW Engineering Division and advertised on the Town website. Complaints pertained to various stormwater issues including: stormwater ponding and drainage system maintenance. 18 additional calls concerned illicit discharges were received by Health Dept. as outlined in BMP 3F. Each location was investigated and documented in the complaint log as part of the process. The log includes investigating findings, actions taken, and follow-up actions.	Continue to receive calls made to the Stormwater Call Directory and take corrective actions. Continue to document the complaint in the log including investigation findings, actions taken, and follow-up actions.
Revised					

4C	Develop Guidance for Erosion Controls & Conduct Inspections	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission, & Consultant	Inspection checklist and documented inspections.	The Stormwater Management & Erosion Control Regulations implemented during Permit Year 5 provide specific guidelines of erosion controls and inspections along with annual reporting. Each large construction site is assigned an inspector who regularly checks the site and documents findings using a standard inspection form, photographs, and brief daily report.	Continue to abide by the design standards set forth in the Stormwater Management & Erosion Control Regulations when managing erosion controls.
Revised					

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

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
5A	Develop BMP Bylaws	Planning Board	Bylaw at Town meeting by year 3.	The Stormwater Management & Erosion Control Bylaw was adopted at the 2008 Annual Town Meeting. The Planning Board adopted the accompanying Stormwater Management Rules and Regulations in February of 2009. Enforcement is ongoing.	Continue to enforce the Stormwater Management & Erosion Control Bylaw and accompanying Stormwater Management Rules and Regulations. Begin to review bylaw for compliance with the new permit requirements.
Revised					
5B	Develop and Implement Inspection Program	Planning Board, Department of Public Works/ Engineering Dept., Conservation Commission, Selectmen and Consultant	Copies of maintenance reports received annually, plus records of inspections completed and results.	The Conservation Commission required that post-construction development projects conform to conservation standards for stormwater control annual inspection and maintenance, including submitting an Operation and Maintenance Plan before a Certificate of Compliance is	Continue to document annual maintenance and inspection of HOA BMPs. Follow-up meetings and reminder letters to the Homeowners' Associations will be necessary on a yearly basis to ensure that the drainage areas are being inspected and maintained and

Revised				issued. Projects must also conform to state standards as required. For every Homeowners' Association (HOA) documented, the Town has established a comprehensive file to track BMP inspections and maintenance. The Planning Division requires that HOAs establish a bylaw requiring inspection and reporting on drainage system maintenance, with annual reports submitted on an annual basis. The Planning Dept. sent reminder letter to owners and together with the Engineering Depts., reports were received during Permit Year 14 for eight sites: Murray Hill Estates, Courtney Lane, Steeple Court, Regency Ridge, 10 Connector Rd (Standard Duplicating Inc) Cassimere St Extension, Willoughby Estates, Winterberry Lane, and Newport Circle. The Conservation Commission has also inspections conducted by outside independent engineers of ongoing constructing projects. Inspections are terminated when work is completed and the site is stabilized.	Operation and Maintenance Plans are being followed.
5C	Develop BMP Design Standards	Planning Board, Dept. of Public Works/ Engineering Dept., Conservation Commission, & Consultant	Copy of draft bylaws.	Design standards consistent with the Stormwater Management Handbook were adopted as part of the Stormwater Management & Erosion Control Regulations, adopted in February 2009. No additional work took place during Permit Year 14.	Continue to abide by the design standards in the Stormwater Management Handbook for all BMP designs.
Revised					

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
6A	Sweep Streets in Town	Department of Public Works/Highway Division	Priority plan of sweeping based on water quality impact.	All streets are swept in Town at least annually. Streets in the downtown area are swept approximately twice a week from April through November. Sweeping efforts were ongoing throughout Permit Year 14.	Continue implementing the current street sweeping program.
Revised					
6B	Clean Catch Basins	Department of Public Works/Highway Division and Consultant	Records of cleaning, inspections and maintenance.	Catch basins are cleaned approximately every other year, with high priority catch basins cleaned more frequently. Limited resources reduced the number of catch basin cleanings performed, however approximately 1,223 catch basins were cleaned during Permit Year 14. Remaining catch basins will be cleaned when resources are available.	Continue to clean all catch basins in Town approximately every two years, pending available resources and funding. Continue to identify problem areas and modify cleaning frequency as needed. Begin consideration of evaluating catch basins to maintain sumps less than 50% full.
Revised					
6C	Develop and Implement an Inspection and Maintenance Plan	Department of Public Works/Highway Division, Plant and Facilities Dept., Water/Sewer Dept.	Written policy. Records of inspections and maintenance.	Inspections and maintenance are performed and procedures are modified as necessary. Stormwater structures are inspected as part of routine operations as time and budget constraints allow. A standard maintenance checklist was developed during previous permitting years and utilized during inspection and cleaning operations. Inspection results and required maintenance at each facility is as follows: Town Yard: 3 inspected, 1 require maintenance; Andover High School: 6 inspected, 0 requires maintenance; West Middle School: 2 inspected, 0 requires	Continue to perform inspection and maintenance of BMPs and catch basins. Modify maintenance frequency as necessary. DPW and Plant and Facilities stormwater BMP's needing service will be scheduled to be cleaned during the Summer of 2017. Jet and clean DMH-2406 to remove debris accumulation behind the weir. Cleaning is scheduled to be done in May.
Revised				(continued on next page)	

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
6C				<p><i>(continued)</i> maintenance; West Fire Station: 1 inspected, 0 requires maintenance; Safety Center: 5 inspected, 0 requires maintenance; Ballardvale Fire Station: 1 inspected, 0 require maintenance; Woodhill School: 2 inspected, 0 require maintenance; Doherty School: 5 inspected, 1 required maintenance which was done 4/20/17; Bancroft School: 5 inspected, 1 requires maintenance. Additionally, 3 oil/water separators were inspected on West Hollow and 1 on River Street. Oil/water separators GOS-3 and GOS-2 on West Hollow were found to be in need of maintenance. A drainage manhole with weir (DMH-2406) was inspected and found to have debris trapped behind weir. Also, cleaning that was identified in year 13, was performed in June 2016 on 3 grit/oil separators, 2 at Bancroft School and one at West Middle School.</p>	
6D	Berm Sand/Salt Pile and Evaluate Options for Protection	Department of Public Works/ Highway Division	Records of modifications, including photos.	A storage shed was constructed in Permit Year 1 to store the sand/salt pile away from stormwater runoff. All salt and sand are currently being stored within the shed, and no further action was performed.	Continue utilizing the shed for storage of all salt and sand materials.
Revised					
6E	Store Paving Tools and Equipment Indoors	Department of Public Works/Highway Division	Designated indoor storage area. Record of Memo.	All paving tools and equipment are now stored indoors in designated areas. No further action was performed during Permit Year 14.	Continue to store all tools and equipment indoors in designated areas.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
6F	Rinse Marking Paint Buckets to the Sanitary Sewer System and Store Buckets Indoors	Department of Public Works/Highway Division	Designated indoor storage area. Record of Memo.	All marking paint buckets are rinsed to the sanitary sewer system and stored indoors.	Continue to rinse all marking paint buckets to the sanitary sewer system and store indoors.
Revised					
6G	Implement BMPs to Reduce Sediments Entering the Drainage System	Department of Public Works/Highway Division	Records of sweeping and inspection records.	The paved roadway and catch basins at the DPW Yard were swept and cleaned frequently, particularly during high usage times. Catch basins cleaned on a schedule and as needed/able as outlined in BMP 6B. Note that the Town no longer uses road sand to treat roads.	Continue to sweep the paved roadway and clean the catch basins at the DPW Yard on a frequent basis.
Revised					
6H	Bring Floor Drain System at the Water/Sewer Building into Compliance	Department of Public Works/Engineering Dept.	As-built sketches.	Floor drain was brought into compliance in Permit Year 1.	No further action is required.
Revised					
6I	Bring Floor Drain System at the Vehicle Maintenance Building into Compliance	Department of Public Works/Engineering Dept.	As-built sketches.	Floor drain was brought into compliance in Permit Year 1.	No further action is required.
Revised					
6J	Wash Vehicles in Accordance with DEP Regulations	Department of Public Works/Highway Division	Record of Memo.	Vehicles are washed indoors to floor drains that discharge into an oil/water separator and the sanitary sewer system.	Continue washing vehicles indoors.
Revised					

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6K	Implement Stormwater BMPs at the Fueling Station	Plant and Facilities Dept. and Consultant	Repair Records. Better housekeeping for small spills. As-built sketches or plans. Record of memo.	A fully stocked spill kit and disposal containers are maintained onsite to clean up future leaks. Any waste will be disposed of properly.	Continue to keep fully stocked spill kit and disposal container on-site to clean up any future leaks and to dispose of wastes properly.
Revised					
6L	Develop an Inspection and Maintenance Program for the Liquid Calcium Chloride (CaCl) ASTs.	Department of Public Works/Highway Division	Inspection and Maintenance Plan. As-built sketches or action taken. Record of memo.	An inspection and maintenance plan and procedures for handling large leaks and spills was completed in Permit Year 2. A Calcium Chloride Use and Inspection Plan has been developed for operations at the Town Yard, including inspecting the calcium chloride tanks and calibrating truck-mounted spreaders. The liquid calcium chloride dispensing system was completely redesigned in 2016 to improve efficiency and safety, and a covered shed was installed for distribution of a sand/salt mix to residents as noted under BMP 6W.	Continue with the current inspection and maintenance program consistent with previous years.
Revised					
6M	Implement BMPs at the Ledge Road Landfill	Department of Public Works	Complete landfill cap.	A Comprehensive Site Assessment (CSA) and semi-annual groundwater & air sampling was performed during Permit Year 6, and an additional risk study as requested by MassDEP was completed. Voters approved a \$7.34M construction bond during Permit Year 6. During Permit Year 14, Andover has been in the final design phase of the landfill cap in conjunction with CDM Smith and MassDEP.	Complete final design during Permit Year 15, with cap construction expected to begin in Spring 2018.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
6N	Provide Additional Slope Stabilization at the Snow Dump and Storage Location	Department of Public Works/Engineering Dept. and Highway Division	As-built sketches or plans and photos.	Slope stabilization at the snow dump location was completed during Permit Year 1.	No additional work is needed.
6O	Ensure Compliance for Floor Drains and Vehicle Washing Activities at the West Fire Station	Plant and Facilities Dept. and Fire Dept.	Sketches or inspection memos. Record of memo.	Continued washing vehicles indoors to prevent discharges to the Town's MS4. Floor drains are periodically inspected and personnel observed to ensure compliance.	Continue to prohibit outdoor vehicle washing and wash vehicles indoors.
Revised					
6P	Ensure Compliance for Floor Drains and Vehicle Washing Activities at the Ballardvale Fire Station	Plant and Facilities Dept. and Fire Dept.	Sketches or inspection memos. Record of memo.	Continued washing vehicles indoors to prevent discharges to the Town's MS4. Floor drains are periodically inspected and personnel observed to ensure compliance.	Continue to prohibit outdoor vehicle washing and wash vehicles indoors.
Revised					
6Q	Wash Vehicles at the Approved Vehicle Wash Area at the Police Station (Public Safety Building)	Plant and Facilities Dept. and Police Dept.	Record of memo.	Continued washing vehicles at approved wash areas. Outdoor vehicle washing is prohibited. Floor drains are periodically inspected and personnel observed to ensure compliance.	Continue to wash all vehicles indoors at approved vehicle wash areas.
Revised					
6R	Prohibit Vehicle Washing at the Cemetery Buildings	Plant and Facilities Dept. and Fire Dept.	Record of memo.	Municipal Services staffs are now working together to wash vehicles at the Town Yard, which drains into the sanitary sewer.	Continue washing vehicles at approved sites.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
6S	Rinse Marking Paint Buckets to the Sanitary Sewer System at the Park Shop	Plant and Facilities Dept. and School Dept.	Record of memo.	Continued rinsing all marking paint buckets to the sanitary sewer system.	Continue rinsing all marking paint buckets to the sanitary sewer system.
Revised					
6T	Ensure Compliance with SPCC Plans for the West, Shawsheen, and Bancroft Elementary Schools	Plant and Facilities Dept. and School Dept.	Record of inspections and activities in accordance with the plan.	Continued inspecting facilities in accordance with the SPCC Plans. During Permit 14 the Bancroft, West Elementary and Shawsheen facilities were inspected.	Continue inspecting facilities in accordance with the SPCC Plans. Update SPCC plans as required under applicable regulations.
Revised					
6U	Use IPM Program for Application of Pesticides in Town	Plant and Facilities Dept.	Copy of “Chapter 85 of the Acts of 2000”.	Continued to implement and fine tune an Integrated Pest Management (IPM) Program to minimize the amount of pesticides (herbicides and insecticides) and fertilizers on Town-owned lands in order to comply with the Massachusetts Pesticide Control Act and the Children Protection Act 2000/Executive Order 2003 (an act protecting children and families from harmful pesticides).	Continue Integrated Pest Management (IPM) Program. Survey the mosquito population to identify potential virus outbreaks of West Nile or Eastern Equine Encephalitis. If a virus outbreak is threatening, the Town will spray for adult mosquitoes.
Revised					
6V	Use Licensed Applicators for Fertilizers and Pesticides in Town	Plant and Facilities Dept.	Record quantities of fertilizers and pesticides purchased annually.	Continued to use licensed applicators to apply chemicals such as fertilizers and pesticides that require a license to ensure the safety of the public and environment in Town.	Continue to use licensed applicators to apply fertilizers and pesticides in Town.
Revised					

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
6W	Store Road Salt Under Cover and Clean Loading Area	Department of Public Works/Highway Division	Minimize stormwater contact with salt.	Stored all road salt materials under cover at the DPW Facilities Plant and Yard and cleaned loading area on a regular basis. Additionally, a new open front shed was purchased during Permit Year 14 to contain a sand and salt mix available for Town residents as noted under BMP 6L.	Continue to store all road salt materials under cover at the DPW Facilities Plant and Yard and clean loading area on a regular basis.
Revised					
6X	Use Low Salt Applications at Designated Areas	Department of Public Works/Highway Division	Use less salt within the Haggetts Pond watershed, as demonstrated with application rate.	Deicing practices modified during Permit Year 6 to reduce salt application within Fish Brook and Haggetts Pond watershed were continued. Low salt applications are performed when able within the watershed. Additionally, MassDOT has incorporated sodium reduction policies throughout its operations area in Andover, including use of speed controllers on the spinners and the use of wetting agents to improve the efficiency of the treatment.	Continue to use low salt applications in the Fish Brook and Haggetts Pond watershed for water supply protection.
Revised					
6Y	Ensure Proper Waste Disposal in Town for Hazardous and Special Wastes	Department of Public Works and Consultant	Document quantity of wastes collected annually.	Hazardous household wastes (HHW) and electronics waste were collected at annual drop-off events. Two HHW collection events were held during Permit Year 14, taking place on May 21, 2016 and September 24, 2016 at West Elementary School. Two additional collections for other waste, including cathode ray tubes, batteries, and electronics took place on June 4, 2016 and November 19, 2016. All events were advertised on the Town website and in flyers made available.	Continue to ensure proper waste disposal in Town for hazardous and special wastes as conducted in the past. A HHW event is currently scheduled for May 2017, and an event for disposal of cathode ray tubes, batteries, and electronic equipment is scheduled for June 2017 at West Elementary School. Recycling, reuse, and waste programs are always being adjusted to improve participation and results
Revised					

(continued on next page)

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
6Y				<i>(continued)</i> Recycling, reuse. A total of approx. 13.25 tons of material were collected for safe disposal. The Town also implemented a new athletic fields recycling program and an enhanced Zero Waste Day in 2016.	
6Z	Ensure Compliance for Snow Disposal in Town	Department of Public Works/Highway Division	Utilize designated snow disposal location.	Continued existing practices for snow disposal activities at the designated snow dump on High St.	Continue existing practices for snow disposal activities in Town to ensure surface water quality protection.
Revised					
6AA	Conduct Town Employee Stormwater Training	Town Manager, Department of Public Works, Plant and Facilities Dept., Police and Fire Dept. and Consultant	Attendance sheet and copy of program.	43 town employees, including representative from schools, cemetery, highway, tree, engineering, water, public works, fire and highway departments attended a stormwater training session held on April 25, 2017. Training focused on stormwater-related topics, such as program background, pollution effects, illicit discharge, and pollution prevention and good housekeeping practices as required under the Phase II permit. Informal training was conducted at applicable work sites. Personnel also attended stormwater management training addressing indoor vehicle washing requirements.	Conduct formal refresher training as in years past. Also conduct informal training at applicable work sites.
Revised					

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

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Term
7A	Develop a Water Quality Strategy for 303d Waters	Town Engineer & Consultant	Summary of pollution prevention efforts, future needs, and responsible parties. Copy of surface water quality strategic plan.	The Town discussed developing a strategy to meet the TMDL considering existing actions under the Phase II stormwater management program and available resources during previous permit years. The next steps for developing a water quality strategy are pending the reissuance of the Phase II Permit. No additional progress occurred during Permit Year 14.	Review the Phase II Permit and begin to develop an implementation strategy to meet the TMDL that considers the goals of the TMDL, available resources, actions currently being undertaken by Andover and actions by others under the MassDEP RIA Permit.
Revised					
7B	Implement BMPs from Water Quality Strategy	Town Engineer, Consultant, & Town Departments (to be determined)	Photographs, logs, and BMP descriptions for completed efforts and water quality improvements.	Progress on this BMP will follow the progress made on BMP 7A.	Progress on this BMP will follow the progress made on BMP 7A.
Revised					

7b. WLA Assessment

A TMDL, No. 2587, was completed for the entire Shawsheen River Basin for pathogens only. The following waterbodies were included in this TMDL and are listed on the 303d list as impaired due to pathogens:

- 1) Unnamed Tributary: segment MA83-15 (8349105); also known as Pinnacle Brook- from a small wetland east of Route 93, Andover to the confluence with Meadow Brook in Tewksbury.
- 2) Unnamed Tributary: segment MA83-20 (8349030); also known as Fosters Brook- from the outlet of Fosters Pond through River Street Pond to the confluence with the Shawsheen River at Lowell Junction Pond in Andover.
- 3) Rogers Brook: segment ID MA83-04; from the Outlet of first unnamed pond to the confluence with the Shawsheen River in Andover.
- 4) Shawsheen River: segment ID MA83-18 (formerly part of segment MA83-02); from the confluence with Spring Brook in Bedford to Central Street in Andover.
- 5) Shawsheen River: segment ID MA83-19 (formerly part of segment MA83-03); from Central Street to the confluence with the Merrimack River in Lawrence.

The TMDL Report set a WLA for fecal coliform standard of 200 organisms/100 mL per outfall. The report also points out that outfalls from Roger's Brook will need an 89.5% reduction in coliform to reach the standard of 200 organisms/100mL at each outfall. To meet these standards the Report suggests the following measures, many of which are already included in Andover's Stormwater Management Plan:

- 1) Implement an illegal connection identification and removal program;
- 2) Collect additional monitoring data to isolate coliform sources;
- 3) Implement more intensive "good housekeeping" practices; and
- 4) Assess water quality in response to implementation activities.

Andover's Phase II program addresses general water quality concerns associated with 303d waters through the implementation of BMPs under the six minimum measures for Phase II. The approach for addressing impaired waters will be updated based on the new permit.

The final 2014 303d list (list of impaired waters) outlines several waterbodies in Andover that are classified as Category 5, meaning waters in need of a TMDL:

1. Brackett Pond: segment ID MA92004; impaired for turbidity
2. Collins Pond: segment ID MA92010; impaired for excess algal growth and turbidity
3. Frye Pond: segment ID MA92023; impaired for excess algal growth
4. Salem Pond: segment ID MA92057; impaired for turbidity
5. Fish Brook: segment ID MA84A-40; impaired for chloride and E. coli

6. Haggetts Pond: segment ID MA84022; impaired for mercury in fish tissue
7. Bellardvale Impoundment: segment ID MA83011; impaired for mercury in fish tissue, aquatic plants (macrophytes) and non-native aquatic plants
8. Fosters Pond: segment ID MA83005; impaired for non-native aquatic plants, mercury in fish tissue and dissolved oxygen
9. Hussey Pond: segment ID MA83009; impaired for excess algal growth
10. Pumps Pond: segment ID MA83014; impaired for mercury in fish tissue and non-native aquatic plants
11. Rabbit Pond: segment ID MA83015; impaired for turbidity
12. Rogers Brook: segment ID MA83-04; impaired for fecal coliform (TMDL prepared), turbidity, and physical substrate habitat alterations
13. Merrimack River: segment ID MA84A-03; impaired for mercury in fish tissue, total phosphorus, E.coli, and PCB in fish tissue.
14. Shawsheen River: segment ID MA83-18; impaired for fecal coliform (TMDL prepared), mercury in fish tissue, and dissolved oxygen
15. Shawsheen River: segment ID MA83-19; impaired for fecal coliform (TMDL prepared) and dissolved oxygen
16. Unnamed Tributary: segment MA83-15; impaired for fecal coliform (TMDL prepared) and chloride
17. Unnamed Tributary: segment MA83-20; impaired for chloride

Once TMDLs are developed for any of the above waterbodies, Section 7 of the annual reports will be updated to reflect changes associated with each TMDL.

Note that under the new permit, Andover is subject to the requirements for approved TMDLs for bacteria or pathogens (multiple waterbodies), and those for water quality limited waterbodies for Total Phosphorus (Merrimack River).

Part IV. Summary of Information Collected and Analyzed

Copies of all educational materials, newspaper articles, and memos distributed have been kept on file. Meeting memos, phone logs, and website hits have also been kept on file. Locations and physical descriptions of approximately 1,083 outfalls have been gathered since Permit Year 1. All outfalls, along with catch basins, manholes, pipes and stormwater BMPs are incorporated into a GIS-based map. To date >99% of the system has been mapped. During outfall inspections, each Town owned outfall was inspected for potential dry weather flows. 11 illicit discharges have been detected since Permit Year 1. Detailed records of all illicit discharges and follow-up actions are maintained by the DPW. BMP inspections and maintenance activities are tracked and documented.

Part V. Program Outputs & Accomplishments (OPTIONAL)

Programmatic

Stormwater management position created/staffed	(y/n)	No
Annual program budget/expenditures	(\$)	

Education, Involvement, and Training

Estimated number of residents reached by education program(s)	(# or %)	95%
Stormwater management committee established	(y/n)	
Stream teams established or supported	(# or y/n)	
Shoreline clean-up participation or quantity of shoreline miles cleaned	(y/n or mi.)	
Household Hazardous Waste Collection Days (including collection events for cathode ray tubes (CRTs), batteries, and electronic equipment)		
▪ days sponsored	(#)	4
▪ community participation	(%)	
▪ material collected	(tons or gal)	13.25 tons
School curricula implemented	(y/n)	yes

Legal/Regulatory

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

Mapping and Illicit Discharges

Outfall mapping complete	(%)	>99%
Estimated or actual number of outfalls	(#)	1,083
System-Wide mapping complete	(%)	>99%
Mapping method(s)		
▪ Paper/Mylar	(%)	
▪ CADD	(%)	
▪ GIS	(%)	
Outfalls inspected/screened	(# or %)	1,083
Illicit discharges identified	(#)	11 since Permit Year 1
Illicit connections removed	(#) (est. gpd)	11 since Permit Year 1
% of population on sewer	(%)	55%
% of population on septic systems	(%)	45%

Construction

Number of construction starts (>1-acre)	(#)	
Estimated percentage of construction starts adequately regulated for erosion and sediment control	(%)	
Site inspections completed	(# or %)	
Tickets/Stop work orders issued	(# or %)	
Fines collected	(# and \$)	
Complaints/concerns received from public	(#)	

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	
Site inspections completed	(# or %)	
Estimated volume of stormwater recharged	(gpy)	

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	(times/yr)	Once/ 2 years
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(times/yr)	Once/ 2 years

Total number of structures cleaned	(#)	1,223
Storm drain cleaned	(lf or mi.)	
Qty. of screenings/debris removed from storm sewer infrastructure	(lbs. or tons)	
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)		
Cost of screenings disposal	(\$)	

Average frequency of street sweeping (non-commercial/non-arterial streets)	(times/yr)	1/year
Average frequency of street sweeping (commercial/arterial or other critical streets)	(times/yr)	1/year
Qty. of sand/debris collected by sweeping	(lbs. or tons)	
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	(location)	
Cost of sweepings disposal	(\$)	
Vacuum street sweepers purchased/leased	(#)	
Vacuum street sweepers specified in contracts	(y/n)	

Reduction in application on public land of: (“N/A” = never used; “100%” = elimination)		
▪ Fertilizers	(lbs. or %)	
▪ Herbicides	(lbs. or %)	
▪ Pesticides	(lbs. or %)	

Anti-/De-Icing products and ratios	% NaCl % CaCl ₂ % MgCl ₂ % CMA % Kac % KCl % Sand	
Pre-wetting techniques utilized	(y/n)	
Manual control spreaders used	(y/n)	
Automatic or Zero-velocity spreaders used	(y/n)	
Estimated net reduction in typical year salt application	(lbs. or %)	
Salt pile(s) covered in storage shed(s)	(y/n)	Yes
Storage shed(s) in design or under construction	(y/n)	No