Municipality/Organization: **MassDOT - Highway Division**

EPA NPDES Permit Number: **MA043025**

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Annual Report Number & Reporting Period: **No. 14: April 2016-March 2017**

NPDES Phase II Small MS4 General Permit Annual Report

Part I. General Information

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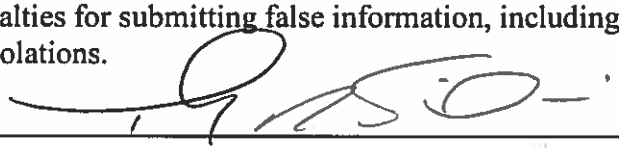
Certification:

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: Thomas J. Tinlin

Title: Administrator – MassDOT, Highway Division

Date: 05/01/2017

Part II. Self-Assessment

The Massachusetts Department of Transportation – Highway Division (MassDOT) has completed the required self-assessment and has determined itself to be in full compliance with the conditions of the Massachusetts MS4 permit, pursuant to the United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems. MassDOT has spent significant time, effort and funds focusing on the potential impacts of stormwater from its roads and properties this year. MassDOT has advanced its stormwater program in Permit Year 14 through implementation of the Impaired Waters Program (IWP), educating its staff, conducting public outreach at numerous seminars, and continuing a pilot stormwater inspection program.

The MassDOT Environmental Services Stormwater Unit continues to consist of three environmental scientists who focus on stormwater management across the Commonwealth. The Stormwater Unit reviews the proposed drainage/stormwater management system improvements for all programmed (planned) projects, identifies programmed projects that would benefit from the implementation of structural stormwater BMPs, ensures effective BMPs are designed, and implements the IWP. Additionally, the Stormwater Unit works to expand its BMP and drainage inventory, and promote inspection and maintenance practices. In Permit Year 14, the Stormwater Unit hired one summer intern and three co-ops (a six-month internship program) which increased the overall capabilities of the Unit.

MassDOT, with consultant support, has continued to implement the IWP to address discharges of highway runoff to impaired waters as part of its compliance with the MS4 general permit, and has completed a significant number of water quality treatment projects. MassDOT's IWP includes two components: the Retrofit Initiative and the Programmed Projects Initiative. Through the Retrofit Initiative, MassDOT identifies locations that warrant adding after-the-fact stormwater Best Management Practices (BMPs) along existing roadways; and through the Programmed Projects Initiative, MassDOT incorporates stormwater BMPs into programmed highway projects. The latter project types have the advantage of being more holistically integrated into highway drainage systems, which often provides more effective stormwater management.

MassHighway's 2010 IWP commitment to the court and EPA regarding IWP assessments of impaired waters potentially receiving MassDOT stormwater runoff was fulfilled in Permit Year 13, therefore it was not necessary for MassDOT to complete additional assessments during Permit Year 14. Overall, 826 water bodies were assessed, 142 more than the 684 required under the EPA Enforcement Order. These additional assessments illustrate MassDOT's commitment to manage and treat runoff from its highways as the opportunities arise.

This year, MassDOT employed six consultant firms to perform site assessments to determine if retrofit BMPs were warranted. There are currently 46 stormwater BMP retrofit projects in various stages of design. These projects include the design of a broad range of vegetated and subsurface stormwater infiltration BMPs. BMPs included in final designs this year are estimated to remove 126 acres of effective impervious cover and 185 lbs/yr of phosphorus from the watersheds. 32 projects are currently under construction and 49 have been completed since the program began in 2010. A summary of the IWP is included in BMPs 7R and 7U, along with Appendix D of this report.

In order to alert designers working on projects that potentially impact impaired waters, and to capture information regarding stormwater improvements incorporated into highway designs, MassDOT developed a water quality data form (WQDF) which is submitted by design consultants at the 25% and 75% design stages.

According to the 25% forms submitted in Permit Year 14, MassDOT proposed projects would discharge to 44 receiving water body segments. Of these segments, 35 had water quality impairments, 19 of which specifically had a final Total Maximum Daily Load (TMDL) report, and 27 segments were in a watershed covered by a TMDL. The 75% forms documented a total of 64 stormwater BMPs (existing and proposed) and at least 1,072 proposed deep sump catch basins. Additionally, sensitive site design elements for these projects were documented and included measures such as preserving existing vegetation, natural drainage patterns, and riparian buffers; minimizing disturbance to wetland resource areas; promoting sheet flow to vegetated areas; and reducing existing impervious cover. Information collected in WQDFs during Permit Year 14 is included in Appendix E.

MassDOT has found that alerting designers early on about impaired waters is an effective way to make sure they include the appropriate stormwater features to address the impairment. In addition, by capturing BMP design information at the 75% design stage, MassDOT can readily build its database of stormwater BMPs which has a variety of applications (e.g., asset management). MassDOT is updating the WQDF to be released in Permit Year 15. This update will include a BMP pollutant estimator tool and allow MassDOT to track pollutant removal and effective IC reduction from each BMP proposed.

MassDOT has developed the IWP geospatial database to track the many structural BMPs being designed and constructed by its design consultants as well as the status of water body assessments. As the assessment portion of the IWP has been fulfilled, BMP data has been transferred to MassDOT's Stormwater Asset Database. In addition to BMPs, this database includes information on stormwater discharge points, inlets, manholes, and pipes. WQDF information (e.g., stormwater BMPs) is used to populate the Stormwater Asset Database.

The Stormwater Asset Database is an integral part of MassDOT's Asset Management Initiative to collect location and condition data on all assets statewide. During Permit Year 14, all structures along MassDOT roadways (inlets and manholes) were collected using LiDAR and high quality imagery as part of MassDOT's Asset Management Initiative.

Compiling stormwater BMP and drainage infrastructure information in the Stormwater Asset Database will allow for streamlined tracking and maintenance of BMPs moving forward. Inspection forms were developed and piloted for inlets, outlets, and BMPs. The Stormwater Asset Database will be used by field personnel to report on condition and maintenance activities performed moving forward.

MassDOT conducted a robust training and outreach effort in Permit Year 14 including presentations on MassDOT's stormwater program at various conferences, participation in national research studies and workshops, and internal staff training. MassDOT's stormwater program continues to be at the cutting edge of stormwater management for regional state DOTs, and presentations from MassDOT are sought out by conference organizers in the area.

MassDOT continues to follow up on potential illicit connections identified along its drainage systems

while working on a more targeted and efficient Illicit Discharge Detection and Elimination (IDDE) program as the isolated and controlled nature of MassDOT's roadway network results in few illicit connections. MassDOT is working to prioritize its IDDE efforts by focusing on watersheds that are more environmentally sensitive and/ or where pathogens are identified as an issue. Several steps have been taken to develop this prioritization, and more information is included in BMP 3D (pg. 21).

MassDOT continued the review of Appendix A (IDDE Status Permit) and Appendix B (Status of Drainage Tie-In Permits) tables that have been submitted in previous Annual Reports. This included revising the tables, including more specific information on the Property Owner and Action Items. Additionally, this critical review included contacting each District to determine if any of the drainage tie-ins were permitted; and therefore could be removed from the IDDE tables.

The Drainage Tie-In Standard Operating Procedure (SOP), issued in 2012, has been utilized this past year to regulate property owners with existing or proposed drainage conveyances tied into MassDOT's system. This mechanism has advanced the objectives of the IDDE program by identifying unauthorized pipe outfalls (e.g., from basement sump pumps) that otherwise would not be detected by using dry-weather flow inspections. When MassDOT identifies such a stormwater connection into MassDOT's drainage system, the respective property owner is contacted with a Notice of Violation (NOV) letter informing them that they can either apply for a Tie-in Permit or remove their connection. A generic NOV letter is included in Appendix C.

MassDOT continues to promote pollution prevention and good housekeeping initiatives. Over 60,000 bags of litter were collected along MassDOT roadways during Permit Year 14. Salt material usage, anti-icing equipment upgrades, and training for snow and ice contractors continued to be a focus for MassDOT with the objective of reducing the amount of deicing materials used and effective storage of materials.

MassDOT additionally advanced their updated Stormwater Handbook during Permit Year 14. The Handbook has been significantly revised to ensure MassDOT projects comply with federal and state regulations, as well as MassDOT policies. Major updates include discussion on the Impaired Waters Program and WQDF, revamped BMP typical designs, guidance, and pollutant credits, a focus on BMP selection and low impact development, and a section on BMP inspection and maintenance. MassDOT plans to complete internal review and begin the process of MassDEP ratification during Permit Year 15.

Part III. Summary of Minimum Control Measures

The BMPs included in MassDOT's Stormwater Management Plan (SWMP) are summarized in each of the Minimum Control Measure sections below.

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
1A **Revised**	MassDOT Training Assistance Program (MTAP)	MTAP	Facilitate one training program related to stormwater and /or snow and ice control as a means of reducing source pollution. Document attendance numbers.	Because this training is for MassDOT staff and contractors, this BMP is reported under 6B-1 (Pollution Prevention/Good Housekeeping).	BMP Revised.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
1B	Baystate Roads	Baystate Roads	Provide one training program for MassDOT employees and one for municipal DPW snowplow drivers related to snow and ice control as a means of reducing source pollution. Document attendance numbers.	Approximately 26 classes were held throughout the permit year providing training on snow and ice operations and source pollution reduction. Attendees included municipal DPW snowplow drivers and there were approximately 1,600 attendees in total. Topics covered included: • Current vendor contract • Anti-icing • Department operations • Salt and environmental considerations • Drainage systems. Additionally, 77 trainings on various topics were provided by Baystate Roads, which is partially funded by MassDOT. The trainings included the following and a total of 3,179 people attended. A full list of trainings is included in Appendix M. • Proposals for Cleaner Water: A Grant Writing Workshop • Complete Streets 101 – Benefits, Eligibility & Funding • Advanced Complete Streets 201 • Principles of Drainage • 2017 Innovation & Tech Transfer Exchange • Snow & Ice Operations • 2016 Moving Together Conference • Gravel Roads: When the Dust Settles • Creating Revenue Stream for Stormwater Management • Pavement Management Boot Camp • Trenching & Excavating Safety: Competent Person	Provide one training program for municipal DPW snowplow drivers related to snow and ice control as a means of reducing source pollution. Document attendance numbers.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
IC-1	MassDOT Web Site	IT/Environmental	Add Environmental Section web page to web site.	Measurable goal completed in Permit Year 1. The MassDOT Environmental Section website was updated and reorganized in the summer of 2014. The updated website is easier to use and more streamlined.	Measurable goal complete. Continue to update the website with the most updated information. MassDOT will be working with the State of Massachusetts to update the state-wide website. This will allow an opportunity to refresh the stormwater information made available to the public.
1C-2	MassDOT Web Site	IT/ Environmental	Include link for contacting Highway Department via email. Review emails and direct to appropriate department.	The MassDOT web site includes a link for contacting the Highway Division via email. Emails received are reviewed and directed to the appropriate department.	Measurable goal complete.
1C-3	MassDOT Web Site	IT/ Environmental	Evaluate web page annually and revise as necessary.	Stormwater Program Webpage – MassDOT updated the stormwater program webpage in Summer 2014 to allow the public to access all related information on the MassDOT stormwater program. The Environmental web page was reviewed and updated. Annual Report 13 was added this year. The WQDF Web Mao was updated in Permit Year 15 and posted to MassDOT's website.	Update the stormwater program webpage as necessary to reflect the current status and most recent documents. Add the PY14 Annual Report. Continue to post updates to the Water Quality Data Form and the WQDF Web Map. Make stormwater assets (e.g., catch basins) available as appropriate.
1D-1 **Removed**	Storm Water Training Workshop	Environmental/ MTAP	Conduct training for MassDOT personnel every two years. Summarize date of meeting, topics covered, and #of attendees in annual report. Also include # of Snow& Ice training classes, and # of "tailgate" meetings.	This BMP is duplicative since stormwater training is addressed through the BMP 1A program above. The BMP 1D-1 is replaced by the additional commitments made in BMP 1A in the January 2008 SWMP.	BMP Removed
1D-2 **Removed**	Storm Water Training Workshop	Environmental/ Baystate Roads	Conduct stormwater training workshop for municipal DPW personnel every two years. Summarize training programs similarly to above.	This BMP is duplicative since stormwater training is addressed through the BMP 1B program above. The BMP 1D-2 is replaced by the additional commitments made in BMP 1B in the January 2008 SWMP.	BMP Removed

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
1E	Educational Seminars for CIM members	Construction Section	Provide educational seminars for CIM members on CGP Permit coverage and environmental compliance in Permit Year 1.	Measurable goal complete in Permit Year 1.	Measurable goal complete.
1F **Removed**	MassDOT/ Municipal Tie-In Review Process	Environmental/ Districts	Develop communication mechanism re: MassDOT drainage that discharges to a local MS4. Develop review process for addressing those concerns. Notify other MS4s of process.	BMP Revised – see 1F below	BMP Revised
1F **Revised**	Post Contact Names for Municipal Drainage Concerns on MassDOT Web Site	Environmental/ Districts/ GIS	1) Distribute a flyer with contact names to municipalities during May 2007 Baystate Roads NPDES Phase II General Permit seminar. 2) Post DHD contact name for each district on website for municipalities to contact and maintain link. 3) GIS group will develop a program to provide easy to use access and allow the public to identify a selected area and review the MassDOT owned roads and outfalls. MassDOT will then review alternatives for alerting towns and the public to the availability of this information.	1) Completed in Year 5. 2) DHD contact names continue to be updated on the web site. Go to http://www.massdot.state.ma.us/highway/AbouttheDistricts.aspx 3) MassDOT developed a new Open Data portal where various data sets are available for view and download by the public. MassDOT has posted the drainage outfall inventory on this web site at this location: http://geo-massdot.opendata.arcgis.com/datasets/drainage-outfalls	1) Completed in Year 5. 2) Continue to maintain contact names. 3) Share drainage inventory information as requested. MassDOT will post additional drainage data, such as inlet data, as they are available.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
1G	River and Stream Signs	Traffic Operations	Maintain signs identifying rivers and streams crossed by MassDOT roads, until crossing of all named rivers and streams are signposted.	MassDOT installed 21 signs identifying river and stream crossings. The locations were identified by the MassRiverways Program and installed by MassDOT personnel. Eight signs were installed along I-90 to identify the Williams River, Housatonic River, Westfield River, Connecticut River, Chicopee River, Quabog River, Sudbury River, and Charles River. 13 signs were installed along I-495 to identify the Snake River, Canoe River, Mine Brook (two crossings), Charles River (two crossings), Assabet River, Hog Brook, Rumford River, Trull Brook, Fish Brook, and the Merrimack River (two crossings).	MassDOT will continue to install signs in areas identified by MassRiverways Program.
1H	Anti-litter/ Dumping Messages on Variable Message Boards	Operations	Maintain anti-litter message in the message mix on permanent Variable Message Boards (VMBs).	Messages on permanent Variable Message Boards are restricted to traffic and safety issues. MassDOT has developed a working group to address public safety and has identified roadside litter as a potential safety issue. April 18-22nd (the week of Earth Day), MassDOT posted the following message on VMBs statewide: Keep Mass Clean - Please Don't Littah	Post anti-litter message on VMBs during the weekend of Earth Day (April 21-24th) and additional days as conditions allow. The anti-litter message has been updated to: Don't Trash Mass! – Please Don't Litter!
1I **Removed**	Anti-litter/ Dumping Literature at Visitors Centers	Operations	Work with EOEEA's Think Blue Campaign to identify appropriate brochures for use in Visitor's Centers. Distribute literature to appropriate visitor centers and track number of brochures distributed annually.	It was determined in Permit Year 7, that the Think Blue Campaign was not the right program for providing stormwater literature to the public. The BMP was revised – see 1I below.	BMP Revised.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
1I **Revised**	Highway Stewardship Literature	Operations / Environmental	Educate the public on the Impaired Waters Program, proper stormwater management, and other environmental stewardship measures.	MassDOT presented various aspects of the MassDOT Stormwater Program at many conferences throughout the year. Notably, MassDOT presented on various topics at the International LID Conference on August 29-31 2017 and on the construction of BMPs at the MassDOT Innovation Exchange conference on March 7, 2017 to an audience of over 100 people including MassDOT staff, consultants, neighboring state DOTs, and the public. Stormwater Program Webpage – MassDOT updated the stormwater program webpage in Summer 2014 to allow the public to access all related information on the MassDOT stormwater program.	The stormwater program webpage will be updated to reflect the current status and most recent documents. Continue to inform others about the Impaired Waters Program through public outreach.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
1J	New England DOT Meetings	Environmental	Coordinate with New England DOTs to discuss on-going issues and programs being faced by the DOTs including wetland mitigation, stormwater, and erosion controls.	MassDOT communicated with other DOTs when the need developed. Specifically, MassDOT has coordinated with representative from Connecticut DOT, Rhode Island DOT, and New York State DOT this permit year. These DOTs have reached out to MassDOT as they are working with regulators to develop permit conditions to learn more about MassDOT's program and to share best practices. As of November 2014, a member MassDOT's Stormwater Unit is participating in an NCHRP 3-year research study titled the "Limitations of the Infiltration Approach to Stormwater Management in the Highway Environment." The objective of the research is to develop guidance for the state DOTs to determine appropriate siting of stormwater infiltration BMPs based on the limitations, risks, and benefits in the context of the built and natural environments. The study is taking place from August 10, 2015 to February 10, 2018 and has $500,000 in funding. In June 2015, a member of MassDOT's Stormwater Unit joined an NCHRP research panel on how to design an effective stormwater monitoring program that is proportionate and appropriate for any state DOT. The study will identify minimum stormwater monitoring goals and objectives that provide information for state DOTs to develop, implement, and improve their stormwater management programs. The estimated study is end date is Fall 2017 and has $125,000 in funding. In September 2015, a member of MassDOT's Stormwater Unit joined an NCHRP research panel to evaluate the effectiveness and cost of using granulated ferric oxide media in removing dissolved metals from stormwater runoff. The study period is ending April 2019 and has $400,000 in funding.	MassDOT will continue to communicate with other DOTs as the need develops and opportunities become available. MassDOT will continue to participate in NCHRP research panels for the duration of the studies.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
1J (Cont'd)				Additionally, in October 2015, a member of MassDOT's Stormwater Unit joined an NCHRP research panel to develop guidance for DOTs on complying with TMDLs. The study period is two years and has $200,000 in funding. MassDOT also attended and presented at various conferences which included audience members from neighboring state DOTs. These conferences included International Low Impact Development Conference, the Massachusetts Association of Conservation Commissions annual meeting, and the MassDOT Innovation Exchange conference.	
1K	Storm Water Coordinator	Environmental	Fund a full-time stormwater coordinator position each year.	The Environmental Section stormwater staff, consisting of three environmental scientists, continues to coordinate compliance with the NPDES MS4 stormwater program across the Commonwealth. They have completed many tasks under these roles throughout the year. Stormwater staff members also continue to coordinate the Impaired Waters Program implementation. They work with consultants to select appropriate stormwater BMPS as part of the Retrofit Initiative and Programmed Project Initiative. During Permit Year 14, MassDOT employed one summer intern who assisted with enhancing MassDOT's stormwater BMP inspection program and reviewing stormwater designs. Additionally, MassDOT's Stormwater Unit hired three co-ops for 6-month periods, one from July to December 2016 and two from January to June 2017 to assist with general stormwater program implementation.	Continue to fund a stormwater unit supervisor, a stormwater analyst, and an Impaired Waters Program coordinator. Hire two co-ops for the fall semester and in the spring, as funding allows, to provide stormwater related assistance.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
Addn.	Environmental Site Data Form	Environmental	Develop an environmental site data form for review by designers with Environmental staff at 25% design. Implement on all projects.	The Water Quality Data Form (WQDF) is being used for submittal at 25% design and 75% design stage to MassDOT by internal designers and consultants. This year, MassDOT has received 78 water quality data forms; 37 at the 25% design phase and 42 forms at the 75% design phase. Of the 25% forms, 44 receiving waterbodies were identified, 35 affected an impaired water body of which 19 had a specific final TMDL, and 27 were in a watershed covered by a TMDL. The 75% forms documented a total of 64 stormwater BMPs (existing and proposed) and at least 1,072 proposed deep sump catch basins. Additionally, site sensitive design measures for these projects were documented. Appendix E provides more information on data collected through the WQDFs in Permit Year 14.	MassDOT designers and consultants will continue to submit the forms at 25% and 75% Design Submittals. Continue to update MassDOT database to accurately track BMP design and pollutant reduction data. Continue to educate designers on how to accurately and comprehensively complete the WQDF. Issue updated WQDF which allows for pollutant load reduction information to be calculated and uploaded into MassDOT's Stormwater Asset Database. Post new form and conduct training sessions on new WQDF.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
Addn.	Stormwater Related Presentations	Environmental		MassDOT stormwater staff delivers educational stormwater presentations to interested groups throughout the year. On May 25, 2016, MassDOT's Administrator Thomas Tinlin spoke on a panel focused on the importance of Green Infrastructure to an audience of industry professionals. MassDOT presented to the North and South Rivers Watershed Association (NSRWA), including many town representative within the watershed, on June 17, 2016 on the Impaired Waters Program and how to improve coordination. MassDOT presented at the International Low Impact Development conference in Portland, Maine on August 29-31 on MassDOT's Stormwater Program at four separate sessions. MassDOT presented to the Mystic River Watershed Initiative Steering Committee on October 13, 2016 on the Impaired Waters Program and upcoming work in the watershed. On October 27, 2016, MassDOT presented to River Herring Network Meeting on ways to improve stormwater runoff for River Herring. On March 4, 2017, MassDOT presented at the Massachusetts Association of Conservation Commissions (MACC) annual conference on stormwater BMPs appropriate for areas in the watershed of a cold-water fishery. MassDOT presented updates to the Stormwater Program and BMP construction lessons learned at the MassDOT Innovation Exchange conference on March 7, 2017 to an audience of MassDOT staff, consultants, municipal officials, neighboring state DOTs, and the public.	Continue to present relevant topics at conferences. MassDOT will present to the Connecticut River Cleanup Committee on June 6, 2017. MassDOT will conduct trainings on the updated Water Quality Data Form and on the updated MassDOT Stormwater Handbook once it is ratified and made available.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
Addn.	TRB NCHRP Committee(s)	Environmental		As of November 2014, a member MassDOT's Stormwater Unit is participating in an NCHRP three-year research study titled the "Limitations of the Infiltration Approach to Stormwater Management in the Highway Environment." The objective of the research is to develop guidance for the state DOTs to determine appropriate siting of stormwater infiltration BMPs based on the limitations, risks, and benefits in the context of the built and natural environments. The study period duration is from August 10, 2015 to February 10, 2018 and has $500,000 in funding. In June 2015, a member of MassDOT's Stormwater Unit joined an NCHRP research panel on how to design an effective stormwater monitoring program that is proportionate and appropriate for any state DOT. The study will identify minimum stormwater monitoring goals and objectives that provide information for state DOTs to develop, implement, and improve their stormwater management programs. The study period is end is estimated to be Fall 2017and has $125,000 in funding. In September 2015, a member of MassDOT's Stormwater Unit joined an NCHRP research panel to evaluate the effectiveness and cost of using granulated ferric oxide media in removing dissolved metals from stormwater runoff. The study period is ending April 2019 and has $400,000 in funding. Additionally, in October 2015, a member of MassDOT's Stormwater Unit joined an NCHRP research panel to develop guidance for DOTs on complying with TMDLs. The study period is two years and has $200,000 in funding.	Continue participation in NCHRP study panels.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
Addn.	USGS Phosphorus Study	Environmental		The objective of the study (to be performed by USGS) is to assess the concentrations of P present in and loading from stormwater runoff coming from bridges in the Lower Charles River Basin. It is postulated that the lack of shoulder soils next to bridges leads to less P loading from runoff. The operation of the three bridge-deck monitoring stations on Route 2A in Boston, Interstate 90 in Weston, and Route 20 in Quinsigamond continued through September 2016. In total, over 50 composite samples of bridge-deck runoff were collected at each station from August 2014 through September 2016. These samples were analyzed for concentrations of total phosphorus, total nitrogen, particulate carbon, loss on ignition, and suspended sediment, including particle size distributions. Sensitive monitoring equipment was removed from each station in the fall of 2016. All data including continuous records of flow and precipitation, sample concentration, and quality-control data were reviewed and approved by USGS.	Prepare final report characterizing total nutrients and suspended sediment concentrations in stormwater runoff from each bridge location.
Addn.	MassDOT Blog Posts	Environmental	Post information on MassDOT's Stormwater Program on the MassDOT blog to update the public.	No blogs were posted related to stormwater management during Permit Year 14.	Continue to identify projects or activities to post on MassDOT's blog to update the public on water quality improvement efforts. MassDOT will post to the blog regarding environmental improvements related to the All Electronic Tolling project, which included removal of 20 acres of impervious cover. Additionally, a press release will be developed to highlight MassDOT's Stormwater Program.

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
2A	Project Related Public Notification and Public Participation Requirements	Environmental	Continue compliance with federal and state public notification and public participation requirements including but not limited to Wetlands Protection Act, Clean Water Act 401 Water Quality Certification, Army Corps of Engineers 404 Permit, and MEPA/NEPA.	MassDOT continues to comply with federal and state public notification and public participation requirements. MassDOT conducted 117 design public hearings and public information meetings in this permit year. See Appendix F for a full list of meetings. This does not include the numerous public participation meetings held for various permit processes throughout the year.	MassDOT will continue to comply with federal and state public notification and public participation requirements.
2B	Adopt-a-Highway	Adopt-a-Highway	Continue to support program.	MassDOT maintained, repaired, and replaced program signs as needed. 750 lane miles are covered by the Adopt-a-Highway and Sponsor-a-Highway programs.	MassDOT will continue to support and promote this program.
2C **Removed**	511 Massachusetts Traveler Information System	Operations	Maintain 511 System.	Revised – see 2C below	BMP Removed.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
2C **Revised**	Call-In Numbers for Roadway Debris	Operations	Maintain Call-In Numbers for Roadway Debris	Each District and Headquarters has a general call-in number for the public to use to alert MassDOT of roadway debris. If Headquarter receives the call, then the information is forwarded to the appropriate District. The information is then forwarded to the Maintenance Department Foreman, who coordinates with the workers to alleviate the situation. Contact information can be found here: http://www.massdot.state.ma.us/ContactUs.aspx Call-in numbers are listed below. • *Headquarters: (857) 368-4636* • *District 1: (413)-637-5700* • *District 2: (413) 582-0599* • *District 3: (508) 929-3800* • *District 4: (781) 641-8300* • *District 5: (508) 824-6633* • *District 6: (857) 368-6100* MassDOT provides Highway Assistance Patrol (HAP), an emergency roadway assistance service, along the most highly traveled roadways in Massachusetts. HAP patrols 982,000 miles annually and removes roadway debris when encountered, in addition to other services.	Maintain call-in numbers and providing active responses.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
2D-1	MassDOT Web Site	IT/ Environmental	Post Storm Water Management Plan (SWMP) to web site.	The most recent SWMP submitted to EPA (December 2009) is posted on MassDOT's web site.	EPA has indicated that MassDOT will receive an individual Transportation specific permit (TS4) and is not included as a permittee in the 2016 MA general permit. MassDOT will continue to be covered by the 2003 MS4 permit until EPA issues a MassDOT TS4 permit. MassDOT will prepare a revised SWMP as part of the TS4 permit compliance, which will be posted on the website once complete.
2D-2	MassDOT Web Site	IT/ Environmental	Post annual reports to the web site.	Annual Reports for Permit Year 1-13 are posted on the Environmental Section's web page.	Permit Year 14's Annual Report will be posted to the Environmental Section web page for public access within 30 days of submittal to EPA and DEP.
2E	Complete AASHTO's Center for Environmental Excellence on "Strategies & Approaches to Complying with NPDES Phase II Survey"	Environmental	Complete survey.	Completed survey in Permit Year 3.	Measurable goal complete.
Addn.	Participate in local cleanup days	Districts	Assist with local cleanup efforts, as appropriate.	On Saturday October 15th, 2016 District 4 Area A assisted the Tewksbury Beautification Committee as they cleaned portions of Route 38 in Tewksbury. Over 50 residents joined the cleanup day and a hundred bags of trash were removed from the roadway.	No action required.

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
3A-1	Rest Area Leases	Environmental/ Right-of-Way	Include drainage system submittal requirements in all new rest area leases where the site is to be redeveloped. Summarize in annual reports.	Submission of drainage information is a standard condition on all new rest area leases.	Measurable goal complete.
3A -2	Rest Area Leases	Environmental/Right-of-Way	Summarize new rest area leases issued each year in the annual report.	No new rest area leases were issued during Permit Year 13.	Any new rest area leases will be summarized in the Annual Report. See MCM 5 for more information on future I-90 leases (pg. 34)
3B-1	Drainage Inventory	Environmental/ Construction/ Planning/ IT Section	Develop and implement specification for securing drainage information from future construction and redevelopment projects.	As part of the Impaired Waters Program Retrofit Initiative, MassDOT consultants have continued to improve upon MassDOT's drainage components electronic inventory. MassDOT has developed a geospatial database to inventory the improvements being identified, designed and installed as part of the program. This database is submitted at the completion of the project design. For programmed projects, the Water Quality Data Form submitted as part of 75% design provides geospatial information on existing and proposed stormwater improvements thereby continuing to develop the database. Additionally, MassDOT has developed a geospatial Stormwater Asset Database to collect all drainage assets including inlets, pipes, and outlets. Manholes and inlets in the roadway were collected using LiDAR data and added into MassDOT's Stormwater Asset Database this permit year.	The IWP database will continue to be updated as retrofit project designs reach milestones. MassDOT will also continue to refine the Water Quality Data Form to capture information from programmed projects. MassDOT is developing methods to update the Stormwater Asset Database from construction and maintenance efforts. Various methods will be evaluated including using LiDAR data, aerial images, record design plans, or manual collection in the field during inspection and maintenance activities. MassDOT will continue to work towards expanding this effort statewide as part of MassDOT's larger Asset Management Initiative.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
3B-2	Drainage Inventory	Environmental/ IT/ Districts	Map drainage discharges within urbanized areas. By the end of the permit term complete inventory of urbanized areas and include summary of resource areas with outfalls. Review methods to make outfall inventory available to the public for ease of access.	Outfall inventory was completed in Permit Year 5 and is posted on MassDOT's website at http://geo-massdot.opendata.arcgis.com/datasets/drainage-outfalls. MassDOT has received a number of requests for information and have been able to respond relatively quickly.	Continue to maintain outfall inventory on website. MassDOT will work towards collecting additional data on drainage assets in accordance with the Asset Management Imitative.
3C-1	Drainage Connection Policy	Environmental	1) Issue Drainage Connection Policy. 2) Post copy of policy on MassDOT web site. 3) Enforce the provision through referrals to the Attorney General office. 4) Summarize actions taken in the annual report.	1) Policy issued on June 26, 2006 by the Chief Engineer 2) Policy posted at http://www.massdot.state.ma.us/Portals/8/docs/engineeringDirectives/policy/p-06-002.pdf 3 and 4) See Appendix A for illicit connection/discharge issues and actions during this permit year.	The drainage tie-in policy is now a formal MassDOT policy and is implemented as necessary.
3C-2	Drainage Tie-In Standard Operation Procedure (SOP)	Environmental/ Legal	Issue a revised Drainage Tie-In SOP. Annual reports will summarize drainage tie-in permits applications and permits issued.	The Drainage Tie-In SOP has been finalized. It was officially issued on March 19, 2012. The SOP continues to be utilized for tie-in issues and procedures. Appendix B summarizes the status of drainage tie-in permits that have been issued or are still in the application process as of this permit year.	The Drainage Tie-In SOP will be utilized for tie-in issues and procedures. MassDOT will also continue to update Appendix B as needed.
3D **Removed**	Revised Illicit Connection Review	Environmental/ Districts	Review twenty discharges each permit year for potential illicit connections.	BMP Revised	BMP Revised

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
3D **Revised**	Illicit Connection Review	Environmental/ Districts	Develop prioritized list for IDDE and include in Permit Year 5 Annual Report. Release RFR for development and implementation of IDDE program for watersheds on prioritized list. Field review complaints/ potential IDDEs identified by District personnel, during the drainage inventory, in response to municipal email requesting suspect areas and/ or from public throughout the year.	Past Illicit Discharge Detection and Elimination (IDDE surveys) have identified few connections relative to the funds and time expended required to conduct the surveys. In an attempt to focus investigative efforts pursuant to Minimum Control Measure 3, MassDOT has prioritized areas that may have a greater potential for illicit drainage connections throughout the Commonwealth. This effort is also being undertaken in anticipation of the updated MA MS4 permit requirements which may be reflected in the TS4 permit expected to be issued to MassDOT. MassDOT has reviewed the IDDE requirements within the NPDES MS4 permit for Massachusetts and begun to develop a prioritization protocol for focusing IDDE efforts in MassDOT-owned stormwater systems. IDDE prioritization areas have been delineated by catchment area, using USGS Series 451 data and Massachusetts Estuaries Program groundwatershed data for Cape Cod watersheds. Catchments have been assigned a prioritization rank based on the watershed's following attributes: waterbodies with pathogen impairments; urban area; TMDL for pathogens; and areas of concern for public health. MassDOT plans to use this data to identify MassDOT-owned roads within priority locations for further investigation, and will be able to conduct more thorough and focused IDDE surveys in areas with a greater probability for illicit connections.	MassDOT will take a closer look at these Highest Priority catchments identified in the prioritization exercise. MassDOT will perform a desktop review to look at the type of DOT owned road(s) (e.g. rural, highway, etc.), proximity to developed areas, and existing sewer lines, if available. While the draft permit also includes other factors that can be used in prioritizing and/or exempting areas from the IDDE program, MassDOT has not found easily accessible data for these factors on a statewide basis. After the roads within the catchments are further prioritized, MassDOT will begin to conduct site visits to evaluate if additional factors should be added to the desktop review process and investigate for illicit connections.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
3D (cont'd)				Appendix B of this report provides a table of locations where unpermitted connections have been identified that require MassDOT stormwater permits. Part of the permitting process will determine if the flows are appropriate under the MS4 permit and therefore not considered illicit. MassDOT discussed these potential illicit connections with the appropriate MassDOT Districts to determine if the connections were previously permitted or required drainage tie-in permits.	MassDOT will proactively address complaints/ potential IDDEs identified by District personnel, during the Impaired Waters Program work, in response to municipal email requesting suspect areas and/ or from public throughout the year. We will provide summary of IDDE activity in annual report.
3E	Resident Engineer Illicit Connection Training	Construction	Provide training on illicit connection policy, illicit connection identification, and protocol for reporting during annual Resident Engineer training seminars. Summarize # of attendees in annual report.	Action completed in Permit Year 4. No additional trainings on IDDE were offered in Permit Year 14.	No action required. MassDOT plans to conduct trainings on the updated Stormwater Handbook which will include IDDE protocols.
3F	Maintenance Staff Illicit Connection Training	Environmental	Provide training on illicit connection policy, illicit connection identification, and protocol for reporting during annual training seminars for maintenance personnel.	Action completed in Permit Year 4.	MassDOT is working on providing training on illicit connection policy, illicit connection identification, and protocol for reporting.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
Addn.	Standard IDDE Letter	Environmental/Legal	Create a standardized letter to make the early stage of the IDDE procedure more efficient. The letter will alert property owners of illicit and/or unauthorized discharges and connections from their property that tie into MassDOT's drainage system. The letter will also recommend that the property owners apply for a non-vehicular access permit in accordance with the MassDOT Drainage Tie-in SOP	Measurable goal met in Permit Year 11. MassDOT has begun to use the Notice of Violation (NOV) letter for notifying property owners of unpermitted connection violations. Appendix B shows NOV letters which were sent in PY13 and the status of follow up.	Send the standardized NOV letter to property owners for any new event involving illicit and/or unauthorized discharges and connections that tie-in to MassDOT's drainage system. Track letters sent and responses in future annual reports.
Addn.	NOV Letter for Municipalities	Environmental/Legal	Create a standardized NOV letter to specific municipalities that have IDDE's into the MassDOT system.	MassDOT has initiated a draft letter to send to municipalities that were identified to have potential IDDE connections to the MassDOT stormwater system. Appendix A provides an update on status of municipal follow up.	Conduct additional field work, inspection, and sampling to determine if potential IDDE connections are of concern. Finalize municipal letter and send as needed. Track letters sent and responses in annual reports.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
Addn.	Billerica/ Somerville/ Arlington/ Belmont IDDE follow up	Environmental	Follow up on potential illicit connections to MassDOT's drainage system in Billerica, Somerville, Arlington, and Belmont	MassDOT completed water quality testing and CCTV inspections in June 2015 at locations in Billerica, Somerville, Belmont and Arlington to confirm previous evidence of illicit connections identified during a water quality sampling survey conducted by the Mystic River Watershed Association (MyRWA). Following review of water quality sampling data and conducting CCTV inspections, it was determined that no illicit connection is suspected in Billerica due to the lack of tangible connections and water quality contaminate concentrations. Out of three sample locations on Route 2 in Belmont/Arlington, one sample location in Arlington yielded E. Coli concentrations of 2,400 MPN/100mL and ammonia concentrations of 0.321 mg/l, and trace (non-detectable) concentrations of Boron and Fluoride. After consulting the Center for Watershed Protection's Illicit Discharge Detection and Elimination Guidance Manual, it was determined that the source of the dry weather flow was likely due to a natural water source (i.e., groundwater). Therefore, it is likely that no illicit connection is present. No further action is necessary for this location. Another sampling location indicated presence of elevated E.Coli concentrations on Route 2 in Belmont. Upon review of the drainage system, it was determined that an illicit connection was likely in the Town of Belmont's drainage system, which connects to MassDOT drainage. In January of 2017, MassDOT contacted the Town of Belmont to inform them of a potential illicit connection to their drainage system, which they were previously aware of. The town is currently working towards developing a remediation plan to remove the illicit connection, and will notify MassDOT once the task is completed.	Follow up with the Town of Belmont to determine the status of their IDDE effort.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
Addn. Cont.	Somerville/Arlington/Belmont IDDE follow up	Environmental	Follow up on potential illicit connections to MassDOT's drainage system in Somerville, Arlington, and Belmont	In Permit Year 14 (April 2016), joint and crack sealing was conducted on the drainage system in Somerville proximal to the potential illicit source. Follow-up dry weather water quality testing was conducted in May 2016 where it was determined that dry weather flow is still present, but testing results were all below constituent thresholds; indicating that the source is likely only groundwater.	
Addn.	Municipal Data Request	Environmental	Collect drainage and sewer mapping in GIS from Massachusetts municipalities.	A letter to all Massachusetts municipalities was sent in June 2015 requesting their drainage and sewer mapping be sent to MassDOT. Drainage and sewer mapping has been received from approximately 70 municipalities. No additional data was received in Permit Year 14.	MassDOT will use this data to identify locations where municipal drainage systems tie into MassDOT drainage or where municipal sewer systems cross MassDOT drainage systems. This information will be used in the effort to prioritize MassDOT's IDDE efforts.

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4A	MassDOT Department Project Development & Design Guide	Environmental/ Construction/ Projects	Drainage systems for MassDOT roadways will be designed in accordance with Chapter 8 of the MHD Highway Design Guide and companion manuals.	All MassDOT projects will continue to be designed in compliance with the erosion and sediment control requirements in the design guide.	All MassDOT projects will continue to be designed in compliance with the erosion and sediment control requirements in the design guide.
4B	MA DEP Stormwater Management Policy	Environmental/ Construction/ Projects	New construction and redevelopment activities will comply with Massachusetts DEP's Stormwater Standards under the Wetlands Protection Act (WPA) and Section 401 of the Clean Water Act.	MassDOT designs continue to comply with the Stormwater Management Policy when projects are subject to the WPA or within urbanized areas.	MassDOT designs will continue to comply with the Stormwater Management Policy when projects are subject to the WPA or within urbanized areas.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4C	NPDES Construction General Permit	Construction	1) File NOIs for new projects which disturb more than one acre. 2) Summarize NOIs issued to MassDOT in annual report.	46 MassDOT projects included submittal of NOIs and development of SWPPPs for compliance with NPDES construction general permit during Permit Year 14. The permits are listed in Appendix G.	Continue to file NOIs for new projects which disturb more than an acre.
4D	Other State Environmental Regulations or Policy	Environmental/ Construction/ Projects	Projects will continue to be designed and constructed in accordance with all applicable state and federal environmental regulations or policy (e.g., Wetlands Protection Act, 404).	The Environmental Section reviews all projects at the 25% design stage to determine what environmental permits are required. The District Environmental Engineer or equivalent District construction staff person attends all pre-construction meetings with the selected contractor to review permit requirements for the project.	The process of design review and pre-construction coordination will continue.
4E	MassDOT Stormwater Handbook	Environmental/ Construction/ Projects	Design projects in urbanized areas in compliance with the Stormwater Handbook	MassDOT requires that all new construction and redevelopment activities undertaken by MassDOT, or by others that are funded in whole or in part by MassDOT, comply with the Handbook. MassDOT is currently revising the Stormwater Handbook to address MassDEP regulatory changes, MassDOT policy changes, TMDL requirements, and the requirements of the forthcoming TS4 permit. MassDOT determined that, given the extent of the changes in its Stormwater Program (e.g., Impaired Waters Program, the use of Water Quality Data Forms, design and maintenance policies, BMP selection with an emphasis on pavement disconnection and stormwater infiltration, BMP inventory and inspection), that the Handbook needed more of a re-write than just an update.	MassDOT anticipates an internal draft of the Stormwater Handbook to be completed in the Spring of 2017. Following internal review, the next step will be to submit the Handbook to MassDEP for ratification (i.e., recognition that MassDOT's Handbook is in compliance with the statewide stormwater management standards to the maximum extent practicable). MassDOT will offer outreach and training on the new handbook to internal staff and consultants once the Handbook is ratified.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4F	Standard Specification for Highways and Bridges	Environmental/ Construction/ Projects	Continue to include erosion and pollution prevention controls in construction contracts	Inclusion of pollution prevention controls is standard practice for construction contracts issued by MassDOT. A revised contract item/specification is now included in each contract which requires a detailed Storm Water Pollution Prevention Plan (SWPPP)/Erosion Control Plan (ECP) for all projects (except minor projects such as signage, grass mowing, etc.). Having the contractor develop the SWPPP and ECP (rather than the designer) has been accepted by the Conservation Commissions and DEP on a project by project basis. In addition, the Stormwater Unit ensures that all construction contracts include items for sediment removal and disposal from pipes and drainage structures within the project area.	Such controls will continue to be included in construction contracts issued by MassDOT.
4G **Revised**	MassDOT Research Needs Program	Environmental/ Construction	Continue funding the MassDOT Research Needs Program	Moved to MCM 6 since the focus of the research program is no longer construction controls.	
4H	Pre-Construction Meeting Review of NPDES Construction GP requirements	District Environmental Staff/Construction	District Environmental Staff Review NPDES requirements at the applicable pre-construction meetings. These meetings include outlining the requirements of the Construction General Permit and identify the roles and responsibilities of MassDOT and the Contractor.	MassDOT reviews the NPDES Construction General Permit (CGP) requirements (i.e. SWPPP) with Contractors at the pre-construction meeting. MassDOT Environmental Engineers attend all pre-construction meetings which involve environmental permits, not limited to NPDES. Therefore, erosion control is discussed at all pre-con meetings. MassDOT has reviewed the 2017 CGP and summarized the changes to all MassDOT Districts and construction personnel.	MassDOT will continue to review the NPDES Construction GP requirements with Contractors at the pre-construction meeting.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4I	Contract Bid Item and Special Provision for Storm Water Pollution Prevention Plans (SWPPPs)	Construction Section/ Contracts	Prepare a Contract Bid Item and Special Provision for inclusion in construction contracts to be advertised for bids which exceed the one-acre disturbance threshold.	Measurable goal complete.	Measurable goal complete.
4J	Field Guide on Erosion Prevention and Sediment Control	Construction Section/ Chief Engineer	Prepare field guide and issue to Resident Engineers.	The guide was issued to resident engineers at winter training and was posted online at the Field Operations page in December 2013 found here: http://www.massdot.state.ma.us/Portals/8/docs/FieldOperations/ErosionSedimentFieldGuide2013.pdf	Measurable goal is now complete.
4K	Storm Water Pollution Prevention Plan (SWPPP) Guidance Manual for Contractors	Construction Section/ Districts	Prepare a SWPPP Guidance for Contractors on MassDOT construction projects. Implement use of the document on all appropriate MassDOT projects. Once contractors begin to use the document, it may be revised if necessary to address input received internally and from agencies. Ultimately the document will be converted into a computer program.	Measurable goal complete in Permit Year 4. SWPPP bid item which includes an Erosion Control Plan is now included in all contracts with over 1 acre of soil disturbance.	Continue use by Contractors on MassDOT projects.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4L-1	Training	Construction Section	Conduct annual Erosion Prevention and Sediment Control Training for MassDOT Construction Personnel. Summarize # of attendees and topics covered.	Winter seminars were performed and covered NPDES permitting, erosion and sediment control, dust, noise, landscape, HazMat, and Diesel Retrofit Program, as well as Chapter 007 – Environmental Compliance and Chapter 200 – Drainage of the RE Inspection Manual. District 1 – February 15th, 2017 with 36 attendees. District 2 – April 28th, 2016 with 37 attendees and February 14th, 2017 with 42 attendees. District 3 – April 28th, 2016 with 27 attendees. Districts 3 & 4 – February 17th, 2017 with 65 attendees District 5 – February 16th, 2017 with 32 attendees District 6 – April 5th, 2017 with 32 attendees Two districtwide environmental classes were held as part of the Highway Core Curriculum. Environmental Permitting – November 28th, 2016 with 36 attendees. Environmental Coordination for Construction – March 13th, 2017 with 23 attendees.	MassDOT will continue training on topics similar to those discussed in the past.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4L-2	Non-Traditional Erosion Control Specifications	Landscaping Section	Develop specifications for non-traditional erosion controls and evaluate research being conducted by other state DOTs that can be accepted by MassDOT Research and Materials Section. As new technologies are developed, review and develop specifications for additional erosion controls.	MassDOT continues to use compost filter tubes as the default for sediment controls. MassDOT is now working, with input from the industry, to develop a specification for bonded fiber matrix for late-fall slope stabilization and dormant seeding. MassDOT continues to use compost amended topsoil and compost filter tubes for many of its projects. There is variability in the reliability of the material available. MassDOT continues to expand its use of compost topsoil in lieu of conventional loam placement, as well as compost filter tubes in lieu of hay bales. MassDOT uses compost for amended topsoil, filter tubes, and compost topsoil and continues to refine its specifications based on feedback from construction.	MassDOT intends to continue to solicit input from the industry on slope stabilization.
4M **Removed**	Erosion and Sediment Control Field Tests	Construction Section/ Districts/ Landscaping	Perform field tests of new erosion and sediment control materials on MassDOT projects. Prepare and circulate an internal memo on the effectiveness of the new measure.	MassDOT does not perform its own field tests any longer but instead relies upon guidance developed by others.	BMP Removed.
4N	Construction Bulletins	Construction Section	Issue annual construction bulletins to each District regarding stormwater issues.	Issued annual construction bulletins to all Districts in Fall of 2016 regarding erosion control and a related training class, dust, cofferdams, project schedules, and stabilization.	Issue bulletin in the Fall of 2017 regarding stormwater issues.
4O	Solicit Construction Activity Feedback from Public	Construction Section/ IT	Maintain MassDOT web site to include contact information for ongoing construction activities. Respond to concerns submitted in a timely manner.	MassDOT maintained their website to include contact information for ongoing construction activities. MassDOT responded to concerns submitted in a timely manner.	MassDOT will continue to maintain their website to include contact information for ongoing construction activities. MassDOT will respond to concerns submitted in a timely manner.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4P	Construction Runoff Control Enforcement	Construction Section/ Districts	Non-compliance with the CGP and SWPPP as well as non-compliance with any applicable environmental permits will be addressed through the District Construction personnel and District Highway Director and can include monetary penalties, where included in contracts, and deductions or delays in payment, when warranted.	The District Construction Office and District Highway Director addressed noncompliance with Environmental Permits at the I-95/Route 128 Interchange Bridge V Add-a-Lane Project. Contractors were required to fix slope erosion problems immediately. Issues included slope protection and BMP maintenance. Ongoing compliance action items include adding and monitoring silt sacks as needed and street sweeping anywhere roadways are silted by exiting construction vehicles. MassDOT field staff and Consultant Environmental Monitors are assigned to these projects for environmental protection. In this case, the issues were fixed immediately in the field and did not result in penalties or noncompliance. MassDOT also addressed noncompliance at a bridge replacement on I-91 NB and SB over Deerfield River, Stillwater Road, and Lower Road (Deerfield Contract 71098), the contractor paid a penalty of $21,600 to the EPA for removing erosion controls protecting a catch basin instead of maintaining the controls and replacing them as necessary.	MassDOT will continue to address non-compliance through monetary penalties or deductions or delays in payment, when warranted.
4Q	Standard Practices Memo	Construction Section	MassDOT will prepare and issue a Standard Practices memo to Construction Engineers on the protocol for Illicit Discharge Detection and Elimination during construction projects.	A separate SOP for construction was not developed. During Permit Year 4, the District Construction offices were provided with the procedures to follow on discovery of any illicit discharges during construction and provided training to the Residential Engineers (REs). MassDOT determined a separate SOP was not warranted.	No further action warranted.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
4R	Contractor Inspector Training	Construction Section	Modify NPDES SWPPP item to include half day training requirement. Provide training programs.	The new SWPPP Item 756 has been revised by the working group and added online training, and will be in new contracts with SWPPP Item. MassDOT provides annual training and contractors are required to take training.	MassDOT will continue to add this item to contracts.
Addn.	Drainage Structure Sediment Removal	Environmental/Design	Include removal of sediments from drainage structures as a standard item on all construction projects	MassDOT bid items 227.3 (removal of drainage structure sediments) and 227.31 (removal of drainage pipe sediments) have been included in all MassDOT bid estimates so as to ensure drainage structures within the project limits are cleaned after construction is complete, as necessary.	Continue to include drainage structure sediment removal bid items in all construction projects.

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	Planned Activities – 2017/ 2018
5A-1	MassDOT Stormwater Handbook	Environmental	Secure DEP ratification for MassDOT Stormwater Handbook.	Measurable goal complete for original Handbook. MassDOT is currently revising the Stormwater Handbook to address MassDEP regulatory changes, MassDOT policy changes, TMDL requirements, and the requirements of the forthcoming TS4 permit. MassDOT determined that, given the extent of the changes in its Stormwater Program (e.g., Impaired Waters Program, the use of Water Quality Data Forms, design and maintenance policies, BMP selection with an emphasis on pavement disconnection and stormwater infiltration, BMP inventory and inspection), that the Handbook needed more of a re-write than just an update.	MassDOT anticipates an internal draft of the Stormwater Handbook to be completed in the Spring of 2017. Following internal review, the next step will be to submit the Handbook to MassDEP for ratification (i.e., recognition that MassDOT's Handbook is in compliance with the statewide stormwater management standards to the maximum extent practicable).
5A-2	Revise Ch. 4 of the MassDOT Storm Water Handbook	Environmental	Revise Chapter 4 (selection methodologies) within 9 months of DEP's SW Policy Handbook update being released. Reissue MassDOT Handbook to Designers within 1 year of DEP's document being released.	MassDOT is revising the Stormwater Handbook. MassDOT determined that a rewrite of the entire Handbook was more appropriate to address the changes in the DEP Policy, the MassDOT experience gained in implementing the guidelines, and the requirements of the forthcoming TS4 permit. Therefore, the update has been more extensive and the schedule extended.	MassDOT anticipates an internal draft of the Stormwater Handbook to be completed in the Spring of 2017. Following internal review, the next step will be to submit the Handbook to MassDEP for ratification (i.e., recognition that MassDOT's Handbook is in compliance with the statewide stormwater management standards to the maximum extent practicable).

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
5A-3	Revise Ch. 5 of the MassDOT Storm Water Handbook	Environmental	Revise Chapter 5 (BMP toolbox) within nine months of DEP's SW Policy Handbook update being released. Reissue MassDOT Handbook to Designers within one year of DEP's document being released.	MassDOT is revising the Stormwater Handbook. MassDOT determined that a rewrite of the entire Handbook was more appropriate to address the changes in the DEP Policy and the MassDOT experience gained in implementing the guidelines. Therefore, the update has been more extensive and the schedule extended.	MassDOT anticipates an internal draft of the Stormwater Handbook to be completed in the Spring of 2017. Following internal review, the next step will be to submit the Handbook to MassDEP for ratification (i.e., recognition that MassDOT's Handbook is in compliance with the statewide stormwater management standards to the maximum extent practicable).
5B	MassDOT Roadway Maintenance Program	Maintenance	Continue to implement MassDOT maintenance program as outlined in the maintenance schedule and in accordance with TMDL watersheds specific agreements.	MassDOT maintained their roads in compliance with the maintenance schedule included in the SWMP and TMDL watershed specific agreements. A summary of this year's maintenance for each district is included in Appendix H.	MassDOT will continue to conduct maintenance on its roadways as outlined in the maintenance schedule and in accordance with the requirements of the TMDL reports.
5C **Removed**	Technology Acceptance and Reciprocity Partnership (TARP)	TARP	Continue to work with DEP to develop review protocol for innovative stormwater BMPs. Summarize meeting(s) attended and agenda in annual report.	BMP Revised – see 5C Revised below.	BMP Revised.
5C **Revised**	Identify Innovative Stormwater BMPs Appropriate for MassDOT Projects	Environmental	Introduce innovative stormwater BMPs for MassDOT highway projects.	MassDOT has been drafting Chapter 4 of the MassDOT Stormwater Handbook. This chapter identifies highway-specific BMPs that are designed and implemented on a site specific basis. New and innovative BMPs are being evaluated for inclusion in these chapters. MassDOT continues to review each project for the potential to include innovative and low impact development type BMPs. Reduction of existing unused pavement and use of porous pavement are two examples of innovative applications used in MassDOT projects.	DEP to ratify & MassDOT to publish the MassDOT Stormwater Handbook.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
5D	Southeast Expressway BMP Effectiveness Project	Environmental	Conduct a study of the effectiveness of water quality inlets (WQIs) and catch basins at removing suspended sediments from highway runoff.	Study completed previously.	No further action planned.
5E	Highway Runoff Contaminant Model	Env. Div. Consultant	Develop and calibrate contaminant loading model (SELDM).	MassDOT has initiated collaboration with EPA to develop a load and BMP credit calculator using published data from EPA, and results from SELDM and MassDOT's long-term continuous simulation model. The calculator will be included in MassDOT's WQDF and also in a stand-alone excel tool. MassDOT continues to work with USGS in the development and use of SELDM.	MassDOT will incorporate the calculator into MassDOT's WQDF and also in a stand-alone excel tool. MassDOT will use the values to estimate loading and pollutant treatment for all of its inventoried BMPs where data is available.
5F **Removed**	BMP Maintenance Manual	Environmental/ Maintenance	Develop BMP Maintenance Manual to be used as a field guide by maintenance personnel Provide training on the BMP Maintenance Manual.	Changes to BMP 5B narrative now include the manual used as guidance by maintenance staff while performing drainage system maintenance.	No further action.
5G	Right of Way Parcel Evaluation	Environmental	Develop and implement a program of evaluating parcels which are candidates for disposal by MassDOT for their potential in siting stormwater BMPs.	Environmental reviewed 36 right of way canvasses. All sales, transfers, and leases of MassDOT properties were approved. Conditions were developed for parcels that were determined to potentially impact existing stormwater facilities or wetlands. These conditions were made standard for all future right-of-way canvass agreements.	The Environmental Section will continue to review canvasses as they are presented. The emphasis will remain on keeping parcels of land that are highly suitable for stormwater treatment (as well as wetland replication).

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
5H-1	Post Construction Runoff Enforcement-Illicit Discharge Prohibition Policy	Commissioner/ Legal/ Environmental	1) Develop policy for addressing unauthorized connections to the MassDOT's drainage system. 2) Enforce the provisions through referrals to the Attorney General. 3) Summarize actions taken in annual report.	Illicit Discharge Policy was issued in June 2006. Failure to comply with the Dept. request will necessitate further action by the Department either through the State Attorney General's office or the District. There were no referrals to the Attorney General's office during Permit Year 14. The standard Notice of Violation (NOV) Letter has been revised. The IDDE Table in Appendix A has been updated to reflect the current status for each case.	MassDOT's Environmental Services Section will continue to communicate (where possible) with the property owners and move toward resolution of the issues. The improved Notice of Violation (NOV) Letter will now be used any new event involving illicit and/or unauthorized discharges and connections that tie-in to MassDOT's drainage system.
5H-2	Post Construction Runoff Enforcement-Drainage Tie-In Policy	Commissioner/ Legal/ Environmental/ Districts	Develop permitting process for adjacent properties which would like to tie into MassDOT drainage system. Implement program and summarize actions taken under program in annual report.	The Drainage Tie-In SOP is being implemented when necessary. Appendix B summarizes the status of drainage tie-in permits that have been received or are still in the application process as of this permit year.	The Drainage Tie-In SOP will continue to be implemented for tie-in issues and procedures. MassDOT will also continue to update Appendix B as needed.
5H-3	Post Construction Runoff Enforcement-Offsite Pollution to MassDOT Drainage System	Commissioner/ Legal/ Environmental	Runoff not meeting the NPDES MS4 requirements which is reaching the MassDOT MS4 and is not covered under 5H-1 or 5H-2 may be considered trespassing and referred to the AG's office by MassDOT counsel at the DHD's discretion.	In Permit Year 14, MassDOT discovered a restaurant on Highland Avenue in Needham was utilizing a MassDOT-owned catch basin to convey rooftop gutter runoff. Gutter drainage was routed through a corrugated plastic pipe to a grassed area that was sloped towards the catch basin. No proper erosion controls were implemented; therefore the exposed grassed area was moderately eroded, conveying sediment to MassDOT's system. A Notice of Violation letter was sent to the restaurant owner requesting that the drainage connection be terminated, or treated prior to entering MassDOT's system. MassDOT is awaiting a response from the property owner.	MassDOT will follow up with the property owner to ensure the drainage connection is eliminated or improved before entering MassDOT' drainage system. MassDOT will continue to take action when these requirements are not met.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
5I	Rest Area Redevelopment to Meet Stormwater Management Handbook Standards	Environmental/ Right of Way	Add language to new lease agreements requiring lessees, who redevelop or build new buildings on rest area property leased from MassDOT, to meet the standards within the Storm Water Management Handbook and the SWMP requirements.	Measurable goal complete.	No action required.
5J	Transportation Evaluation Criteria	Planning/ MPOs	Continue to include environmental considerations in the funding prioritization evaluation.	MPOs continued to include the environmental component in their evaluation procedures. Additionally, MassDOT has implemented a new project review and prioritization process which MassDOT's Stormwater Unit is integrally involved. See the additional BMP for Project Selection and Advisory Council on the following pages for more information.	Continue to include environmental component in evaluation procedure.
5K	Federal Enhancement Funding	Planning	Explore opportunities for using Federal enhancement funding for environmental restoration and pollution abatement projects. Participate in quarterly committee meetings.	MassDOT no longer utilizes TAP funding for the Impaired Waters Program. Instead, funding for structural stormwater improvements is received now through the FHWA Surface Transportation Program (STP) under Transportation Enhancements. MassDOT has continued to secure funding for the Impaired Waters Program. MassDOT advertised $7,920,000 in stormwater improvements in PY14. This included approximately $6.67 million in Federal Fiscal Year 2016 (from April 2016-September 2016) and approximately $1.25 million to date in Federal Fiscal Year 2017.	Continue to utilize funding from the STP for the Impaired Waters Program. For the remaining time within Federal Fiscal Year 2017 (through September 2017), MassDOT will advertise approximately $4.375 million in stormwater improvements projects. An additional $7.765 million is allocated to stormwater improvement projects in Federal Fiscal Year 2018.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
Addn.	Rest Area Pet Waste Program	Environmental/Office of Real Estate Development		In Permit Year 13, MassDOT completed a study of all rest areas within the watershed of a pathogen impaired water body for installation of pet waste stations (signage, bags, and waste disposal). In MassDOT-owned Service Plazas, those with tenants such as gas stations or food vendors, MassDOT began discussions to delegate the maintenance responsibility of the pet waste stations on the tenants and to include this requirement in upcoming lease agreements. Leases for service area tenants are not set to be renewed. In Permit Year 14, leases for gas stations were renewed, however it was determined that the gas station tenants would not be the appropriate party to take on pet waste station maintenance.	In Permit Year 15, MassDOT plans to discuss the possibility of Service Plaza tenants along I-90 installing and maintaining pet waste stations. For unmanned rest areas, especially those with no facilities including waste barrels, MassDOT will need to identify funding sources for the maintenance of pet waste stations.
Addn.	Project Selection and Advisory Council (PSAC)	Environmental		MassDOT's Stormwater Unit has become involved in the Project Selection and Advisory Council (PSAC), which has developed and implemented a standardized scoring system to effectively evaluate project merit for the goal of delivering a balanced Transportation Investment Program. A potential project is scored based on a wide variety of attributes, which includes impacts to water quality and other environmental resources, where a project will score negatively if water quality impacts are anticipated or positively for projects that may improve existing stormwater quality. The inclusion of MassDOT's Stormwater Unit in the PSAC scoring process has provided improved identification of a potential project's overall impact to water quality, therefore allowing the Council to arrive at more informed decisions on a project's viability.	MassDOT's Stormwater Unit will continue to have an active role in the PSAC moving forward.

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	Planned Activities – 2017/2018
6A-1 **Removed**	Source Control - 511 Massachusetts Traveler Information System	Project Clean/ Operations	Maintain the existing 511 System.	Revised – see 6A-1 below.	BMP removed.
6A-1 **Revised**	Source Control - Call-In Numbers for Roadway Debris	Operations	Maintain Call-In Numbers for Roadway Debris	Each District and Headquarters has a general call-in number for the public to use to alert MassDOT of roadway debris. If Headquarter receives the call, then the information is forwarded to the appropriate District. The information is then forwarded to the Maintenance Department Foreman, who coordinates with the workers to alleviate the situation. Contact information can be found at this link: http://www.massdot.state.ma.us/ContactUs.aspx Call-in numbers are listed below. • *Headquarters: (857) 368-4636* • *District 1: (413)-637-5700* • *District 2: (413) 582-0599* • *District 3: (508) 929-3800* • *District 4: (781) 641-8300* • *District 5: (508) 824-6633* • *District 6: (857) 368-6100* MassDOT provides Highway Assistance Patrol (HAP), an emergency roadway assistance service, along the most highly traveled roadways in Massachusetts. HAP patrols 982,000 miles annually and removes roadway debris when encountered, as outlined in Appendix L, in addition to other services.	The call-in numbers will continue to be utilized for the public to call in about roadway debris.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6A-2	Source Control – Adopt-a-Highway	Adopt-a-Highway/ Operations	Continue to support this program by maintaining signs in areas where the program is active. Summarize number of road miles cleaned.	MassDOT continues to support this program. Approximately 566 miles were cleaned for litter pick-up by Sponsor-A-Highway. MassDOT continues to maintain, repair, and replace program signs as needed. See Appendix L for a summary of litter programs.	MassDOT will maintain or increase the current level of sponsors and increase volunteer participation.
6A-3	Source Control - Deicing Programs and Reduced Salt Areas	Environmental/ Districts	Continue to support De-icing and Reduced Salt Areas Programs.	MassDOT continues to support the De-icing and Reduced Salt Areas Programs. One Material Usage Committee meeting was held on June 23, 2016 and the discussion topics included: Winter Severity Index vs. material usage, possible name change from Reduced Salt Zones (RSZ) to Salt Sensitive Areas, ESPR Annual Report, and anticipated training locations for 2016/2017 season.	The next Material Usage Committee meeting will be held in summer 2017. The committee will review results from RSZ study, new areas of concern, and the Snow and Ice Control Program annual update.
6A-4	Source Control – Motorist Assistance Program (formerly HELP)	MAP Program/ Operations	Continue to provide 22 Highway Emergency Locator Program vans and/or tow trucks.	MassDOT provided 35 Highway Assistance Program (HAP) vans and/or tow trucks. The HAP vehicles cover 25 patrol routes on Massachusetts' most highly traveled roads and patrols approximately 982,000 miles annually.	MassDOT will continue to maintain this program.
6A-5	Source Control - VMP	Environmental	1) Develop a generic Vegetation Management Plan (VMP) which outlines methods of minimizing the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers. 2) Prepare a Yearly Operational Plan (YOP) by April of each year. 3) Post YOP on web site within 30 days. 4) Summarize actions taken in previous year in annual report.	There are currently no active VMPs for MassDOT. While a VMP was developed and is posted on MassDEP's website (http://www.mass.gov/eea/docs/agr/pesticides/rightofway/vmp/massdot-vmp-2014-2018.pdf), this plan has not been internally vetted or implemented. MassDOT does use herbicide for selective control of invasive plant species on its construction projects, working with regulatory agencies as applicable.	MassDOT anticipates very limited spraying statewide-mostly for treatment of invasive plants.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6A-6	Source Control - HOV	Planning	Continue participation in ridesharing activities through the duration of the permit term.	MassDOT continues to support this program through: • Operation of the HOV lanes on I-93 • Funding and promotion of the NuRIDES online ride-matching database • The toll discount program on I-90 for HOVs	MassDOT will continue to support this program.
6A-7	Source Control - Alternative Transportation	Planning	Provide technical assistance and funding for bicycling and walking, including on-road and off-road improvements, at the local level.	MassDOT continues to utilize Transportation Alternatives Program (TAP) and Congestion Mitigation and Air Quality (CMAQ) funding to fund bicycle and walking infrastructure improvements as part of the Safe Routes to School Program and other transportation improvement projects. In addition, in November 2015, the Baker-Polito Administration and MassDOT announced a $12.5 million Complete Streets Funding Program in an effort to encourage cities and towns in the Commonwealth to design and construct projects to make street networks safer and more efficient for pedestrians, cyclists, drivers, and users of mass transit. The Complete Streets Funding Program provides up to $50,000 in technical assistance and $400,000 in construction funding. The Complete Streets Funding Program was launched in February 2016. MassDOT initiated the development of a new statewide Pedestrian Plan that will be completed next year.	Continue to provide funding for bicycle, walking, and complete streets enhancements across the state. Complete statewide Pedestrian Plan.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6A-8	Source Control-Highway Safety	Highway Design	1) Incorporate safety measures into all new highway designs. 2) Provide signage to warn of vehicle hazards including tipping hazards and steep grades. 3) Install variable message boards (VMBs) on selected roadways to improve driver awareness. 4) Include evolving safety technologies as part of future highway design projects as they are developed.	Safety measures are included in all new highway designs including appropriate signage and evolving technologies. MassDOT installs and maintains VMBs on select roads to improve driver awareness to potential safety hazards.	MassDOT will continue to support this program.
6A-9 **Revised**	Source Control	Environmental	1) Maintain the Pollution Prevention Task Force (PPTF) throughout the permit term. 2) Provide summary of actions taken on each pollution prevention initiative included in the SWMP in the annual report.	MassDOT continued the practice of indoor storage of raw materials (oils, chemicals, salt) and select operation/maintenance equipment. Hazardous materials/hazardous waste are covered either in the depot garage bays or hazardous waste storage sheds. MassDOT continued enforcement of the indoor-only vehicle washing policy; no soap or power washing outside. The PPTF was no longer deemed necessary after the state adopted the Environmentally Preferable products (EPP) Purchasing Program in 2009. All Standard Operating Procedures can be found here: http://www.massdot.state.ma.us/highway/Departments/EnvironmentalServices/FormsPublicationsDocuments/EMSSustainability.aspx	MassDOT will continue monitoring for proper handling and management of stormwater polluting materials, solid wastes, and industrial waste water.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6B-1	Employee Training	MTAP/ Baystate Roads	Facilitate one training program related to stormwater and /or snow and ice control as a means of reducing source pollution. Document attendance numbers.	Snow and ice control classes were conducted in Permit Year 14 with approximately 1,600 attendees. Topics covered included: • Current vendor contract • Anti-icing • Department operations • Salt and environmental considerations • Drainage systems Additionally, nine classes and one event were held by Baystate Roads on snow and ice operations with a total of 299 attendees. Topics included: • The proper use of salt and liquid anti-icers and the environmental impacts. • Pre wetting and pre-treating • Anti-icing vs. De-icing. • The use of sand and its environmental impact. • Equipment calibration, usage specification and technology. • Snow and ice policy for public review. • Cost benefit analysis of salt vs. sand.	Provide one training program for MassDOT employees (provided by MTAP) and one for municipal DPW snowplow drivers (provided by MTAP/Baystate Roads) related to snow and ice control as a means of reducing source pollution. Document attendance numbers.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6B-2	Employee Training	Environmental	Provide annual training to at least 300 maintenance facility personnel regarding good housekeeping/ spill prevention.	Trainings were provided during the winter of 2016/2017 for 327 maintenance facility personnel. Training included discussion of the following topics: • Environmental Awareness Training • Asbestos containing materials • Solid waste • Roadside issues • Storage tanks • Wetlands protection and compliance • Recordkeeping • Inspections/Audits • Water quality (including stormwater issues) • Hazardous materials management • Hazardous waste management • Universal waste management • Emergency response	MassDOT will again provide annual training to maintenance facility personnel regarding good housekeeping practices and spill prevention.
6B-3	Employee Training	Highway Operations	Provide annual training to at least 200 supervisors and drivers annually on the latest on snow and ice removal.	20 tailgate trainings were performed where MassDOT spoke to 919 vendors/operators of material spreading vehicles. Topics covered include: current vendor contract, new equipment, material usage, salt sensitive areas, and MassDOT operations updates. MassDOT also stressed the concept of doing more work with less material by utilizing practices like prewetting and better timing of material applications, as well as implementing GPS/AVL (automated vehicle locator) technology. Each district held at least two operations trainings. Approximately 700 state employees were trained. State employees also participated in SIMS timekeeper training.	MassDOT will continue to provide training and focus on operational efficiency and effectiveness. Topics to discuss will include material usage data, technology and cause and effect of snow & ice operations and environmentally sensitive areas.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6B-4	Employee Training	Highway Operations	Ensure all equipment and vehicle operators have received training on the proper operation of the equipment and vehicles they operate.	Each MassDOT district has hosted trainings for maintenance personnel in Permit Year 14 on the correct usage of construction and maintenance equipment, including but not limited to washers, linestripers, underground storage tanks, chainsaw safety, mowers, street sweepers, front end loaders, tractor trailers, and bucket lifts.	MassDOT will provide operational, safety, and maintenance training on sweeper training, mower training, and snow and ice equipment training. Training is based on the District's needs and requests.
6C-1	Maintenance	Districts	Continue to implement maintenance schedule outlined in Appendix E of the SWMP.	MassDOT continued to maintain the highway system through catch basin cleaning contracts and performed street sweeping and regular drainage system maintenance. See Appendix H of the annual report for a summary of compliance.	MassDOT will continue to maintain the highway system through catch basin cleaning contracts, street sweeping, and regular drainage system maintenance in compliance with Appendix E of the SWMP. MassDOT will work to develop a spatial maintenance work order tracking system to allow for easier tracking and reporting of maintenance activities.
6C-2	Maintenance/ Material Storage Yards	Districts	1) MassDOT inspects and audits maintenance and material storage yards using the Facility Environmental Handbook in order to maintain environmental compliance. 2) Post EMS Manual on MassDOT website for public information. 3) Post generic Facility Environmental Handbook on website for public information.	MassDOT updated its Facility Environmental Handbook in 2011. This handbook includes information on hazardous waste, hazardous materials, water quality, inspections, and record keeping for MassDOT facilities. The Facility Environmental Handbook is posted on MassDOT's public website. Additionally, in 2015, MassDOT developed updated facility plans for each specific facility. This year no updates were completed for the Environmental Management System (EMS) Manual. The manual outlines the organizational structure, associated responsibilities, and procedures for integrating environmental objectives in roadway and maintenance facility operations and is posted on the internal MassDOT web site. MassDOT has finalized an updated audit checklist associated with the EMS Manual. See Appendix K for the most recent audit checklist.	MassDOT will continue to post updated materials to the public website. Expect to revise the Facility Environmental Handbook and the EMS Manual in calendar year 2017.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6C-3	Maintenance Record and Data Management Work Management System	Environmental/ Highway Operations	1) Develop work management system. 2) Populate program with infrastructure information as available. 3) Implement system and begin to record maintenance activities in these watersheds.	The Maximo Asset and Maintenance Management System is being used in each of MassDOT's Districts as a maintenance work order program. MassDOT is currently piloting new asset management systems which allow for spatial data storage and mobile data collection. During Permit Year 14, MassDOT developed a drainage system maintenance and inspection database in ArcGIS Online to capture ongoing catch basin cleaning, unplugging and repair. Additionally, drainage cleaning and repair contracts were issued and included language requiring contractors to report work completed and system condition in a mobile data collection system.	Begin using ArcGIS Online to capture information on catch basin cleaning and repair through the Asset Management Initiative. Provide data from maintenance operations in annual report. Continue to pilot stormwater BMP inspection program and identify appropriate inspectors statewide, train inspectors, and implement program.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6D	Waste Disposal	Districts	1) Street sweeping waste will be reused in appropriate slope stabilization and road work projects in compliance with SOP, when appropriate. 2) Street Sweeping material which cannot be reused will be disposed of at landfills as daily cover. 3) Waste material from drainage structures and stormwater BMPs removed during maintenance will be disposed of according to "Reuse and Disposal of Contaminated Soil at Massachusetts Landfills" DEP Policy #COMM-97-001.	MassDOT and its contractors continue to properly dispose of waste. MassDOT did not have an appropriate opportunity to reuse street sweeping waste. MassDOT removed greater than 10,000C.Y. of sweeping material and 7,000 C.Y. of drainage structure material this year. Material removed is summarized below. • District 1 had 1,211 C.Y. of sweeping materials removed and 587.5 C.Y. of drainage structure waste removed. • District 2 had 3,950 tons of sweeping materials removed and 1,700 tons of drainage structure waste removed. • District 3 had 2,645 C.Y. of sweeping materials removed and 1917 C.Y. of drainage structure waste removed. • District 4 had 3,477 C.Y. of sweeping materials removed and 789 C.Y. of drainage structure removed. • District 5 had 1,344 C.Y. of sweeping materials removed and 2,000 C.Y. of drainage structure waste removed. • District 6 had 2,134 C.Y. of sweeping materials removed and 309 C.Y. of drainage structure waste removed.	MassDOT and its contractors will continue to properly dispose of waste and ensure disposal of street sweepings and catch basin cleanings are in accordance with DEP policy.
6E – **Removed**	Good Housekeeping/ Pollution Prevention Program Evaluation	Environmental	Evaluate existing Maintenance Programs to determine additional or revised activities, which would increase effectiveness and usefulness of the programs.	BMP 6E Good Housekeeping/ Pollution Prevention Program Evaluation has been removed (and the subsequent BMPs renumbered) since the addition of BMP 6F through 6O provide a better use of resources with an increased impact on meeting the good housekeeping and pollution prevention minimum control measure.	No further action recommended.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6E **Revised**	Catch Basin Accumulation Project	Environmental/ Maintenance/ Districts	1) Provide annual report on progress each December and include summary in annual report. 2) Complete a study of debris accumulation in catch basins. 3) Based on the results of the study, revise the existing cleaning schedule and SOP for catch basin cleaning.	Measurable goal is complete. The findings of the Catch Basin Accumulation Project do not support the need for revising the existing cleaning schedule and SOP for catch basin cleaning. During Permit Year 14, MassDOT collected location information on each drainage structure along MassDOT roadways using LiDAR data. MassDOT has developed a Stormwater Asset Database to allow for tracking and maintenance/condition reporting.	MassDOT plans to conduct a catch basin study along I-95 in Needham and Wellesley following the completion of the Add-a-Lane project. The study will involve inspecting a representative set of catch basins four times per year for one year. This will inform MassDOT and MassDEP on the appropriate, effective, and efficient cleaning schedule required for catch basins along this corridor and potentially inform programs statewide. During Permit Year 15, MassDOT will pilot a system to allow for catch basin cleaning contractors to collect information on work performed, condition, and action required on catch basins. This program will allow for enhanced reporting and maintenance program refinement.
6F	Policy and Program Review	Environmental	MassDOT will continue to at least biannually evaluate its snow and ice control policies and operational programs in order to make adjustments based on data and experience, and to respond to changing conditions.	During the winter season of 2016-2017 MassDOT continued to include Closed Loop Ground Speed Controller Systems on all material spreaders. This allows truck operators to maintain a constant application rate of material on the road without having to adjust the valve opening to conform to the changing speed of the truck which provides a more efficient and consistent application of material. Additionally, MassDOT had pilot studies for loader scales, GPS/AVL (particularly with cloud-based material usage reporting), friction meters and mobile RWIS stations. Over the past 5 years MassDOT has realized a 23% reduction in material usage due to updates to the snow and ice policy.	MassDOT will evaluate the effectiveness of the pilot studies and consider if these tools should be permanently added to the snow and ice control policy. The overall program will also be evaluated annually.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6G	Salt Remediation Program	Environmental/Maintenance/ Districts	Continue to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints.	MassDOT continues to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints. Funding has been provided through Interdepartmental Service Agreement (ISA) totaling 1.5 million between April 2016 and March 2017. Unlike private well complaints, which are investigated and remediated by MassDOT's Salt Remediation Program, public water supplies concerned about elevated levels of sodium and/or chloride will provide water quality results to MassDOT for evaluating the effectiveness of snow & ice control BMPs in those areas. Based on the evaluation, MassDOT will make operational improvements as needed. An updated version of the Public Well Supply Matrix is included as Appendix I of this annual report to summarize the current status of these public water supply complaints.	Continue Salt Remediation Program and continue ISA funding for the program.
6H	Clean Well Initiative	Environmental	Provide a continued level of funding that will allow MassDOT to complete up to 20 replacement wells per year.	MassDOT remediated four (4) wells and installed two (2) water treatment system s in the following locations: • Clarksburg (1 well) • Groton (1 well) • Uxbridge (1 well) • Westford (1 well) • Otis (1 water treatment system) • Hopkinton (1 water treatment system) An updated version of the Public Well Supply Matrix is included as Appendix I of this annual report to summarize the current status of each public well included in the Clean Well Initiative Program.	Continue sampling and analysis of private water supply wells and where applicable well rehabilitation, replacement well, water treatment activities and drainage modifications.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6I	Salt/Sand Management and Storage	Highway Operations	MassDOT will continue to replace or repair inadequate salt storage sheds, as well as cover sand piles and/or move them out of wetland buffer zones. **Review sheds:** Increased capacity of some sheds may be justified because salt storage needs have grown over time and/or because the shed is in a sensitive area and the salt loading operations call for better containment. In sensitive areas, consideration should be given to the use of Gambrel style sheds that provide for the entire operation to be conducted under cover to minimize salt spillage outside of the shed. MassDOT will continue to prioritize the identification and selection of parcels being considered for new salt storage facilities, considering operational needs and the environmental setting. **Review Sand Piles:** MassDOT will strive to locate sand piles outside wetland buffer zones whenever space allows. However, when this is not possible the department will work towards storing sand piles under cover, especially during the non-winter months. This could be accomplished by storing sand within sheds or, more likely, using a heavy-gauge polyethylene tarp. (Continued on next page)	MassDOT continues to staff the position of Director of Snow and Ice Operations. MassDOT removed salt storage from the Columbia Street underpass of Route 93. District 6 relocated the salt storage site to MassDOT property along Freeport Street where two new salt storage sheds with stormwater BMPs are planned. Salt is currently under cover until the permanent structure is constructed. In Billerica there is a new salt shed; the land on which Burlington's former salt shed sat was sold. MassDOT has also continued to make minor structural repairs (fix doors, failed wall panels and structural members/braces) as needed. The new salt shed in Billerica is a high arch gambrel roofed barn with concrete walls on the interior to ensure salt will not put pressure on the barn walls. The size of the barn allows loading and unloading to occur undercover which reduced spillage. Additionally, the site design of the facility includes stormwater BMPs including bioretention areas and grass swales.	Continue to train our Snow and Ice personnel to be aware of wetlands in and around our facilities. MassDOT will repair or replace many damaged sheds. Locations include: Hopkinton, Manchester, Stoughton, Sturbridge and Charlton. Increased capacity needs will be evaluated in Braintree and Yarmouth. Environmentally sensitive areas will be considered in the design process. MassDOT will work with area supervisors to manage sand supply in all areas.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6I (cont'd)			The tarp could be peeled back once, before winter operations, and then covered again at the end of the season. **Personnel:** In October 2006, MassDOT hired a Director of Snow & Ice Operations, with over 20 years of experience in winter operations, to improve salt management and supervision of deicing operations.		
6J	Salt Storage Best Management Practices/ Pollution Prevention	Environmental	Continue to implement salt storage in compliance with DEP Guidelines on Deicing Chemical Storage. Continue to follow MassDOT SOP for the Management of Sand and Deicing Chemicals at MassDOT Facilities. Continue to follow Facility Environmental Handbook guidelines at maintenance facilities.	MassDOT continued to include environmental stewardship in their winter operations classes. The classes emphasized the needs to follow the current SOP's on salt management and proper material handling. Concepts stressed at trainings included: • Prewetting • Pretreating • Environmental stewardship	Continue to inform snow and ice operations personnel of the cause and effects of winter operations on the environment.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6K	Snow and Ice - Equipment Improvements	Environmental	MassDOT will continue to expand the use of anti-icing as a standard tool for snow and ice control.	The anti-icing program expanded with the opening of a salt brine production facility in Sagamore in December 2012. Salt brine is more affordable than $MgCl_2$ as crews can cover more area and be proactive by treating roads in advance of a storm. Using salt brine increases efficiency resulting in less material used, cost savings and reduction of environmental impacts. The use of anti-icing has increased. MassDOT increased the number of anti-icing equipment and the hours the equipment is utilized. Most of the depots across the Commonwealth have access to direct liquid trucks. Interstates are the primary roads targeted followed by all others. As of Permit Year 14, MassDOT has 10 more state-owned spreaders in District 3 with GPS-AVL technology, which allows material spreaders to be reflected on a map and material distribution parameters can be viewed in real-time and after an event to examine if practices are consistent with MassDOT directives and protocols. This program highlights that all contractors are responsible for material conservation and are held accountable as business entities and individuals for responsible use of anti-icing materials.	MassDOT will work on a method of quantifying anti-icing activities versus pre-wetting activities. Each District will acquire additional liquid tank trucks to increase roadway pretreatment prior to winter storm events. A small number of obsolete tanks will be replaced and a few facilities will receive new tanks. This will enhance our Agency's ability and directive for all state-owned and contracted vehicles to only use pre wetted salt.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6L	Snow and Ice - Enhanced Weather Forecasting Information	Environmental	Continue to provide sufficient funding to use weather forecasting contractor to provide up-to-date and local weather information during snow and ice season.	MassDOT is using tailgate-mounted friction meters in Districts 1, 4 and 6. These devices measure the height of water/ice, among other parameters and then quantify the grip/friction in real time on a smartphone installed on the driver's windshield. The device also captures images that show the roadway condition and the grip at that specific location. The experienced operators are using these devices to confirm their own visual observations and to optimally time material applications. MassDOT now has four trailer mounted mobile Road Weather Information System (RWISs) in addition to the stationary systems installed across the state. Quincy, Newton, and Canton RWISs had sensors changed from in-pavement style to non-invasive. French King Bridge RWIS had its in-pavement sensors replaced. Northborough had its entire RWIS replaced. Peabody had its subsurface temperature probe replaced.	MassDOT will continue to investigate pavement temperature forecasting.
6M	Snow and Ice - Road Weather Information System (RWIS)	Environmental	MassDOT will ensure that these stations will be maintained so as to remain fully functional.	MassDOT has developed an agreement with NH, ME, VT, RI and CT to expand the data sharing of RWIS station data, significantly expanding the RWIS network. MassDOT's weather provider, Schneider Electric, developed a Custom Forecast map/tool for MassDOT that graphically depicts the timing of the start of weather events across the state.	MassDOT will work to expand the use of RWIS data across the Commonwealth.
6N	Snow and Ice GEIR - Alternative Technologies	Environmental	MassDOT will continue to maximize the use of Premix and liquid calcium chloride, as alternative deicers, to reduce the quantity of granular sodium chloride, and should closely monitor reduced salt zones during storms to ensure the proper timing of salt applications and to minimize the potential for overuse of deicing chemicals.	MassDOT – Highway Division has increased the use of spreaders with GPS-AVL technology. The uses of anti-icing techniques have significantly reduced the amount of deicer required to keep the roads reasonably safe. Additionally, MassDOT is using tailgate-mounted friction meters in three districts, four trailer mounted mobile RWISs, and non-invasive RWIS sensors in Quincy, Newton and Canton.	MassDOT will continue to reduce the quantity of granular sodium chloride, develop operation BMPs to reduce the use of sodium chloride, and closely monitor reduced salt zones during storms to ensure the proper timing of salt applications and to minimize the potential for overuse of deicing chemicals.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
6O	Snow and Ice GEIR - Research	Operations	MassDOT has joined Clear Roads program and will continue to explore moving forward on other projects. Summarize research performed.	Massachusetts has continued to commit resources towards Clear Roads and MassDOT continues to be an active member in the Clear Roads program. Clear Roads activities are documented on their web-site www.Clearroads.org. Research continues to assist MassDOT by bringing the most current practices to Operations. Recently member states were surveyed about their switch from sand or sand/salt to straight salt. Respondents shared their experience and what they gained from the change. Some of the benefits discussed were: • Less time required to achieve bare pavement during and after events • Lower overtime materials and costs • Lower application rates allowed for longer vehicle routes; this translated to reduced equipment and employee numbers required to do the same work • Fewer overall facilities or facilities with smaller actual and environmental footprints were possible when sand is removed from the winter treatment toolbelt • Reduced sand reliance meant fewer sand-caused environmental repercussions and less required springtime cleanup of sand on the roads, roadsides, drainage basins, etc. • MassDOT now only uses sand in a 50/50 sand/salt mix in reduced salt areas on Cape Cod Clear Roads also inspired a discussion surrounding the huge benefits from prewetting salt before roadway application.	MassDOT will continue to support, participate, and use the research and benefits of collaboration with Clear Roads.

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/2018
Addn.	MassDOT Research Needs Program (Previously indicated as BMP 4G but focus of research program is now for source control instead of construction)	Environmental/ Construction	Continue funding the MassDOT Research Needs Program.	Continued funding the MassDOT Research Needs Program. MassDOT participated in NCHRP studies concerning limitations of the infiltration approach to stormwater management in the highway setting, stormwater monitoring programs, innovative dissolved metals BMPs, and TMDL compliance. Ratified an agreement with USGS to study phosphorous loading off bridges.	MassDOT will continue to participate in NCHRP studies as well as work with USGS to consult as needed on water quality issues and on the phosphorus loading off bridges.
Addn.	Open Graded Friction Course	Environmental	Complete Study on Open Graded Friction Course benefits on stormwater treatment	MassDOT, along with USGS, has initiated a study on the water quality benefits of Open Graded Friction Course (OGFC). The reason for this study is to obtain stormwater treatment credit from MassDEP for use of this technology along a section of I-95 in Needham and Wellesley. OGFC has stormwater quality benefits, as it reduces vehicle "underwash" and runoff volumes, and contributes fewer pollutants to runoff than traditional pavement. A study area, where traditional hot-mix asphalt adjoins the OGFC pavement, has been selected. During the summer of 2016, MassDOT conducted survey of the study site area to better define the drainage sub-basins. In 2017, MassDOT developed a site plan with the sampling outlets for each pavement type, which includes the installation of plastic drainage trenches, along with "catch basins" to take stormwater samples with automatic samples.	Continue discussions with MassDEP regarding obtaining stormwater treatment credit for OGFC use in any location. Install sampling equipment and start to collect runoff samples in fall 2017.

7. Impaired Waters

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
7A	Wetland Protection Act (WPA) Compliance	Environmental	1) All MassDOT projects will comply with the WPA and MESA. 2) When potential impacts are identified, MassDOT will work with the appropriate agencies to design the project to minimize the impacts.	Continued to comply with requirements of MESA and the WPA.	Continued to comply with requirements of MESA and the WPA.
7B	401 Water Quality Certification	Environmental	Massachusetts's 401 Water Quality certification requirements, which include review of the project by MA Natural Heritage program and US Fish and Wildlife if endangered species habitat is mapped in the project vicinity, will be complied with whenever they are applicable.	Continue to comply with MA 401 Water Quality Certification Regulations.	Continue to comply with MA 401 Water Quality Certification Regulations.
7C	CE Checklist	Environmental	Complete a Categorical Exclusion Checklist for all MassDOT projects that utilize federal funds.	125 Categorical Exclusion (CE) checklists were completed and approved for all federally-aided projects advertised for construction by MassDOT during Permit Year 14. All documentation supporting MassDOT's determination of a project meeting the definition of a Categorical Exclusion is on file with Environmental Services Department at MassDOT Highway Division.	Continue to approve Categorical Exclusion Checklists in support of MassDOT Highway Division's Construction Advertising Program.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
7D	Environmental Site Data Form (Water Quality Data Form - WQDF)	Environmental/ Construction	Develop an environmental site data form for review by designers with Environmental staff at 25% design. Implement on all projects.	The WQDF captures information during programmed projects about existing and proposed BMPs identified by design consultants and MassDOT designers. The WQDF is part of 25% (preliminary design) and 75% design (final design) submittals to MassDOT. The form requires the designer to document information about the stormwater system and the receiving water. MassDOT has received more than 78 water quality data forms; 37 at the 25% design phase and 42 forms at the 75% design phase. Of these, 44 had water quality impairments, 19 of which had a final Total Maximum Daily Load report, and 27 were in a watershed covered by a TMDL. The 75% forms documented a total of 64 stormwater BMPs (existing and proposed) and at least 1,072 proposed deep sump catch basins. Additionally, non-structural BMPs implemented for these projects were documented and included measures such as street sweeping, protecting sensitive areas, inspection and cleaning of stormwater structures, catch basin cleaning, snow removal and deicing controls, and use of sediment and erosion controls during construction. For more information on the data collected through the WQDF, please see Appendix E.	Continue to require submittal of forms at 25% and 75% design submittals. Report on results in annual report. Continue to educate designers on how to accurately and comprehensively complete the WQDF. Issue updated WQDF which allows for pollutant load reduction information to be calculated and uploaded into MassDOT's database. Post new form on MassDOT website and conduct training sessions on new WQDF.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
7E	TMDL Recommendation Summary Table Update	Environmental	The TMDL Recommendation Summary Table of the annual report will be updated annually to reflect the TMDL reports that have been finalized in the previous permit year and to include update on activities consistent with the recommendations made in the TMDL.	While MassDOT has developed a more detailed program in the Impaired Waters Program to address TMDLs, they had historically included a table in the annual report summarizing all Final TMDLs in the state, how they relate to MassDOT and activities which have occurred in the watershed that are consistent with the TMDL suggestions. MassDOT has continued to include this table as Appendix J of this annual report for consistency with new data regarding activities that occurred this year and TMDLs that were finalized this permit year. As part of MassDOT's commitment under the Impaired Waters Program and BMP 7R of the SWMP, MassDOT completed all assessments of impaired waters with TMDLs. Additional information is included under BMP 7R of this report and in Appendix D.	Continue to review draft and final TMDL reports and implement TMDL recommended activities when possible.
7F – 7Q	TMDL Specific Recommendations	See NOI		Comply with TMDL recommendations in Appendix J.	Comply with TMDL recommendations in Appendix J.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
7R **Revised**	TMDL Watershed Review	Environmental	1. Assess all TMDL waters (total of 209 covered by final TMDLs as of April 30, 2010) listed in Appendix L-1 of the SWMP (revised as of July 22, 2010), using the process described in BMP 7R. The assessments will be completed over five years, beginning June 8, 2010, and 20% (or about 41, TMDL waters) will be assessed each year. 2. Assess at least 25 water bodies (both TMDL and non-TMDL waters) within the first quarter of the Impaired Water Program (BMPs 7U and 7R). 3. Submit annual report to EPA containing the documentation described in Step 6 of BMP 7R. 4. Submit quarterly progress report to EPA during the first year of the Impaired Waters Program (BMP 7U and BMP 7R) and semi-annually thereafter.	1-4. MassDOT has reviewed all waterbodies on the Appendix L-1 list within watersheds with a TMDL and has fulfilled their commitment to the court with its final semi-annual submission to the EPA on June 8, 2015. MassDOT continues to be an active participant in developing TMDLs with EPA and DEP. Appendix J includes a review of final TMDLs and the implementation requirements which are relevant to MassDOT.	MassDOT will continue to be an active participant in developing TMDLs that impact MassDOT with EPA and DEP. MassDOT will provide public comment on draft TMDLs as appropriate. As new TMDLs are finalized, they will be reviewed during future designs of programmed projects.
7S	Salt Remediation Program	Environmental	Continue to provide the Salt Remediation Program with a funding level appropriate to quickly address salt related complaints.	Overall ISA Salt Remediation Program budget is $4.05 million from July 2015 through June 2018.	Continue to address new and existing salt complaints.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
7T **Added**	Review of Specific Sites for Water Quality Exceedances in Response to Conservation Law Foundation (CLF) et al. Lawsuit	Environmental	1. Analyze each of the three sites identified in the CLF lawsuit (Charles River crossings in Bellingham and Milford; and North Nashua River crossing in Lancaster). Develop summary report with modeling methodology and summary of results. 2. For the sites which are determined to contribute to the exceedance of water quality at the stream crossing, construct BMPs to address MassDOT related exceedances. 3. Submit a remedial plan to the court.	1. Task completed in Permit Year 8. 2. Task completed in Permit Year 8. 3 Task completed in Permit Year 8.	All required actions have been completed.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
7U **Revised**	Water Quality Impaired Waters Assessment and Mitigation Plan	Environmental	1) Assess all water listed in Appendix L-1 of the SWMP (revised as of July 22, 2010) using the process described in this BMP. 2) Assess at least 25 water bodies (both TMDL and non-TMDL waters) within the first quarter of the Impaired Water Program (BMPs 7U and 7R). 3) Submit quarterly progress reports to EPA during the first year of the Impaired Waters Program and semi-annually thereafter. 4) Provide documentation described in step 6 of BMP 7U in annual reports to the EPA.	1-4 MassDOT submitted assessments to EPA as part of its semi-annual submittals for all waters listed in Appendix L-1 as of its final submission on June 8, 2015.	Future activities of the Impaired Waters Program are summarized in Appendix D. MassDOT will continue to develop designs for BMPs to address impaired waters under the Impaired Waters Program.
8A	Cultural Resources Review	Cultural Resources Department	Review all projects for impacts to historic properties at the 25% design phase. If a potential impact is found, the Department works with the designer (MassDOT or consultant) and Massachusetts Historical Commission to alter the design to mitigate or prevent adverse effects.	All projects listed in the Construction Advertisement Program for the reporting year were reviewed for impacts to historic properties or archaeological resources. None of the projects reviewed had stormwater impacts to significant archaeological or historic resources. Thus, none of these projects required any stormwater BMP design alterations based on cultural resources concerns.	The Cultural Resources Unit will continue to review projects for any stormwater impacts to historic resources at the 25% design stage.

BMP ID #	BMP Description	Responsible Dept./ Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 14	Planned Activities – 2017/ 2018
Addn.	V-Pass Pollutant Assessment Simulation for SWMM	Environmental/ Consultant		MassDOT used the supplemental approach on multiple Retrofit Initiative designs in PY 14. MassDOT, their consultant and EPA have met multiple times to discuss the calibration of the model to loading values in draft NPDES permits. MassDOT has initiated collaboration with EPA to develop a load and BMP credit calculator using published data from EPA, and results from SELDM and MassDOT's V-Pass long-term continuous simulation model. The calculator will be included in MassDOT's WQDF and also in a stand-alone excel tool.	MassDOT will incorporate the calculator into MassDOT's WQDF and also in a stand-alone excel tool. MassDOT will use the values to estimate loading and pollutant treatment for all of its inventoried BMPs where data is available.
Addn.	Programmed Projects Initiative	Environmental/ Consultant		MassDOT continues to implement stormwater BMPs in programmed projects that drain to an impaired water body. The WQDF documented 64 existing and proposed stormwater BMPs this permit year. Refer to Appendix D for more detail on the Programmed Project Initiative and Appendix E for data collected in WQDFs submitted in PY14.	MassDOT will continue the Programmed Projects Initiative.

Part IV. Summary of Information Collected and Analyzed

All information collected and analyzed this year is summarized in the proceeding tables and narrative.

Part V. Program Outputs & Accomplishments (OPTIONAL)

MassDOT's accomplishments during the fourteenth permit year are summarized in Part 1- 4 of this annual report. Additional BMPs that have been added this year have been added to the matrix above with new "Additional" row, rather than summarized below. Additional accomplishments are described below.

The MassDOT Environmental Services Stormwater Unit continues to consist of three environmental scientists and to focus on stormwater management across the Commonwealth. The Stormwater Unit reviews the drainage/stormwater management system for all programmed projects, identifies programmed projects that would benefit from the implementation of structural stormwater BMPs, ensures effective BMPs are designed, and implements the Impaired Waters Program. Additionally, the Stormwater Unit works to expand its BMP and drainage inventory, and promote inspection and maintenance practices. In Permit Year 14, the Stormwater Unit hired one summer intern and three co-ops (a 6-month internship program) which increased the overall capacity of the Unit.

List of Appendices

Appendix A: IDDE Status Table

IDDE Status Table

Date	Location	Flow	Source Justification	Test Results	Current Status of Follow up	Action Item	DOT District Responsibility	Flow Owner Contact Information
2012	626 Bedford Street (Route 18) East Bridgewater	Not Present	Illicit Discharge Survey	Not Tested	A survey was conducted in 2012 on two catch basins and two manholes with suspicious pipes located within them. No dry weather flow was observed. DOT confirmed no knowledge of tie-in.	Upon recent field investigation of the site, it was determined there was no visible tie-in present. This site is no longer considered a potential illicit/unauthorized survey.	District 5	Joppa Market (508) 378-1313
2012	257 Mansfield Avenue (Route 140) Norton, MA	Not Present	Illicit Discharge Survey	Not Tested	MassDOT conducted two site visits at this location in 2012 and determined the source of this connection is located off of MassDOT property. Property owner was contacted by Mr. George Ayoub in 2012 and was asked to apply for a permit. No record of the permit is known at MA DOT.	Notify the town of Norton of the connection	District 5	Norton Estates (508) 285-2901
2007	209 Main Street (Route 1A) Rowley, MA	Not Present	1" black rubber hose noted from residence to MassDOT catch basin	Not Tested	A letter was sent to the residence of 209 Main Street, Rowley, MA on 10/7/2011. The property owner was given 60 days to respond. A response was not received during this time period. MassDOT Environmental contacted the property owner via telephone and left a detailed message regarding the unpermitted flow. A return phone call was received from the property owner. MassDOT is currently working with the property owner to resolve the issue.	District 4 will follow up with property owner to determine if this is a permitted connection.	District 4	Robert and Kathryn Casaletto (978) 948-2911
2010	Rent-A-Tool 777 North Shore Road (1A), Revere, MA	Trickle	District 4 staff identified flow discharging to a MassDOT catch basin/Follow up Illicit Discharge survey	Not Tested	A permit application was submitted to MassDOT in 2010. Additional information was requested by MassDOT but was not received. In 2013 MassDOT environmental contacted the business owner via telephone and left a detailed message, a return phone call has not been received.	District 4 will follow up with property owner and then send an NOV letter, if necessary.	District 4	Rent-A-Tool (Steve Williams) (781) 829-3900
2011	Dunkin Donuts 888 Main Street Woburn, MA	Not Present	District 4 staff identified a 4" pipe connected to a MassDOT catch basin	Not Tested	In 2011 a letter was sent to the property owner and a phone call was placed in 2013. MassDOT has not received a response from the letter or phone communication.	District 4 will follow up with property owner to determine if this is a permitted connection.	District 4	Dunkin Donuts (781) 932-0548
2011	454 Patriots Road (Route 2A) Templeton, MA	Not Present	District 2 observed a small pipe exiting this property during a maintenance call	Not Tested	In 2012 a letter was sent to the property owner and a phone call was placed in 2013. MassDOT has not received responses to either form of communication. District staff do not think the flow direcly ties into the DOT system.	A follow up visit should be conducted to determine the source of this flow, and follow up with the town should be conducted if this is not connected to MA DOT property	District 2	Charlie Perkins (978) 939-1063 (978) 939-8980
2007	Dorrance, Inc. 283 West Main Street (Route 123) Norton, MA	Not Present	Tie-in identified by MassDOT at private residence	Not Tested	A letter and permit application was sent to the homeowner in September of 2011. In March of 2013 MassDOT Environmental left a detailed message with the homeowner regarding the suspect flow. The permit application has yet to be submitted and a return phone call has not been received.	A follow-up visit should be scheduled to confirm tie-in still exists and then follow-up with a NOV letter.	District 5	Carl Dorrance (508) 455-0299

IDDE Status Table

Date	Location	Flow	Source Justification	Test Results	Current Status of Follow up	Action Item	DOT District Responsibility	Flow Owner Contact Information
2012	469 Taunton Avenue (Route 44) Seekonk, MA	Not Present	Impaired Waters Site Visit	Not Tested	This connection was found during an Impaired Waters Site visit in 2012. No flow was present and therefore not tested.	A follow up visit will be conducted to determine the source of this flow. If flow is present a sample will be collected and tested to determine the potential source.	District 5	Mark Chandley (Country Kitchen) (508) 336-9807
2010	I-93/Mystic River, near 32 Shore Drive Somerville, MA	Trickle	MyRWA Water Quality Survey/Illicit Discharge survey	Sanitary Sewer/Washwater	Joint and crack sealing was conducted on the drainage piping proximal to the location of the sampled location in April 2016, and follow-up dry weather flow analysis was conducted in May 2016, which revealed that although flow is still present, constituent concentrations indicate the presence of groundwater only.	No follow up needed- task complete	District 4	MassDOT District 4/MyWRA
2010	Mystic Avenue Somerville, MA	Trickle	Illicit Discharge Survey	Sanitary Sewer	Flow originates off of MassDOT property onto town of Somerville property	Field investigations conducted June 2015 concluded elevated flouride and ammonia concentrations were present, but E. Coli levels were within accpetable ranges. Determined that source of connection was groundwater, and that location is currently undergoing remediation via joint and crack sealing on the drainage pipe in question.	District 4	City of Somerville (617) 666-3311
2010	Route 3 Billerica	Trickle	Illicit Discharge Survey	Washwater	Original source flow was determined to be originating at a clogged catch basin. MassDOT has since cleaned the clogged catch basin and will revisit this location to determine if flow is still present.	District 4 to revisit this location and determine if unclogged catch basin has resolved during dry weather.	District 4	MassDOT District 4
2010	Route 3 Billerica (Concord Road)	Trickle	Illicit Discharge Survey	Washwater	Flow originates off of MassDOT property onto town of Billerica Property	Site investigation completed in June 2015, determined that flow originated from Route 3 median, therefore no illicit source is present. No further action is required. Should remove from next annual report.	District 4	Town of Billerica (978) 671-0924
2010	Route 2/Spy Pond, Belmont/Arlington, MA	Not Present	MyRWA water quality survey/Illicit Discharge survey	Not known	It was determined that a connection is likely not present in Arlington- but there is still evidence of an illicit connection in Belmont. The Town of Belmont was contacted on January 12, 2017 where they were notified of a potential illicit connection.	MassDOT Environmental will work with the Town of Belmont as they investigate the potential illicit connection to their drainage system.	District 4	Town of Belmont (617) 993-2650

Appendix B: Status of Drainage Tie-in Permits

Status of Drainage Tie-In Permits

Permit	Date	Location	Flow	Source Justification	Test Results	Current Status of Follow up	Action Item	DOT District Respon	Flow Owner Contact Information
Unpermitted	2007	615 Northampton St. (Route 5), Holyoke, MA	Intermittent	Sediment carried in stormwater during rain events is clogging MassDOT catch basin	Not tested	In December 2011 a letter was sent to the property owner by MassDOT. In March 2013 an attempt to locate the property owners phone number was made but rendered unsuccessful. MassDOT has not had any further contact with the property owner. District 2 confirmed that flow is not permitted.	MassDOT will conduct a follow-up site visit to confirm flow is still present and then continue to work with the property owner to obtain a tie-in permit	District 2	Tracey Barclay
Unpermitted	2012	25 Upton Street (Route 140) Grafton, MA	Not Present	District 3 observed a 2" PVC pipe exiting a residential home	Not Tested	A follow up visit was conducted again in 2012 and the 2" PVC pipe was still present	District 3 will follow up with the property owner to determine if this is a permitted connection	District 3	Ross Sciarro (508) 839 - 7098
Unpermitted	2012	69 South Main Street (Route 114) Middleton, MA	Intermittent	Illicit Discharge Survey	Natural Water/Tap/Irrigation	MassDOT collected and tested the flow located on this property.	District 4 will work with the Middleton Golf Course to obtain a tie-in permit- waiting for DOT response	District 4	Middleton Golf Course (978) 774-4075
Unpermitted	2014	Route 127 (Summer Street) Kings Way, Manchester, MA	Connection	11/28/2014 - 6-inch SDR 35 Private Storm Sewer connection to a MassDOT Drain Manhole	Not permitted	NOV letter sent to property owner on 12/8/2014	District 4 will work with the Owner to obtain a tie-in permit or removal of tie-in	District 4	Martin Nally & Co. 5 University Lane, Manchester, MA
Unpermitted	2013	Oak Street Barnstable, MA	Intermittent	Oak Street drainage is connected to MassDOT drainage. Reconstruction of the roadway is in the design phase and the town of Barnstable will remove the drainage tie-in during reconstruction (2013-2014)	Not tested	Construction began in August of 2013, follow up with the town of Barnstable and request new drainage plans.	Site visit confirmed drainage tie-in has been disconnected. MassDOT district 5 awaiting letter from the town of Barnstable confirming the work has been completed.	District 5	Town of Barnstable (508) 862-4000
Unpermitted	2012	500 Bedford Street (Route 18) East Bridgewater, MA	Intermittent	4" clay pipe coming from the property, discharging water during dry weather	Natural Source	MassDOT determined this flow is unpermitted.	MassDOT will send a letter to the property owner	District 5	Albert Medeiros (508) 378-7539

Status of Drainage Tie-In Permits

Permit	Date	Location	Flow	Source Justification	Test Results	Current Status of Follow up	Action Item	DOT District Respon	Flow Owner Contact Information
Unpermitted	2013	Abington Fire Station #1040 Bedford Street Abington, MA	Not Present	An 18" reinforced concrete pipe leading from the property's drainage system and connecting to a drain manhole on Route 18 (Bedford Street) was discovered by MassDOT personnel while conducting site investigations as part of a project to widen a section of that roadway.	Not Tested	A *Notice of Violation* letter was sent to the property owner on January 29, 2014.	MassDOT is coordinating with the Town on the drainage tie-in in conjunction with the Route 18 Widening project. A meeting was held on 8/19/15 to discuss alternatives.	District 5	Rick LaFond (Town Manager) 781-982-2100
Unpermitted	2013	McPhail Realty Trust #1200 Bedford Street Abington, MA	Not Present	A 12" PVC pipe leading from a detention pond on the property and connecting to a MassDOT catch basin on Route 18 (Bedford Street) was discovered by MassDOT personnel while conducting site investigations as part of a project to widen a section of that roadway. In addition to that, a 6" HDPE pipe leading from the detention pond to a different MassDOT catch basin further north on Route 18 was also discovered.	Not Tested	A *Notice of Violation* letter was sent to the property owner on January 28, 2014.	MassDOT is coordinating with the Town on the drainage tie-in in conjunction with the Route 18 Widening project. A meeting was held on 8/19/15 to discuss alternatives.	District 5	Matthew and Diana McPhail 781-878-2875
Unpermitted	2013	Travi Realty Trust #1400 Bedford Street Abington, MA	Not Present	A small drainage system leading from a pond within a wooded area on the property and connecting to a drain manhole on Route 18 (Bedford Street) was discovered by MassDOT personnel while conducting site investigations as part of a project to widen a section of that roadway. In addition to that, several upstream connections and runoff spots were also discovered.	Not Tested	A *Notice of Violation* letter was sent to the property owner on January 24, 2014.	MassDOT is coordinating with the Town on the drainage tie-in in conjunction with the Route 18 Widening project. A meeting was held on 8/19/15 to discuss alternatives.	District 5	Vincent Travi 781-871-1469
Unpermitted	2012	Residence, 338 South Main Street (Route 122), Orange MA 01364	Intermittent	4" PVC draining flooding backyard (from stormwater) connected to MassDOT catch basin on Route 122.	Groundwater	No further action required.	MassDOT determined no other feasible alternative to a MassDOT tie-in, therefore a non-vehicular access permit was granted to the property owner on June 10, 2014.	District 2	David Vitols

Status of Drainage Tie-In Permits

Permit	Date	Location	Flow	Source Justification	Test Results	Current Status of Follow up	Action Item	DOT District Respon	Flow Owner Contact Information
Unpermitted	2014	Blockbuster 465 S. Washington St. North Attleborough, MA	Connection	18" RCP connected to MassDOT drainage	Not tested	A *Notice of Violation* letter was sent to the property owner on September 29, 2014.	Through district investigation, pipe found to not be in violation with the drainage tie-in policy. NOV letter will be rescinded.	District 5	Skye Enterprises LLC 9 Cedar Ridge Rd. North Attleborough, MA 02760

Appendix C: Notice of Violation (NOV) Letter

[Letterhead]

[Date]

CERTIFIED MAIL – RETURN RECEIPT REQUESTED # _____

[Contact's Name]
[City/Town or Business Name, If Applicable]
[Address]
[Town/City, State, Zip Code]

Notice of Violation

Re: Illicit and/or Unauthorized Drainage Connection or Discharge to MassDOT Drainage System
Located at _____

Dear _____:

The purpose of this Notice of Violation (NOV) is to inform you, as owner of the above-referenced property, of a suspected connection or discharge to the Massachusetts Department of Transportation's Highway Division (MassDOT) drainage system without a properly issued Non-vehicular Access Permit (tie-in permit).

[Description of the site (several sentences), along with details of the suspect connection.]

This is in violation of G.L. c. 81, § 21, regulations found at 720 CMR 13.00, and Standard Operating Procedure No. HMD-02-2-000 (a copy of which is enclosed). Be aware that MassDOT strictly prohibits illicit and/or unauthorized drainage connections and discharges. Any such connection or discharge must be either permitted by MassDOT or immediately disconnected/sealed.

You have ninety (90) days from the receipt of this notification to contact the person listed below to indicate whether: (1) you will apply for a tie-in permit; (2) you will propose a schedule for the removal of the discharge; or (3) you hold a pre-existing drainage tie-in permit[i]. Should no response be received, a follow-up site investigation will be performed. At that time, should an illicit and/or unauthorized connection or discharge be confirmed, the matter will be forwarded to MassDOT's Chief Legal Counsel for enforcement in conjunction with the Attorney General's Office. This may include fines or penalties of up to $1,000 per day.

Please be aware, however, that applying for a tie-in permit does not guarantee being granted one and an internal review will be performed in order to determine if the connection or discharge should be permitted.

Thank you for your anticipated cooperation in resolving this matter. Please contact the District __ Permits Engineer, _____, at _____ at your earliest convenience within the 90-day period.

Sincerely,

[District Highway Director's Signature]

[District Highway Director's Name]
District __ Highway Director

Attachment: Standard Operating Procedure No. HMD-02-02-2-000 (dated 3/19/2012)

cc: Tracy W. Klay, MassDOT Environmental Counsel
Robert Bennett (w/o attachment), MassDOT Environmental Services Section

[i] In the case of a pre-existing permit, MassDOT will consider rescinding the NOV.

Appendix D: Impaired Waters Program – Summary of NPDES Permit Year 14

Appendix D

Impaired Waters Program

Summary of NPDES Permit Year 14

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Project No. 606176.1 – I-495 at Mine Brook

Project No. 606176.2 – I-495 at Lake Pearl

Project No. 606176.3 – I-495 at Wading River

Project No. 607181 - I-290 at Assabet River

Project No. 608060.1 - Rt. 68 at Parker Pond

Project No. 608060.2 - Rt. 70 at Poor Farm Brook

Project No. 608131.1 - I-93 at Mystic River

Project No. 608131.2 - I-95 at Beaver Brook

Project No. 608132.1 - I-195 at Rumford River

Project No. 608132.2 - I-495 at New Bedford Inner Harbor

Project No. 608132.3 - I-195 at Lee River

Project No. 608135 - Rt. 6, 18 at New Bedford Inner Harbor

Project No. 608136 – Route 116 at Stony Brook

Project No. 600703 – Route 2 at Cambridge Reservoir and Cambridge Reservoir Upper Basin

Project No. 601630 – Route 18 at Mill River, French Stream, Old Swamp River and Shumatuscacant River

1.0 Introduction

MassDOT's Impaired Waters Program (IWP) is a robust program addressing roadway stormwater runoff discharging to impaired waters. The program is both part of MassDOT's commitment to improving the quality of stormwater runoff from its highways and is in compliance with the NPDES Phase II Small MS4 General Permit and commitments in the EPA enforcement order dated April 22, 2010. "Impaired" water bodies are those listed as Category 4a or 5 in MassDEP's Integrated List of Waters (referred to as the 303(d) list).

Starting in June 2010, MassDOT made a five-year commitment to assess all impaired water body segments that receive (or potentially receive) stormwater runoff from MassDOT roadways located in urban areas. As of June 2015, MassDOT has completed assessments of 684 water bodies across the State based on a water body estimate submitted as part of the EPA enforcement and referred to as Appendix L-1. MassDOT also assessed water bodies that were not on the Appendix L-1 list (expanded to encompass the additional urban area identified in the latest census, impaired waters listed on the latest (2012) final 303(d) list, and MassDOT property acquired (e.g., Mass. Turnpike) since the enforcement) as part of MassDOT's good-faith commitment to improve stormwater runoff quality from its highways. Performing a water body assessment includes identifying if runoff from the roadways drains to the water body, whether stormwater is contributing to the impairment, and whether existing Best Management Practices (BMPs) effectively treat runoff from the roadways. The assessment then sets a pollutant removal target for the specific receiving water. When the treatment target is not currently met, MassDOT will design and construct additional water quality BMPs where site conditions allow. To most effectively utilize tax dollars, MassDOT is implementing this program through two initiatives: Retrofit and Programmed Projects.

The Retrofit Initiative is designed to identify locations where adding BMPs along existing roadways is warranted and will lead to a significant reduction in water quality impacts. This effort is aimed at reducing the impacts of MassDOT's runoff on impaired water bodies through the implementation of structural BMP retrofits. MassDOT proactively constructs these stormwater improvements as stand-alone projects or along with resurfacing projects. BMP design and construction is underway and MassDOT plans to continue the design and construction expeditiously until complete. Significant funding has been allocated for retrofit construction projects to meet this goal.

Alternatively, improvements occur as part of programmed projects which are those projects where significant improvements are planned for a roadway or intersection (e.g., intersection improvement, highway widening) and MassDOT can include stormwater treatment upgrades. MassDOT's Programmed Projects Initiative is implemented for construction projects where roadways discharge to impaired waters and may also include municipal projects undertaken by MassDOT for local municipalities. MassDOT performs an evaluation of the project area draining to the impaired water body and installs additional structural stormwater BMPs to the maximum extent practicable as part of the roadway construction. Furthermore, MassDOT has initiated a substantial water quality data form/database project to capture information regarding the improvements included in the programmed projects so they can be evaluated as part of the overall program.

As of MassDOT's final semi-annual report, submitted to the EPA on June 8, 2015, MassDOT had assessed 826 water bodies. Of the 826 assessments, 116 have moved forward into design as retrofit projects, programmed projects, or both. In some cases, BMPs to a single receiving water body are constructed under separate projects, pulling from retrofit and/or from programmed-project funding based on timing, the locations of contributing roadways, and on the work that MassDOT already has planned. To date, 19

instances have occurred in which water bodies have or will have BMPs constructed under multiple IWP projects, bringing the total number of IWP water body projects from 116 to 134.

Table 1 Assessment/Design/Construction Project Summary

EPA Submittal	Final Program Outcome
# of Water Bodies Assessed	826
Projects to address impaired water bodies moving forward with design as part of retrofit, programmed projects or combination project	134
Projects no longer feasible due to site constraints	7
Projects in Design	46
Projects in Construction	32
Projects with Construction Complete	49

MassDOT continues to use six different consulting design firms to assist with meeting the aggressive goals pertaining to design and construction oversight of IWP projects.

All of the newly constructed BMPs will have a beneficial impact on the runoff from MassDOT roads. An estimated 127 acres of impervious cover (IC) will be treated by the BMPs currently under construction or constructed this past year and 185 lbs/year of phosphorus will be removed in phosphorus Total Maximum Daily Load (TMDL) watersheds.

In addition to structural BMPs, MassDOT has taken many steps to further strengthen the Impaired Waters Program this year. MassDOT has continued to maintain and update the IWP geospatial database to track structural BMPs being designed and constructed by our design consultants and the status of water body assessments. This IWP geospatial database is a powerful tool in the analysis of MassDOT's program and future planning/ water quality analysis.

2.0 Retrofit Initiative Stormwater BMPs

The following is a summary of MassDOT's actions through the Retrofit Initiative.

2.1 Overview of Progress in Permit Year 14

MassDOT has completed all of the impaired waters assessments and is designing many water quality BMPs that will provide pollutant treatment, while advancing effective construction of the designs.

2.1.1 Design

For assessments where moving forward with BMP design is suggested, MassDOT assigns the project to one of the six IWP designers under contract to MassDOT. The designer performs a more detailed review of the MassDOT urban area roads directly draining to the impaired receiving water to identify site constraints (soils, wetlands, utility conflicts, etc.) that may limit potential BMP locations, and requests survey and geotechnical information as needed. The designer develops the design of BMPs to meet the target

impervious cover or pollutant load reduction to the maximum extent practicable, receives permits, and prepares construction plans for the retrofit project.

Currently, there are 46 projects in a variety of stages of design. Table 2 provides a summary of the design project status for the overall program and illustrates how many projects have moved through the design stages during this year.

Table 2 Design Stage Summary

Design Stage	Permit Year 12	Permit Year 13	Permit Year 14
Pre-Design	40	31	16
Pre-25/75%	21	16	6
25/75%	14	12	5
100%	11	4	4
PS&E	0	8	15
Total	86	71	46

Table 10 provides more details on the individual projects and their progress this year. Summary sheets in Attachment A highlight the projects that have reached final design and/or construction this year that have not previously been included in the annual report summary.

As part of the design of the BMPs, MassDOT consultants calculate the pollutant load that will be removed by the proposed BMPs and therefore will not reach the impaired waters. BMPs in construction or constructed this year are estimated to remove 126 acres of effective IC and 185 lbs/yr of phosphorus from the phosphorus impaired watersheds. 94 of the 166 BMPs currently under construction or constructed this past year treat roadway runoff that discharges directly to impaired waters. The effective IC and phosphorus reduction provided by these BMPs treating direct discharges to impaired waters are 71 acres and 85 lbs/yr, respectively.

Table 3 BMP Pollutant Removal Estimate Summary

Pollutant Type	Permit Year 14	Overall Program
Effective IC (acres)	126	**599**
Phosphorus (lbs/yr)	185	**679**

Table 12 provides a BMP pollutant removal summary of individual BMPs treating stormwater directly discharging to impaired waters on projects which were constructed or started construction this year. Table 13 provides a BMP pollutant removal summary of additional BMPs treating indirect discharges to watersheds of impaired waters. Projects completed in previous permit years have not been included for simplicity but are tracked in MassDOT's database.

2.1.2 Construction

Once the designs are completed, the projects are advertised and await construction. Table 4 summarizes the status of IWP construction projects this year in comparison to last permit year. Thirty-two projects are currently under construction and 18 project were completed this permit year.

Table 4 Construction Project Summary

Construction Stage	Permit Year 12	Permit Year 13	Permit Year 14
Construction On-going	15	29	32
Construction Completed	10	5	18

Table 11 provides details on the projects currently being constructed. More than one Impaired Waters Program project may occur to address a water body for different reasons. Sometimes it's due to a resurfacing project that will cover a portion of the directly discharging area to the receiving water, and so BMPs are included within the project limits of the resurfacing project. Other times it's due to the shape and length of the water body which may cross under MassDOT property at multiple locations so it may make sense geographically to have separate projects.

In order to showcase some of the many improvements that have progressed to construction or have been completed this year as part of the Impaired Waters Program, Attachment A includes detailed summary sheets including pictures, pollutant removal estimates, and costs for projects that have reached final design and/or construction this year and had not been highlighted in annual reports previously. The projects include:

1. Project No. 607176 – Route 9 at Assabet River
2. Project No. 606290.1 – I-90 at Blackstone River
3. Project No. 606290.2 – I-90 at Dorothy Pond
4. Project No. 606485 – Route 146 at Marble Pond
5. Project No. 607175 – Route 3 at Plymouth Harbor
6. Project No. 606176.1 – I-495 at Mine Brook
7. Project No. 606176.2 – I-495 at Lake Pearl
8. Project No. 606176.3 – I-495 at Wading River
9. Project No. 607181 - I-290 at Assabet River
10. Project No. 608060.1 - Rt. 68 at Parker Pond
11. Project No. 608060.2 - Rt. 70 at Poor Farm Brook
12. Project No. 608131.1 - I-93 at Mystic River
13. Project No. 608131.2 - I-95 at Beaver Brook
14. Project No. 608132.1 - I-195 at Lee Rumford River
15. Project No. 608132.2 - I-495 at Rumford RiverNew Bedford Inner Harbor
16. Project No. 6081321.3 - I-195 at New Bedford Inner HarborLee River
17. Project No. 608135 - Rt. 6, 18 at New Bedford Inner Harbor
18. Project No. 608136 – Route 116 at Stony Brook

To date, construction of 49 projects have been completed as part of the overall IWP.

Funding is provided through the Federal Highway Administration (FHWA) transportation improvements program to fund stand-alone retrofit projects and programmed resurfacing projects coupled with the IWP. MassDOT advertised approximately $9.2 million in stormwater improvements in federal fiscal year (FFY) 2016 (October 1, 2015 to September 31, 2016). MassDOT plans to advertise $6.8 million in stormwater improvements by the end of FFY 2017 (October 1, 2016 to September 31, 2017) and an additional $7.7 million the following FFY. Funding is allocated for stormwater retrofits under the Statewide Transportation Improvement Program (STIP) through FFY 2021.

Table 5 Construction Project Funding Summary

Federal Fiscal Year	FY9-15	FY16	FY17	FY18	Total
Contract Values ($M)	21.2	9.2	6.8	7.7	**44.9**

2.1.3 Other

In addition to structural BMPs, MassDOT has taken many steps to further strengthen the Impaired Water Program this year. MassDOT has continued to maintain and update the IWP geospatial database to track the many structural BMPs being designed and constructed by its design consultants and the status of water body assessments. MassDOT has expanded the capabilities of its BMP database to include recording BMP characteristics and include inspection and maintenance tracking. MassDOT continues to pilot and refine the BMP inspection tracking system and plans to more widely implement the inspections and maintenance scheduling and tracking in the upcoming year.

In addition, MassDOT has expanded the BMP database to include parameters necessary to better characterize the water quality performance of each BMP. MassDOT plans on implementing a consistent BMP accounting methodology based on EPA's methodology using these additional parameters to estimate water quality treatment. This methodology will be embedded into MassDOT's WQDF and also be a stand-alone tool for MassDOT designers to help select, size and calculate the treatment of their BMPs.

2.2 Planned Activities for Permit Year 15

MassDOT will continue to implement the Impaired Waters Program in Permit Year 15 to move the many projects identified with potential and need for BMPs through the design stages and develop bundled construction projects for advertisement. In addition to the BMPs constructed as part of the Retrofit Projects Initiative, MassDOT will further develop and populate the robust impaired waters database.

2.2.1 Design

MassDOT will continue to work with the six firms under contract to assist with design of stormwater BMPs.

Table 6 Design Project Schedule Summary

Construction Stage	Permit Year 14	Permit Year 15
Design	46	26
Construction	32	49

2.2.2 Construction

MassDOT will advertise and construct BMPs as designs are completed. MassDOT plans to advertise $6.8 million in stormwater improvements by the end of FFY 2017 (October 1, 2016 to September 31, 2017). Funding will be provided through the Federal Highway Administration (FHWA) transportation improvements program. The $6.8 million will go toward stand-alone retrofit projects and programmed resurfacing projects coupled with the IWP. Funding has been allocated to construction stormwater BMPs as part of the IWP through Federal Fiscal Year 2020.

Table 7 IWP Construction Project Funding

Federal Fiscal Year	FY9-FY16	FY17	FY18	FY19	FY20	Total
Stormwater Improvement Construction Funding ($M)	30.4	6.8	7.7	3.0	4.3	**52.2**

3.0 Programmed Projects Initiative Stormwater BMPs

Projects included in the Statewide Transportation Improvement Plan (TIP) or otherwise included in MassDOT's program for construction provide an excellent opportunity to incorporate stormwater BMPs and provide significant water quality improvements. Unlike retrofit BMPs, these projects allow for holistic site planning, where drainage can be redirected and stormwater management can be included in the overall plan for the site. Also, programmed projects allow for the potential to increase the right-of-way and/or move conflicting utilities. Therefore, MassDOT has included stormwater BMPs in contracts for planned projects that discharge stormwater runoff to impaired waters including municipal projects undertaken by MassDOT for local municipalities and projects outside the permit (i.e., urbanized) area.

3.1 Overview of Progress in Permit Year 14

Many stormwater improvements were incorporated into programmed projects over the past year. Attachment A includes summary sheets showcasing the following projects that included stormwater improvements:

1. Project No. 600703 – Route 2 at Cambridge Reservoir and Cambridge Reservoir Upper Basin
2. Project No. 601630 – Route 18 at Mill River, French Stream, Old Swamp River and Shumatuscacant River

MassDOT's Environmental Section identifies projects discharging to impaired waters through water quality data forms. MassDOT employees and consultants complete a water quality data form for regularly scheduled (programmed) projects at the 25% design phase, and then again at the 75% design phase. The form provides designers with general guidance for implementing BMPs given project type and receiving water body characteristics, gathers water quality and stormwater improvement data, and conducts data validation. The form solicits specific location information for each proposed BMP, which allows for simple integration in the IWP geospatial database. The accompanying web map application allows designers to quickly determine which impaired water body their project drains to and whether the project lies in a watershed with a TMDL.

The table below summarizes the information received from data forms this year about programmed projects.

Table 8 Permit Year 14 Program Projects BMPs Summary

	25% Design	75% Design	Total
Data Forms Received	37	42	78
Impaired Receiving Waters Identified	35	-	
Receiving Waters with a Final TMDL	19	-	
Stormwater BMPs Identified (Existing and Proposed)	-	64	
Deep Sump Catch Basins Identified	-	1,072	

Additionally, sensitive site design elements for these projects were documented and included measures such as preserving existing vegetation, natural drainage patterns, and riparian buffers; minimizing disturbance to wetland resource areas; promoting sheet flow to vegetated areas; and reducing existing impervious cover.

3.2 Planned Activities for Permit Year 15

MassDOT will continue to include stormwater improvements to the maximum extent practicable within programmed projects, require designers to complete water quality forms on the projects and capture the stormwater control information in the IWP database. Additionally, MassDOT plans to update the Water Quality Data Form to include a BMP credit calculator. This will allow MassDOT designers to estimate loading and pollutant treatment for proposed BMPs, refine BMP selection and design to maximize treatment, and will allow MassDOT to include treatment information on all BMPs inventoried in its database.

4.0 Design Status of TMDL Watersheds

As discussed in the June 8th, 2015 submittal to EPA, the EPA enforcement required that "*all TMDL waters in urbanized areas to which MassDOT discharges must have been evaluated to determine if existing BMPs are sufficient and, if not, MassDOT must have identified additional controls that should be implemented."*

As of the June submittal, MassDOT had met this requirement for all but three Appendix L-1 TMDL waterbodies. However, BMPs to address these water bodies are currently under design and shown in the table below. MassDOT met all of the remaining EPA enforcement requirements.

Table 9 Appendix L-1 TMDL Water Bodies with Design Potential Still to be Identified Status

Water Body ID	Water Body Name	June 8, 2015 Submittal		Current		
		Design Status	Ad Date	Project Name	Design Status	Ad Date
MA73-30	Gulliver Creek	Pre-proposal	5/19	I-93	Pre-25/75%	10/19
MA82B-07	Assabet River	Pre-proposal	5/20	Rt 2, 2A (Project 606995)	Construction	8/16
MA84A-03	Merrimack River	Pre-proposal	12/16	Rt. 110, I-93,113 (Resurfacing Contract 607561)	PSE	4/17
MA82B-04*	Assabet River	Construction	--	I-290 (Project 607181)	Construction	--

*This project was mistakenly included as being in the pre-proposal phase in the June 8, 2015 submittal. This project was in the construction phase at the time of the June 8, 2015 submittal and is currently still in construction.

Table 10 Retrofit Project in Design Status

Water Body ID	Water Body Name	Project Name	Project Type	District	Year 14 % Design Complete	Estimated Ad Date	Year 13 % Design Complete
MA62-06	Salisbury Plain River	Rt. 28 at Salisbury Plain River	Retrofit	5	Not Feasible[1]	8/1/2016	25%/75%
MA82A-26	Sudbury River	Route 9 at Sudbury River	Retrofit	4	Not Feasible[2]	10/1/2017	Pre-Design
MA73-33	Unnamed Tributary	Rt. 1 at Unnamed Tributary	Retrofit	5	NA[3]	NA	Pre-Design
MA61-06	Mount Hope Bay	I-195 at Mount Hope Bay	Retrofit	5	Pre-Design	10/1/2023	Pre-Design
MA62-04	Taunton River	I-195, Rt. 79, 24, 103, 138 at Taunton River	Retrofit	5	Pre-Design	10/1/2023	Pre-Design
MA70-02	Boston Inner Harbor	Boston Inner Harbor	Retrofit	6	Pre-Design	TBD	Pre-Design
MA71043	Upper Mystic Lake	Rt. 3 at Upper Mystic Lake	Retrofit	4	Pre-Design	10/1/2018	Pre-Design
MA73-01	Neponset River	I-95 at Neponset River	Retrofit	5	Pre-Design	10/1/2018	Pre-Design
MA81-02	North Nashua River	Rt. 2 at North Nashua River	Retrofit	3	Pre-Design	6/1/2018	Pre-Design
MA81046	Fort Pond	Rt. 2 and Rt. 70 at Fort Pond	Retrofit	3	Pre-Design	6/1/2018	Pre-25/75%
MA81053	Grove Pond	Rt. 2A, 110, 111 at Grove Pond	Retrofit	3	Pre-Design	6/1/2018	Pre-Design
MA82125	Lake Cochituate	Rt. 9 at Lake Cochituate Middle Basin	Resurfacing	3	Pre-Design	TBD	Pre-Design
MA82127	Lake Cochituate	Rt. 9 at Lake Cochituate South Basin	Retrofit	3	Pre-Design	6/1/2018	Pre-Design
MA82A-08	Concord River	Rt. 3A, I-495 at Concord River	Retrofit	4	Pre-Design	6/1/2018	Pre-Design
MA83-04	Rogers Brook	Rt. 28 at Rogers	Retrofit	4	Pre-Design	6/1/2018	Pre-Design
MA92-06	Ipswich River	I-95/I-93 at Ipswich River	Retrofit	4	Pre-Design	10/1/2020	Pre-Design
MA95-67	Nasketucket River	Rt. 6, 240 at Nasketucket River	Retrofit	5	Pre-Design	10/1/2018	Pre-Design
MA96050	Crystal Lake	Rt. 28 at Crystal Lake	Retrofit	5	Pre-Design	10/1/2019	Pre-Design
MA81-05	Nashua River	Route 2 at Nashua River	Resurfacing	3	Pre-Design	10/1/2019	N/A
MA42-03	French River	I-90 at French River	Retrofit	3	Pre-25/75%	TBD	Pre-25/75%
MA51-02	Middle River	I-290, Rt. 146 at Middle River	Retrofit	3	Pre-25/75%	6/1/2018	Pre-25/75%
MA51073	Indian Lake	Rte 122A at Indian Lake	Retrofit	3	Pre-25/75%	10/1/2019	Pre-25/75%
MA51-08	Unnamed Tributary	I-290, I-90, Rt. 146, Rt. 12 at Unnamed Tributary	Retrofit	3	Pre-25/75%	10/1/2019	Pre-25/75%
MA73-26	Unquity Brook	I-93, Randolf Ave at Unquity Brook	Retrofit	6	Pre-25/75%	10/1/2019	Pre-Design
MA73-30	Gulliver Creek	I-93 at Gulliver Creek	Retrofit	6	Pre-25/75%	10/1/2019	Pre-Design
MA34-05	Connecticut River	Chicopee Holyoke Interstate Maintenance	Resurfacing	2	25%/75%	10/1/2018	Pre-25/75%
MA41-05	Cady Brook	I-90 at Cady Brook	Retrofit	3	25%/75%	TBD	25%/75%

Water Body ID	Water Body Name	Project Name	Project Type	District	Year 14 % Design Complete	Estimated Ad Date	Year 13 % Design Complete
MA51135	Lake Ripple	Rt. 140 at Lake Ripple	Retrofit	3	25%/75%	TBD	25%/75%
MA53-01	Runnins River	I-195, Rt. 44 at Runnins River	Resurfacing	5	25%/75%	10/1/2017	25%/75%
MA82B-14	Nashoba Brook	I-495 at Nashoba Brook	Resurfacing	3	25%/75%	10/1/2017	Pre-Design
MA41057	Pistol Pond	I-84, I-90, And Route 20 at Pistol Pond	Retrofit	3	100%	10/1/2017	Pre-Design
MA72-28	Beaver Brook	Rt. 2 at Beaver Brook	Retrofit	4	100%	10/1/2017	Pre-25/75%
MA82055	Grist Mill Pond	Rt. 20 at Grist Mill Pond	Retrofit	3	100%	10/1/2017	Pre-25/75%
MA82A-16	Unnamed Tributary	Rt. 20 at Hager Road	Retrofit	3	100%	10/1/2017	Pre-Design
MA82020	Lake Cochituate	I-90 at Lake Cochitutate North Basin	Resurfacing	3	PSE	10/28/2017	Pre-25/75%
MA82097	Saxonville Pond	I-90 at Saxonville Pond	Retrofit	3	PSE	10/28/2017	Pre-25/75%
MA82125	Lake Cochituate	I-90 at Lake Cochituate Middle Basin	Resurfacing	3	PSE	10/28/2017	Pre-25/75%
MA82A-07	Concord River	Rt. 3 at Concord River	Retrofit	4	PSE	10/1/2016	Pre-Design
MA82A-22	Unnamed Tributary	I-90 at Cochituate Brook	Resurfacing	3	PSE	10/28/2017	Pre-25/75%
MA82A-26	Sudbury River	I-90 at Sudbury River	Resurfacing	3	PSE	10/28/2017	Pre-25/75%
MA83-17	Shawsheen River	Rt. 3, 3A at Shawsheen River	Retrofit	4	PSE	10/1/2016	Pre-Design
MA83-18	Shawsheen River	I-93 at Shawsheen River	Retrofit	4	PSE	5/6/2017	Pre-25/75%
MA84A-03	Merrimack River	Rt. 110, I-93, and 113 at Merrimack River	Resurfacing	4	PSE	4/15/2017	25%
MA95115	Parker Mills Pond	Wareham Rochester Milleboro Interstate Maintenance	Resurfacing	5	PSE	4/22/2017	Pre-Design
MA96-14	Swan Pond River	Dennis Harwich Brewster Orleans Resurfacing	Resurfacing	5	PSE	4/22/2017	Pre-Design
MA96-51	Muddy Creek	Dennis Harwich Brewster Orleans Resurfacing	Resurfacing	5	PSE	4/22/2017	Pre-Design
MA96-70	Areys Pond	Dennis Harwich Brewster Orleans Resurfacing	Resurfacing	5	PSE	4/22/2017	Pre-Design
MA96-77	Pleasant Bay	Dennis Harwich Brewster Orleans Resurfacing	Resurfacing	5	PSE	4/22/2017	Pre-Design
MA96-88	Cedar Pond	Dennis Harwich Brewster Orleans Resurfacing	Resurfacing	5	PSE	4/22/2017	Pre-Design

[1] Following design, this BMP was determined infeasible due to property owner objections, major existing drainage infrastructure insufficiencies, and potential utility conflict.

[2] Following further review, BMPs were determined to be infeasible at this location due to limited available space within the right-of-way along a developed corridor.

[3] Improvements associated with I-95/I-93 interchange exceed reduction target. Therefore, retrofit project no longer necessary.

Table 11 Retrofit/Resurfacing Projects under Construction Status

Water Body ID	Water Body Name	Project Name	Project Type	District	Year 14 Construction Status	Estimated Construction Start Date	Estimated Construction End Date	Year 13 Status
MA34-05	Connecticut River	I-91, I-90 at Connecticut River (Subbasins A & B)	Retrofit	2	In Construction	Fall 2017	Spring 2018	100%
MA41-02	Quinebaug River	I-84 at Quinebaug River	Resurfacing	3	In Construction	Spring 2017	5/18/2019	100%
MA51039	Dorothy Pond	I-90 at Dorothy Pond	Retrofit	3	In Construction	Fall 2016	5/18/2019	PSE
MA51-05	Blackstone River	Rt. 146, Rt. 122 at Blackstone River	Retrofit	3	In Construction	Winter 2016	10/31/2017	25%/75%
MA51-08	Unnamed Tributary	I-190 at Indian Lake	Resurfacing	3	In Construction	Summer 2016	8/4/2019	In Construction
MA51-10	Mill River	Rt. 140 at Mill River	Retrofit	3	In Construction	Winter 2016	10/31/2017	25%/75%
MA51105	Mill Pond	Shrewsbury/Boylston/Northborough Maintenance	Resurfacing	3	In Construction	Spring 2017	8/16/2019	25%/75%
MA51125	Lake Quinsigamond	Shrewsbury/Boylston/Northborough Maintenance	Resurfacing	3	In Construction	Spring 2017	8/16/2019	25%/75%
MA51-14	Mumford River	Rt. 146 at Mumford River	Retrofit	3	In Construction	1/15/2016	7/8/2017	In Construction
MA51-15	Tatnuck Brook	Rt. 122 at Tatnuck Brook	Retrofit	3	In Construction	1/15/2016	7/8/2017	In Construction
MA51196	Shirley Street Pond	Shrewsbury/Boylston/Northborough Maintenance	Resurfacing	3	In Construction	Spring 2017	8/16/2019	25%/75%
MA61-02	Lee River	I-195 at Lee River	Retrofit	5	In Construction	Fall 2016	5/9/2017	In Construction
MA62-39	Rumford River	I-495 at Rumford River	Retrofit	5	In Construction	Fall 2016	5/9/2017	In Construction
MA62-47	Wading River	I-495 at Wading River	Resurfacing	5	In Construction	Winter 2016	4/25/2018	PSE
MA71-02	Mystic River	I-93 at Mystic River	Retrofit	4	In Construction	4/13/2016	11/14/2017	In Construction
MA72092	Lake Pearl	Foxborough Plainville Wrenthem Maintenance	Resurfacing	5	In Construction	Winter 2016	4/25/2018	PSE
MA72-14	Mine Brook	I-495 at Mine Brook, Phase II	Resurfacing	3	In Construction	Winter 2016	4/25/2018	PSE

Water Body ID	Water Body Name	Project Name	Project Type	District	Year 14 Construction Status	Estimated Construction Start Date	Estimated Construction End Date	Year 13 Status
MA82B-02	Assabet River	Rt. 9 at Assabet River	Retrofit	3	In Construction	Summer 2017	3/16/2019	100%
MA82B-03	Assabet River	Shrewsbury/Boylston/Northborough Maintenance	Resurfacing	3	In Construction	Spring 2017	8/16/2019	25%/75%
MA82B-04	Assabet River	I-290 at Assabet River	Resurfacing	3	In Construction	Summer 2015	9/1/2018	In Construction
MA82B-07	Assabet River	Rt. 2, 2A at Assabet River	Retrofit	4	In Construction	Spring 2017	9/30/2017	Pre-Design
MA84A-10	Spicket River	Andover-Methuen Interstate Maintenance	Resurfacing	3	In Construction	Spring 2017	11/2/2018	PSE
MA84A-10	Spicket River	I-93 at Spicket River	Resurfacing	4	In Construction	Spring 2017	11/2/2018	PSE
MA84A-17	Black Brook	Rt. 3/3A at Black Brook	Retrofit	4	In Construction	Spring 2017	9/30/2017	Pre-25/75%
MA84A-18	Bare Meadow Brook	I-495 at Bare Meadow Brook	Resurfacing	4	In Construction	Spring 2017	11/2/2018	PSE
MA93-07	Bass River	Rt. 128 at Bass River	Resurfacing	4	In Construction	Spring 2015	Spring 2017	In Construction
MA93-37	Beaver Brook	I-95 at Beaver Brook	Retrofit	4	In Construction	4/13/2016	11/14/2017	In Construction
MA93-39	Proctor Brook	Rt. 128 at Proctor Brook	Retrofit	4	In Construction	Spring 2017	9/30/2017	Pre-Design
MA93-42	North River	Rt. 107 at North River	Retrofit	4	In Construction	Summer 2017	9/2/2017	25%/75%
MA94-16	Plymouth Harbor	Plymouth Resurfacing work	Resurfacing	5	In Construction	Winter 2016	10/16/2018	100%
MA95-42	New Bedford Inner Harbor	Rt. 6, 18 at New Bedford Inner Harbor	Retrofit	5	In Construction	Fall 2016	6/11/2017	PSE
MA95-42	New Bedford Inner Harbor	I-195 at New Bedford Inner Harbor	Retrofit	5	In Construction	Fall 2016	5/9/2017	In Construction
MA32-05	Westfield River	Rt. 20 at Westfield River	Retrofit	2	Constructed	Mar-16	3/16/2017	In Construction
MA34-05	Connecticut River	I-91, Rt. 5 at Connecticut River (Subbasins C & D)	Retrofit	2	Constructed	Fall 2015	3/16/2017	In Construction
MA34-19	Stony Brook	Rt. 116 at Stony Brook	Retrofit	2	Constructed	Fall 2016	Spring 2017	In Construction
MA35026	Greenwood Pond	Rt. 2 at Greenwood Pond	Retrofit	2	Constructed	Spring 2016	3/16/2017	In Construction
MA35056	Parker Pond	Rt. 68 at Parker Pond	Retrofit	3	Constructed	Summer 2016	11/21/2016	In Construction

Water Body ID	Water Body Name	Project Name	Project Type	District	Year 14 Construction Status	Estimated Construction Start Date	Estimated Construction End Date	Year 13 Status
MA51093	Marble Pond	Rt. 146 at Marble Pond	Retrofit	3	Constructed	1/15/2016	Spring 2017	In Construction
MA51-17	Poor Farm Brook	Rt. 70 at Poor Farm Brook	Retrofit	3	Constructed	Summer 2016	11/21/2016	In Construction
MA72-07	Charles River	I-90, I-95 Tolls	Retrofit	6	Constructed	Spring 2015	Fall 2016	In Construction
MA72-29	Cheese Cake Brook	I-90 at Cheese Cake Brook	Retrofit	6	Constructed	Spring 2015	Fall 2016	In Construction
MA72-36	Charles River	I-90 at Charles River	Retrofit	6	Constructed	Spring 2015	Fall 2016	In Construction
MA73-04	Neponset River	I-93 at Neponset River	Retrofit	6	Constructed	11/18/2015	3/27/2017	In Construction
MA74-04	Mill River	Rt. 3, 53 at Mill River	Retrofit	6	Constructed	11/18/2015	3/27/2017	In Construction
MA74-08	Monatiquot River	Rt. 3 at Monatiquot River	Resurfacing	6	Constructed	Summer 2014	Summer 2016	In Construction
MA74-09	Town Brook	Rt. 3 and I-93 Interchange at Town Brook	Retrofit	6	Constructed	11/18/2015	3/27/2017	In Construction
MA81-05	Nashua River	Rt. 2, 2A at Nashua River	Retrofit	3	Constructed	1/28/2016	7/6/2017	In Construction
MA83-19	Shawsheen River	I-495 at Shawsheen River	Resurfacing	4	Constructed	Spring 2015	Spring 2017	In Construction
MA84A-04	Merrimack River	I-495 and Merrimack River	Resurfacing	4	Constructed	Spring 2015	Spring 2017	In Construction
MA93-51	Unnamed Tributary	Rt. 60 at Unnamed Tributary	Resurfacing	4	Constructed	Fall 2015	Spring 2017	In Construction

Table 11 Summary of Retrofit BMPs under Construction or Constructed (Direct Discharge)

Blackstone Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA51039	Dorothy Pond	21.9	N/A	23.0
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	4.2	2.0	5.0
	Infiltration Swale	3.8	1.3	3.4
	Infiltration Swale	0.9	0.4	1.2
	Infiltration Swale	1.3	0.8	2.1
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	4	10.2	4.5	11.6
	Remaining Red. to Meet Target:		N/A	11.4
Waterbody ID	**Waterbody Name**	**Direct IC WS (acres)**	**Target IC Red. (acres)**	**Target P Red. (lbs/yr)**
MA51-03	Blackstone River	116	69	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	2.6	0.8	2.2
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	2.6	0.8	2.2
	Remaining Red. to Meet Target:		68.2	N/A
Waterbody ID	**Waterbody Name**	**Direct IC WS (acres)**	**Target IC Red. (acres)**	**Target P Red. (lbs/yr)**
MA51125	Lake Quinsigamond	22.2	N/A	8.8
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	2.0	1.9	5.6
	Infiltration Basin	3.5	3.4	9.9
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	2	5.5	5.3	15.5
	Remaining Red. to Meet Target:		N/A	0

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA51196	Shirley Street Pond	15.7	N/A	14.6
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	1.9	1.8	5.5
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	1.9	1.8	5.5
	Remaining Red. to Meet Target:		N/A	9.1
MA51135	Lake Ripple	3.3	0.9	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	1.0	0.9	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	1.0	0.9	N/A
	Remaining Red. to Meet Target:		0	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA51-10	Mill River	N/A	N/A	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	0.1	0.1	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	0.1	0.1	N/A
	Remaining Red. to Meet Target:		N/A	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA51-05	Blackstone River	9.7	2.7	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Bioretention	4.6	4.1	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	4.6	4.1	N/A
	Remaining Red. to Meet Target:		0	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA51093	Marble Pond	6.6	1.6	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.7	0.2	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	0.7	0.2	N/A
	Remaining Red. to Meet Target:		1.4	N/A

Buzzard's Bay Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA95-42	New Bedford Inner Harbor	37.0	32.0	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.3	0.2	N/A
	Infiltration Swale	0.3	0.1	N/A
	Infiltration Swale	0.1	0.1	N/A
	Infiltration Basin	0.4	0.3	N/A
	Infiltration Basin	0.5	0.4	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	5	1.6	1.0	N/A
	Remaining Red. to Meet Target:		31.0	N/A

Charles Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA72-14	Mine Brook	79.2	36.7	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.3	0.3	0.8
	Infiltration Swale	0.9	1.0	17.3
	Infiltration Swale	0.1	0.1	0.3
	Infiltration Swale	0.1	0.1	0.3
	Infiltration Swale	0.4	0.4	3.1
	Infiltration Swale	0.5	0.5	4.1
	Infiltration Swale	1.1	1.1	15.4
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	7	3.3	3.3	41.1
	Remaining Red. to Meet Target:		33.4	N/A

Concord Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA82B-02	Assabet River	9.8	2.9	18.8
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Leaching Basin	2.5	0.1	0.6
	Leaching Basin	0.4	0.1	0.3
	Leaching Basin	4.3	0.1	0.6
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	3	7.2	0.3	1.5
	Remaining Red. to Meet Target:		2.6	17.3
MA82B-07	Assabet River	9.0	4.0	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	0.2	0.1	N/A
	Infiltration Basin	0.2	0.2	N/A
	Iniltration Swale	0.4	0.4	N/A
	Infiltration Swale	0.5	0.5	N/A
	Infiltration Swale	0.6	0.6	N/A
	Infiltration Swale	0.4	0.4	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	6	2.2	2.2	N/A
	Remaining Red. to Meet Target:		1.8	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA82B-14	Nashoba Brook	30.6	8.5	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	0.2	0.2	N/A
	Subsurface Infiltration Structure	0.4	0.3	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	2	0.5	0.5	N/A
	Remaining Red. to Meet Target:		8.0	N/A

Connecticut Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA34-05	Connecticut River	237.8	164.3	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	0.7	0.7	N/A
	Infiltration Swale	0.7	0.7	N/A
	Infiltration Swale	0.5	0.5	N/A
	Infiltration Swale	1.2	1.2	N/A
	Infiltration Swale	0.6	0.6	N/A
	Infiltration Basin	0.2	0.2	N/A
	Infiltration Basin	1.1	1.1	N/A
	Infiltration Basin	0.5	0.5	N/A
	Infiltration Basin	0.6	0.6	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	9	6.0	6.0	N/A
	Remaining Red. to Meet Target:		158.3	N/A

Merrimack Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA84A-17	Black Brook	14.8	10.4	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Extended Detention Basin	6.8	5.4	N/A
	Extended Detention Basin	4.0	3.7	N/A
	Infiltration Swale	0.3	0.3	N/A
	Infiltration Swale	0.2	0.2	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	4	11.3	9.6	N/A
	Remaining Red. to Meet Target:		0.9	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA84A-10	Spicket River	41.6	31.8	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Wet Pond	0.8	0.6	N/A
	Infiltration Swale	0.5	0.5	N/A
	Infiltration Swale	1.8	0.6	N/A
	Infiltration Swale	0.2	0.1	N/A
	Infiltration Swale	1.2	1.2	N/A
	Leaching Basin	0.7	0.5	N/A
	Leaching Basin	0.3	0.3	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	7	5.4	3.7	N/A
	Remaining Red. to Meet Target:		28.1	N/A
MA84A-18	Bare Meadow Brook	18.7	11.4	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.2	0.2	N/A
	Infiltration Swale	0.3	0.3	N/A
	Infiltration Swale	0.5	0.4	N/A
	Infiltration Swale	0.6	0.4	N/A
	Infiltration Swale	0.2	0.2	N/A
	Infiltration Swale	0.5	0.5	N/A
	Infiltration Swale	0.2	0.2	N/A
	Infiltration Swale	0.4	0.3	N/A
	Infiltration Swale	0.2	0.1	N/A
	Infiltration Basin	0.8	0.8	N/A
	Infiltration Basin	0.4	0.4	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	11	4.3	3.8	N/A
	Remaining Red. to Meet Target:		7.6	N/A

North Coastal Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA93-42	North River	4.0	0.8	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	1.4	1.2	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	1.4	1.2	N/A
	Remaining Red. to Meet Target:		0.0	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA93-39	Proctor Brook	12.4	8.9	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.3	0.2	N/A
	Infiltration Basin	1.0	0.8	N/A
	Subsurface Infiltration Structure	0.3	0.2	N/A
	Infiltration Swale	2.0	1.3	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	4	3.6	2.5	N/A
	Remaining Red. to Meet Target:		6.4	N/A

Quinebaug Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA41-02	Quinebaug River	7.2	2.7	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	5.8	5.8	N/A
	Infiltration Basin	5.2	5.1	N/A
	Infiltration Basin	1.0	1.0	N/A
	Infiltration Basin	1.3	1.3	N/A
	Infiltration Basin	0.4	0.4	N/A
	Infiltration Basin	0.9	0.9	N/A
	Infiltration Basin	1.6	1.6	N/A
	Infiltration Basin	0.8	0.8	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	8	17.0	16.8	N/A
	Remaining Red. to Meet Target:		0.0	N/A

Taunton Watershed

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA62-47	Wading River	12.0	3.8	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.1	0.1	0.3
	Infiltration Swale	0.1	0.1	0.2
	Infiltration Swale	0.1	0.1	0.2
	Infiltration Swale	0.2	0.2	0.6
	Infiltration Swale	0.1	0.1	0.1
	Infiltration Swale	0.1	0.1	0.3
	Infiltration Swale	0.2	0.2	0.4
	Infiltration Swale	0.2	0.2	0.4
	Infiltration Swale	0.6	0.5	1.3
	Infiltration Swale	0.3	0.3	0.7
	Infiltration Swale	0.5	0.4	1.1
	Infiltration Swale	0.2	0.2	0.6
	Infiltration Swale	0.1	0.1	0.2
	Infiltration Swale	0.4	0.4	1.0
	Infiltration Swale	0.3	0.3	0.7
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	15	3.1	3.0	7.9
	Remaining Red. to Meet Target:		0.8	N/A

Table 12 Summary of Retrofit BMPs under Construction or Constructed (Indirect Discharge)

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA51-03	Blackstone River	116.0	69.0	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	1.2	1.2	3.1
	Infiltration Basin	0.4	0.4	1.1
	Infiltration Swale	1.0	1.0	2.7
	Infiltration Swale	1.4	1.4	3.8
	Infiltration Basin	0.6	0.6	1.6
	Infiltration Basin	0.1	0.1	0.3
	Infiltration Swale	1.1	1.1	3.0
	Infiltration Basin	1.5	1.5	4.1
	Infiltration Basin	2.8	2.8	7.5
	Infiltration Basin	0.4	0.4	1.1
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	10	10.5	10.5	28.3
	Remaining Red. to Meet Target:		58.5	N/A
Waterbody ID	**Waterbody Name**	**Direct IC WS (acres)**	**Target IC Red. (acres)**	**Target P Red. (lbs/yr)**
MA51071	Howe Reservoirs	N/A	N/A	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	1	1	2.6
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	1	1	2.6
	Remaining Red. to Meet Target:		N/A	N/A
Waterbody ID	**Waterbody Name**	**Direct IC WS (acres)**	**Target IC Red. (acres)**	**Target P Red. (lbs/yr)**
MA51039	Dorothy Pond	21.9	N/A	23.0
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	1	1	2.6
	Infiltration Swale	0.6	0.6	1.6
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	2	1.6	1.6	4.2
	Remaining Red. to Meet Target:		N/A	18.8
Waterbody ID	**Waterbody Name**	**Direct IC WS (acres)**	**Target IC Red. (acres)**	**Target P Red. (lbs/yr)**
MA51188	Flint Pond	14.4	N/A	3.5
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.3	0.3	0.71
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	0.3	0.3	0.7
	Remaining Red. to Meet Target:		N/A	2.8

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA51105	Mill Pond	N/A	N/A	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	1.1	0.9	N/A
	Infiltration Basin	3.9	3.5	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	2	5.0	4.4	N/A
	Remaining Red. to Meet Target:		N/A	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA72092	Lake Pearl	N/A	N/A	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.4	0.3	1.0
	Infiltration Swale	0.2	0.2	0.7
	Infiltration Swale	0.6	0.4	1.4
	Infiltration Swale	0.3	0.2	0.5
	Infiltration Basin	0.9	0.9	2.5
	Infiltration Swale	0.4	0.4	3.7
	Infiltration Swale	0.6	0.4	1.4
	Infiltration Swale	0.1	0.1	0.3
	Infiltration Swale	0.2	0.2	0.5
	Infiltration Swale	0.3	0.3	0.7
	Infiltration Swale	0.6	0.4	1.3
	Infiltration Swale	0.8	0.8	2.2
	Infiltration Swale	1.1	1.1	2.9
	Infiltration Swale	0.4	0.4	1.0
	Infiltration Swale	0.5	0.5	4.2
	Infiltration Swale	1.0	0.8	2.6
	Infiltration Swale	0.7	0.7	2.0
	Infiltration Swale	0.2	0.2	0.5
	Infiltration Basin	7.6	5.6	19.1
	Infiltration Swale	0.5	0.5	1.2
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	20	17.4	14.4	49.5
	Remaining Red. to Meet Target:		N/A	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA72-14	Mine Brook	79.2	36.7	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.3	0.3	1.4
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	0.3	0.3	1.4
	Remaining Red. to Meet Target:		36.4	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA82B-02	Assabet River	9.8	2.9	18.8
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Basin	0.7	0.7	2.0
	Infiltration Basin	0.3	0.3	0.8
	Infiltration Basin	0.2	0.2	0.6
	Infiltration Basin	2.5	1.9	N/A
	Other	0.9	0.9	N/A
	Infiltration Basin	2.7	2.5	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	4	7.3	6.5	3.4
	Remaining Red. to Meet Target:		0.0	15.4

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA82B-03	Assabet River	2.8	1.3	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	1.5	1.4	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	1	1.5	1.4	N/A
	Remaining Red. to Meet Target:		0.0	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA34-05	Connecticut River	237.8	164.3	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Extended Detention Basin	0.3	0.3	N/A
	Extended Detention Basin	0.4	0.4	N/A
	Extended Detention Basin	0.4	0.4	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	3	1.1	1.1	N/A
	Remaining Red. to Meet Target:		163.2	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA84A-10	Spicket River	41.6	31.8	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	1.6	1.4	N/A
	Infiltration Swale	2.4	2.2	N/A
	Infiltration Swale	0.3	0.2	N/A
	Wet Pond	0.4	0.4	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	4	4.7	4.1	N/A
	Remaining Red. to Meet Target:		27.7	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA84A-18	Bare Meadow Brook	18.7	11.4	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.5	0.4	N/A
	Infiltration Swale	0.2	0.1	N/A
	Infiltration Swale	1.5	1.4	N/A
	Wet Pond	1.1	1.1	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	4	3.3	3.0	N/A
	Remaining Red. to Meet Target:		8.4	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA94-16	Plymouth Harbor	171.0	N/A	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	1.3	1.2	N/A
	Infiltration Basin	0.3	0.3	N/A
	Infiltration Swale	1.2	1.2	N/A
	Infiltration Swale	0.5	0.5	N/A
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	4	3.3	3.2	N/A
	Remaining Red. to Meet Target:		N/A	N/A

Waterbody ID	Waterbody Name	Direct IC WS (acres)	Target IC Red. (acres)	Target P Red. (lbs/yr)
MA62-47	Wading River	12.0	3.8	N/A
	BMP Type	**BMP IC WS (acres)**	**IC Reduction (acres)**	**P Reduction (lbs/yr)**
	Infiltration Swale	0.5	0.5	1.2
	Infiltration Swale	0.3	0.3	0.8
	Infiltration Swale	0.1	0.1	0.4
	Infiltration Swale	0.5	0.5	1.1
	Infiltration Swale	0.1	0.1	0.2
	Infiltration Swale	0.3	0.3	0.9
	Infiltration Swale	0.2	0.2	0.6
	Infiltration Swale	0.4	0.4	1.1
	Infiltration Swale	0.1	0.1	0.3
	Infiltration Swale	0.2	0.2	0.6
	Infiltration Swale	0.2	0.2	0.6
	Infiltration Swale	0.4	0.3	1.1
	Infiltration Swale	0.5	0.3	1.1
	Total No. of BMPs	**Total IC Area to BMP(s) (acres)**	**Total IC Red. (acres)**	**Total BMP P Red. (lbs/yr)**
	13	3.8	3.6	10.0
	Remaining Red. to Meet Target:		0.22	N/A

Attachment A: IWP Project Summary Sheets

Resurfacing and Related Work on Route 9

MassDOT Project #: 607176
Project Town: Westborough
MassDOT District: 3

Water Body Name: Assabet River
Water Body ID: MA82B-02

Project Description:

A section of MassDOT's Route 9 in the town of Westborough discharges stormwater to the Assabet River (MA82B-02). As part of the Impaired Waters Program, the assessment of the Assabet River identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The resurfacing project is located east and west of the Assabet River crossing with Route 9, with BMPs along Route 9 starting from east of the Otis Street intersection and ending at the Milk Street interchange. Direct stormwater runoff from MassDOT's roadway enters segment MA82B-02 through a system of catch basins, drainage pipes, ditches, and unnamed streams. Approximately 800 feet of Route 9 on the west side of the Assabet River contributes direct discharge to the River. The Assabet River is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired. While this segment of the Assabet River is covered under the *Assabet River Total Maximum Daily Load for Total Phosphorus* (CN 201.0), this TMDL only addresses wastewater treatment plants as a source and no waste load allocation is set for other sources. The Assabet River is impaired for aquatic macroinvertebrate bioassessments, fecal coliform, nutrient/eutrophication biological indicators, dissolved oxygen, and total phosphorus.

Project Goal:

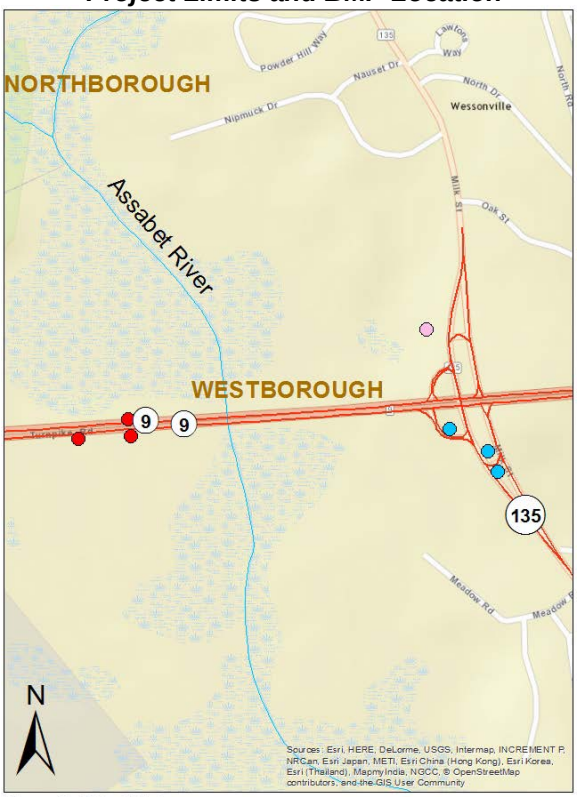
MassDOT's directly discharging area to Assabet River is 9.8 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to the Assabet River. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 2.9 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that MassDOT was able to design **seven stormwater BMPs** consisting of **three leaching basins, three infiltration basins, and one bioretention basin** to treat stormwater from Route 9 prior to draining to the Assabet River. Lack of available right-of-way prevented the design of additional BMPs at this location.

The retrofit project began in March 2017 and is still in construction. The BMPs provide 1.6 acres of effective IC reduction that would otherwise drain directly to the Assabet River. Although there is a remaining 1.3 acres from the reduction target, BMPs were implemented to the maximum extent practicable. The construction cost of the project is estimated to be $287,208. The stormwater management costs were unavailable.

Project Limits and BMP Location



MassDOT BMPs

- Bioretention
- Infiltration Basin
- Leaching Basin

Resurfacing and Related Work on I-90

MassDOT Project #: 606290.1
Project Town: Millbury and Grafton
MassDOT District: 3

Water Body Name: Blackstone River
Water Body ID: MA51-03

Project Description:

A section of MassDOT's Interstate 90 in the towns of Millbury and Grafton discharges stormwater to the Blackstone River (MA51-03). As part of the Impaired Waters Program, the assessment of the Blackstone River identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to achieve the program goal of effective impervious cover (IC) reduction.

Site Description:

The Blackstone River project is located along I-90 in the town of Millbury, MA. Direct stormwater runoff from MassDOT's roadway enters segment MA51-03 through stormwater structural BMPs. The Blackstone River is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. This segment of the Blackstone River is impaired for unknown toxicity, priority organics, metals, unionized ammonia, nutrients, organic enrichment/low DO, flow alterations, other habitat alterations, pathogens, suspended solids, turbidity and objectionable deposits.

Project Goal:

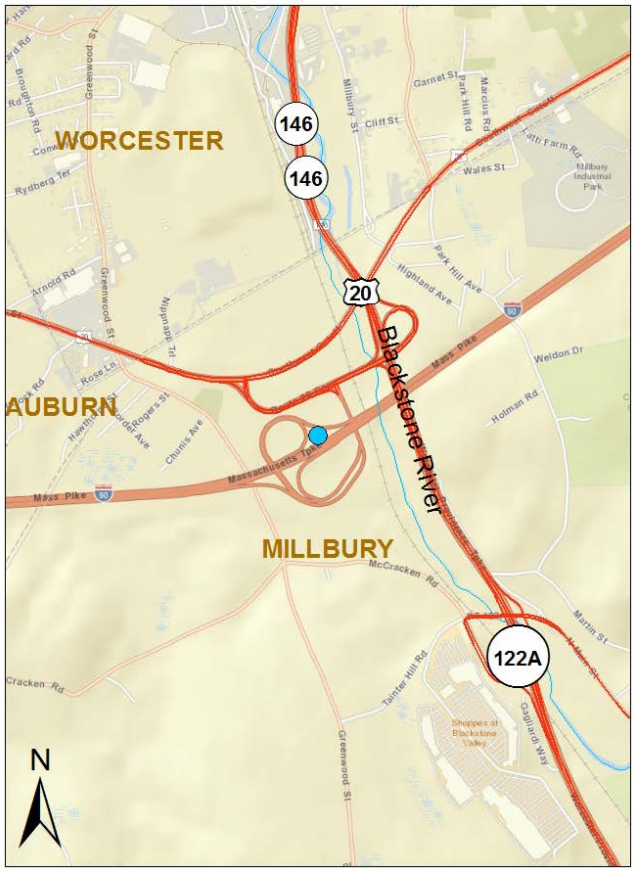
MassDOT's directly discharging area to the Blackstone River is 116 acres and there are 23 existing BMPs in place to treat stormwater runoff from MassDOT properties to the Blackstone River. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 69 acres, from which existing BMPs have effectively reduced 68.1 acres; therefore, the remaining IC to mitigate with proposed BMPs is 0.9 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of the project area. MassDOT was able to design **1 stormwater BMP,** an **infiltration basin**, to treat stormwater from I-90 prior to draining to the Blackstone River.

The retrofit project began August 2016 and is still in construction. The BMP provides an effective IC reduction of approximately 0.8 acres that would otherwise drain directly to the Blackstone River. With the completion of this BMP, MassDOT would have to reduce its effective IC by 0.1 acres in order to meet the target reduction. The construction cost of the retrofit project is estimated to be $96,300.

Project Limits and BMP Location



Resurfacing and Related Work on I-90

MassDOT Project #: 606290.2
Project Town: Millbury and Grafton
MassDOT District: 3

Water Body Name: Dorothy Pond
Water Body ID: MA51039

Project Description:

A section of MassDOT's Interstate 90 in the town of Millbury discharges stormwater to Dorothy Pond (MA51039). As part of the Impaired Waters Program, the assessment of Dorothy Pond identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to achieve the TMDL goal of reducing phosphorus in this waterbody.

Site Description:

The Dorothy Pond project is located along I-90 in the town of Millbury, MA. Direct stormwater runoff from MassDOT's roadway enters segment MA51039 through a 1,400-foot long natural ditch located in the east side of the main pond. Dorothy Pond is listed on the *2014 Integrated List of Waters* as a Category 4a impaired water, indicating the waterbody is impaired and has a final TMDL. This segment of Dorothy Pond is covered under the *MassDEP's Total Maximum Daily Loads (TMDL) of Phosphorus for Selected Northern Blackstone Lakes [CN 70.1]*. Dorothy Pond is impaired for turbidity, non-native aquatic plants, and Eurasian Water Milfoil.

Project Goal:

MassDOT's directly discharging area to Dorothy Pond is 42.4 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to the Dorothy Pond. In order to meet the water quality goals, the assessment recommended a phosphorus reduction target of 23 lbs/yr.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed a survey of the project area. During design, it was determined that some natural ditches had standing or flowing water, hence these locations were not chosen for BMP locations because of their poor infiltration capabilities. However, some areas surrounding I-90, within the layout, were available for BMPs. MassDOT was able to design **four stormwater BMPs** consisting of **four infiltration swales with check dams** to treat stormwater from I-90 prior to draining to Dorothy Pond. Other site constraints such as limited available land, existing natural wetlands and the evidence of a high water table prevented the design of additional BMPs at this location.

The retrofit project began August 2016 and is still in construction. The BMPs provide a total phosphorous reduction of approximately 11.62 lbs/yr that would otherwise drain directly to the Dorothy Pond. With the completion of these BMPs, MassDOT would need to reduce the phosphorus load by an additional 11.4 lbs/yr to meet the target reduction; however, BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $385,350.

Project Limits and BMP Location

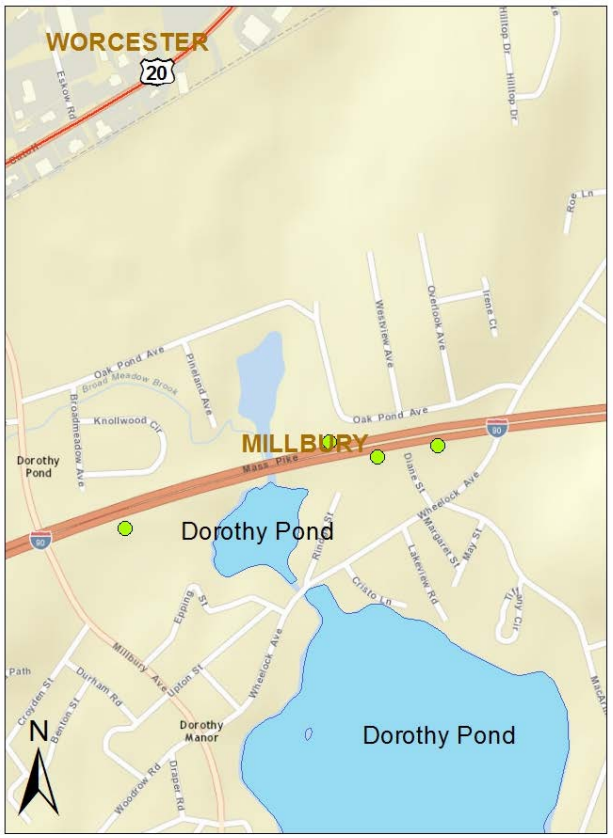


Photo 1. Constructed Infiltration Swale

Photo 2. Constructed Infiltration Swale

Route 146 at Marble Pond

MassDOT Project #: 606485
Project Town: Sutton
MassDOT District: 3

Water Body Name: Marble Pond
Water Body ID: MA51093

Project Description:

A section of MassDOT's Route 146 in the town of Sutton discharges stormwater to Marble Pond (MA51093). As part of the Impaired Waters Program, the assessment of Marble Pond identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The Marble Pond project is located in the town of Sutton, MA. Stormwater runoff from MassDOT's roadway enters segment MA51093 at 3 locations. The northwest portion of Route 146 drains stormwater to a piped system which discharges to an unnamed stream that flows into Marble Pond from the north. The remaining outfalls are located on both the right and left side of an unnamed stream flowing into Marble Pond from a wetland west of this waterbody. Marble Pond is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. Marble Pond is impaired for aquatic plants (macrophytes) and non-native aquatic plants.

Project Goal:

MassDOT's directly discharging area to Marble Pond is 6.6 acres and no existing BMPs were in Marble Pond's directly contributing watershed to treat stormwater runoff from MassDOT properties. After assessing Marble Pond, MassDOT determined that an effective IC reduction target of 1.6 acres must be met in order to meet the water quality goal.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that available space to incorporate BMPs was limited due to nearby natural resources and existing drainage conditions. In the available land around the project location, MassDOT was able to design **one stormwater BMP**, an **infiltration swale with check dams,** to treat stormwater from Route 146 prior to draining to Marble Pond.

The retrofit project began in January 2016 and is still in construction. The BMP provides approximately 0.2 acres of effective IC reduction that would otherwise drain directly to Marble Pond. With these BMPs complete, MassDOT would need to reduce the effective IC by an additional 1.41 acres to meet the targets but BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $49,600.

Project Limits and BMP Location

MassDOT BMPs

Infiltration Swale

Photo 1. Constructed Infiltration Swale

Photo 2. Constructed Infiltration Swale

Interstate Maintenance and Related Work on I-495 (NB and SB)

MassDOT Project #: 606176.1
Project Town: Franklin
MassDOT District: 5

Water Body Name: Mine Brook
Water Body ID: MA72-14

Project Description:

A section of MassDOT's Interstate 495 in the town of Franklin discharges stormwater to the Mine Brook (MA72-14). As part of the Impaired Waters Program, the assessment of the Mine Brook identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The project is located along a segment of I-495 through the town of Franklin. Drainage systems along I-495 carry stormwater to conveyance ditches which discharge to Mine Brook. Mine Brook is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. Mine Brook is impaired for stream habitat and water temperature; these impairments have not been addressed by a TMDL.

Project Goal:

MassDOT's directly discharging area to Mine Brook is 33.8 acres and two existing BMPs were in place to treat stormwater runoff from MassDOT properties to the Mine Brook. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 15.7 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that MassDOT was able to design **eight stormwater BMPs** consisting of **eight infiltration swales** to treat stormwater from I-495 prior to draining to Mine Brook.

The retrofit project began July 2016 and is still in construction. The BMPs provide approximately 3.62 acres of effective IC reduction that would otherwise drain directly to the Mine Brook. The existing BMPs provide 2.9 acres of effective IC reduction. Because this is Phase II of the Mine Brook Project, MassDOT has achieved and exceeded the effective IC reduction target with these BMPs and BMPs from Phase I, totaling 45 BMPs or 32 acres of effective IC reduction. The construction cost of the retrofit project is estimated to be $222,900.

Project Limits and BMP Location

Interstate Maintenance and Related Work on I-495

MassDOT Project #: 606176.2
Project Town: Wrentham
MassDOT District: 5

Water Body Name: Lake Pearl
Water Body ID: MA72092

Project Description:

A section of MassDOT's Route I-495 in the town of Wrentham discharges stormwater to the watershed of Lake Pearl (MA72092). As part of the Impaired Waters Program, the assessment of Lake Pearl identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of total phosphorus (TP) reduction.

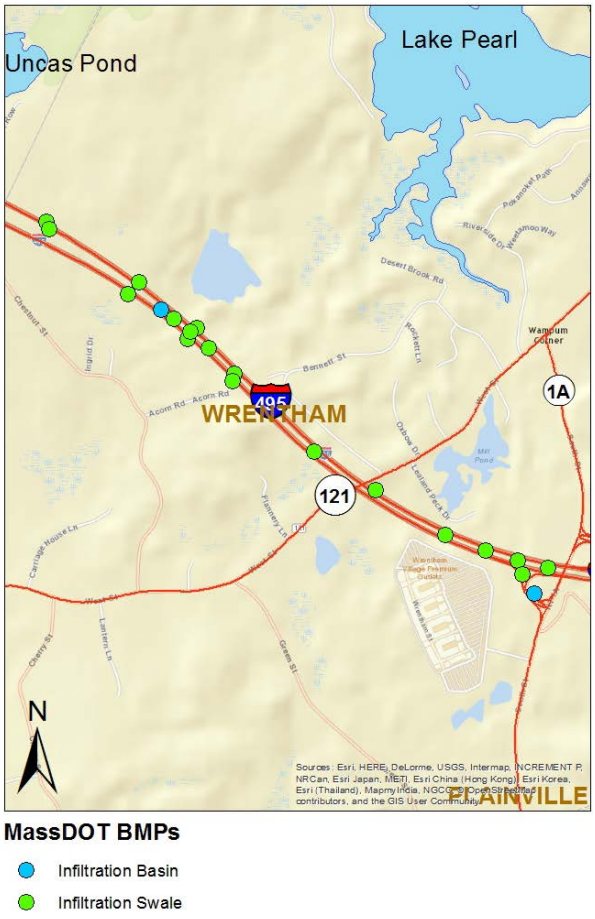
Site Description:

The project is located along I-495 in Wrentham. No direct stormwater runoff from MassDOT's roadway enters segment MA72092. Lake Pearl is listed on the *2014 Integrated List of Waters* as a Category 4A impaired water, indicating the waterbody is impaired and has a TMDL. This segment of Lake Pearl is covered under the *Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River, Massachusetts (CN 272.0)*. Lake Pearl is impaired for non-native aquatic plants and dissolved oxygen.

Project Goal:

MassDOT does not directly discharge to Lake Pearl and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to Lake Pearl. Because Lake Pearl is in the Charles River watershed and covered by the Charles River Nutrients TMDL, MassDOT set a goal of reducing phosphorus entering the Lake Pearl Watershed to the maximum extent possible.

Project Limits and BMP Location



Stormwater Management Improvements:

MassDOT reviewed the contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that MassDOT was able to design **20 stormwater BMPs** consisting**, 18 infiltration swales with check dams and two infiltration basins** to treat stormwater from I-495 prior to draining to the Lake Pearl watershed. BMPs were implemented to the maximum extent practicable to provide stormwater treatment and to mitigate for phosphorus. The BMPs provide approximately 49.5 lbs/year of phosphorus reduction.

The retrofit project began July 2016 and is still in construction. The construction cost of the retrofit project is estimated to be $557,250.

Interstate Maintenance and Related Work on I-495

MassDOT Project #: 606176.3
Project Town: Foxborough
MassDOT District: 5

Water Body Name: Wading River
Water Body ID: MA62-47

Project Description:

A section of MassDOT's Interstate 495 in the town of Foxborough discharges stormwater to the Wading River (MA62-47). As part of the Impaired Waters Program, the assessment of the Wading River identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The project is located along a segment of I-495 through the town of Foxborough. East of where I-495 crosses Wading River, stormwater runoff from MassDOT's roadway enters MA62-47 through grass ditches, which discharge directly to the river. West of the crossing, drop inlets collect runoff and discharge directly to the river. This segment of the Wading River is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired. This segment of the Wading River is covered under the *Final Pathogen TMDL for the Taunton River Watershed, June 2011 (CN 0256.0)*. This segment of the Wading River is impaired for fecal coliform and dissolved oxygen.

Project Goal:

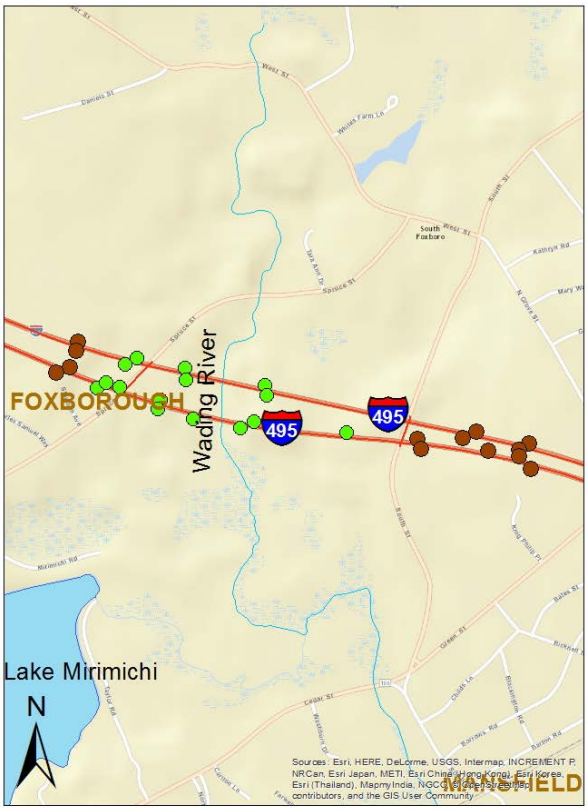
MassDOT's directly discharging area to Wading River is 13.0 acres and four existing BMPs were in place to treat stormwater runoff from MassDOT properties to the Wading River. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 1.8 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that MassDOT was able to design **28 stormwater BMPs** consisting of **28 infiltration swales** to treat stormwater from I-495 prior to draining to Wading River. Site constraints such as construction access, grading, and clearing prevented the design of additional BMPs at this location.

The retrofit project began July 2016 and is still in construction. 15 BMPs provide approximately 3.0 acres of effective IC reduction that would otherwise drain directly to the Wading River. With these BMPs complete, and the existing BMPs' reduction of 2.5 acres, there is no remaining target. The remaining 13 BMPs have an indirect flow path with an effective IC reduction of 3.6 acres. The construction cost of the retrofit project is estimated to be $780,145.

Project Limits and BMP Location



Interstate Maintenance & Related Work on I-290

MassDOT Project #: 607181
Project Town: Marlborough - Northborough
MassDOT District: 3

Water Body Name: Assabet River
Water Body ID: MA82B-04

Project Description:

A section of MassDOT's I-290 in the city of Marlborough discharges stormwater to the Assabet River (MA82B-04). As part of the Impaired Waters Program, the assessment of the Assabet River identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The Assabet River project is located along I-290 in the city of Marlborough, MA. Direct stormwater runoff from MassDOT's roadway enters segment MA82B-04 through ditches located within the shoulder and medians of the road that outlet directly into the Assabet River. Stormwater primarily sheet flows into these ditches. The Assabet River is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. This segment of the Assabet River is covered under the *Assabet River TMDL for Total Phosphorus*. The TMDL does not specifically address the contribution stormwater has to the phosphorous concentration in the river and does not provide a waste load allocation for stormwater discharges. This segment of the Assabet River is impaired for aquatic macroinvertebrate bioassessments, aquatic plants (macrophytes), excess algal growth, fecal coliform, fish bioassessments, dissolved oxygen and phosphorus (total).

Project Goal:

MassDOT's directly discharging area to this segment of the Assabet River is 50 acres and two vegetated filter strips, were in place to treat stormwater runoff from MassDOT properties to the Assabet River. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 10 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of the project area. During design, it was determined that available land was limited due to utility conflicts, property ownership and soil characteristics. In the area within the layout that was available for BMPs, MassDOT was able to design **five stormwater BMPs** consisting of **four infiltration swales with check dams and one infiltration basin** to treat stormwater from I-290 prior to draining to the Assabet River.

The retrofit project began August 2015 and is still in construction. The BMPs provide approximately 9.5 acres of effective IC reduction that would otherwise drain directly to the Assabet River. With these BMPs complete, MassDOT would need to reduce the effective IC by an additional 0.5 acres to meet the target, but BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $400,000.

Project Limits and BMP Location

Stormwater Improvements along Route 68 and Route 70

MassDOT Project #: 608060.1
Project Town: Gardner
MassDOT District: 3

Water Body Name: Parker Pond
Water Body ID: MA35056

Project Description:

A section of MassDOT's Route 68 in the town of Gardner discharges stormwater to Parker Pond (MA35056). As part of the Impaired Waters Program, the assessment of Parker Pond identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of total phosphorus (TP) reduction.

Site Description:

The BMPs in the project are located at north and south of a section of Route 68, just north of Parker Pond. Direct stormwater runoff from MassDOT's roadway enters segment MA35056 through catch basins and outfalls. Parker Pond is listed on the *2014 Integrated List of Waters* as a Category 4A impaired water, indicating the waterbody is impaired and requires a TMDL. This segment of Parker Pond is covered under the *Total Maximum Daily Loads of Phosphorus for Selected Millers Basin Lakes* [CN123.1], (MassDEP, May 8, 2003). Parker Pond is impaired for aquatic plants.

Project Goal:

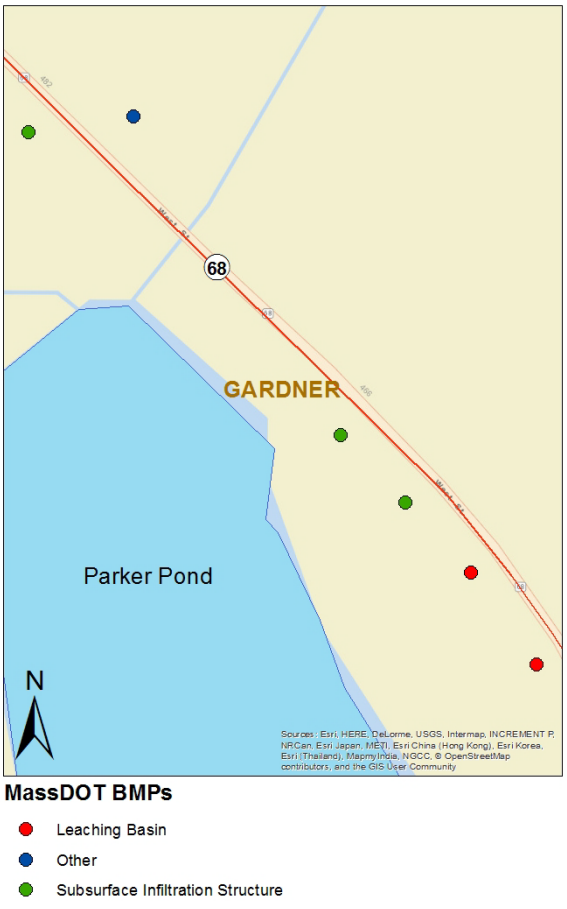
MassDOT's directly discharging area to Parker Pond is 2.4 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to Parker Pond. In order to meet the water quality goal, the assessment showed MassDOT's target reduction in TP load as 2.6 lb/yr.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. MassDOT was able to design **five stormwater BMPs** consisting of **three subsurface infiltration structures (12-inch perforated pipe with crushed stone), two leaching basins, and one dissipation bowl (marked as "other")** to treat stormwater from Route 68 prior to draining to Parker Pond. Right-of-way limitations prevented the design of additional BMPs at this location.

The retrofit project began May 2016 and has completed construction. The BMPs provide 0.9 lbs/year of effective TP reduction that would otherwise drain directly to Parker Pond. Although there is a remaining 1.7 lb/yr remaining from the reduction target, BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $494,400.

Project Limits and BMP Location



Stormwater Improvements along Route 68 and Route 70

MassDOT Project #: 608060.2
Project Town: Shrewsbury
MassDOT District: 3

Water Body Name: Poor Farm Brook
Water Body ID: MA51-17

Project Description:

A section of MassDOT's Route 70 in the town of Shrewsbury discharges stormwater to Poor Farm Brook (MA51-17). As part of the Impaired Waters Program, the assessment of Poor Farm Brook identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The project is located at along Route 70 near Bow Street, Shrewsbury. Direct stormwater runoff from MassDOT's roadway enters segment MA51-17 through a system of catch basins, and then to a trunk line which drains to an outfall into Poor Farm Brook. Approximately 1.8 acres of Route 70 roadway surface discharges stormwater directly to Poor Farm Brook. Poor Farm Brook is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. Poor Farm Brook is impaired for aquatic plants and sedimentation/siltation.

Project Goal:

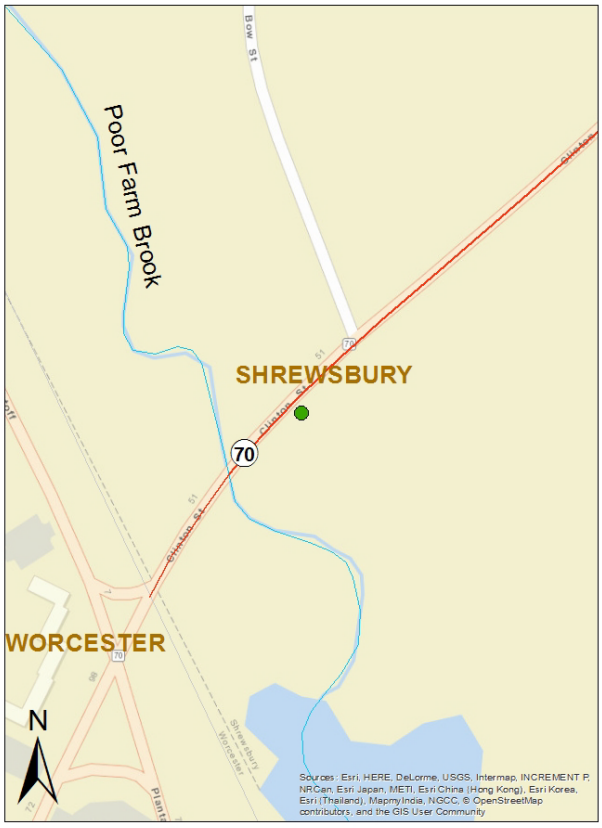
MassDOT's directly discharging area to Poor Farm Brook is 1.8 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to Poor Farm Brook. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 1.2 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. MassDOT was able to design **one stormwater BMPs** consisting of **one subsurface infiltration swale** to treat stormwater from Route 70 prior to draining to Poor Farm Brook.

The retrofit project began May 2016 and has completed construction. The BMP provides an effective IC reduction of 1.3 acres that would otherwise drain directly to Poor Farm Brook, exceeding the reduction target of 1.2 acres. The construction cost of the retrofit project is estimated to be $82,400.

Project Limits and BMP Location



MassDOT BMPs

Subsurface Infiltration Structure

Stormwater Improvements along Route 1, I-95 & I-93

MassDOT Project #: 608131.1
Project Town: Medford
MassDOT District: 4

Water Body Name: Mystic River
Water Body ID: MA71-02

Project Description:

A section of MassDOT's I-93 in the city of Medford discharges stormwater to the Mystic River (MA71-02). As part of the Impaired Waters Program, the assessment of the Mystic River identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The Mystic River project is located along I-93 in the city of Medford, MA. Runoff from MassDOT's roads is collected by a closed stormwater drainage system that discharges directly into the Mystic River. There are 3 outfall locations that appear to drain interconnected municipal stormwater systems own by Medford in addition to MassDOT's property. The Mystic River is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. This segment of the Mystic River is impaired for arsenic, chlordane, chlorophyll-a, DDT, dissolved oxygen saturation, Escherichia coli, PCB in fish tissue, phosphorus (total), Secchi disk transparency; sediment bioassays – chronic toxicity freshwater.

Project Goal:

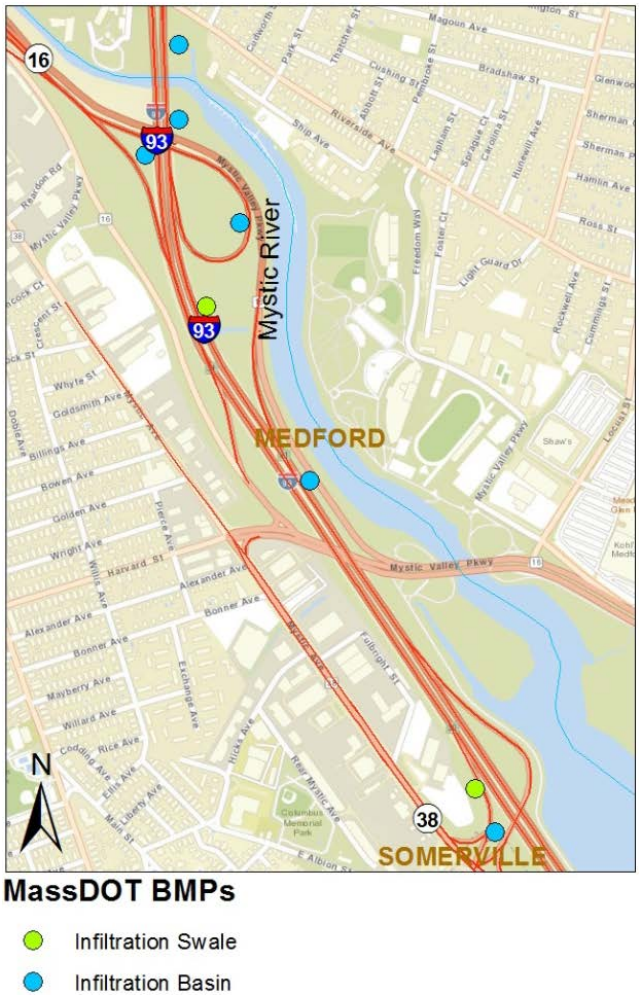
MassDOT's directly discharging area to Mystic River is 117 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to the Mystic River. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 100 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that available space to incorporate BMPs was limited due to right of way constraints and urban development in surrounding areas. In the available spaces for BMPs, MassDOT was able to design **eight stormwater BMPs** consisting of **two infiltration swales with check dams and six infiltration basins** to treat stormwater from I-93 prior to draining to the Mystic River.

The retrofit project began April 2016 and is still in construction. The BMPs provide approximately 7.6 acres of effective IC reduction that would otherwise drain directly to the Mystic River. With these BMPs complete, MassDOT would need to reduce the effective IC by an additional 92.4 acres to meet the targets but BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $754,000.

Project Limits and BMP Location



Stormwater Improvements along Route 1, I-95 & I-93

MassDOT Project #: 608131.2
Project Town: Danvers
MassDOT District: District 4

Water Body Name: Beaver Brook
Water Body ID: MA93-37

Project Description:

A section of MassDOT's Route 1 and I-95 in the town of Danvers discharges stormwater to Beaver Brook (MA93-37). As part of the Impaired Waters Program, the assessment of Beaver Brook identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The Beaver Brook project is located along I-95 and Route 1 in the town of Danvers, MA. Stormwater runoff from Route 1 is collected in catch basins that carry the stormwater directly to segment MA93-37 or to a mainline in the median of Route 1 that ultimately discharges directly into the waterbody. Runoff from I-95 SB is carried towards a closed drainage system that outlets directly into Beaver Brook, while runoff from I-95 NB is discharged to the pervious area adjacent to this road. Beaver Brook is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating that the waterbody is impaired and requires a TMDL. Beaver Brook is impaired for dissolved oxygen.

Project Goal:

MassDOT's directly discharging area to Beaver Brook is 57.1 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to Beaver Brook. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 40 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of the project area. During design, it was determined that the soil surrounding Route 1 have poor infiltration capabilities. In the surrounding areas within the layout that were suitable for BMPs, MassDOT was able to design **14 stormwater BMPs** consisting of **three infiltration swales with check dams, five infiltration basins, and six infiltration trenches** to treat stormwater from Route 1 and I-95 prior to draining to Beaver Brook. Other constraints encountered while identifying BMP locations were drainage/utility systems nearby, topography, and limited right-of-way.

The retrofit project began on April 2016 and is still in construction. The BMPs provide approximately 16.1 acres of effective IC reduction that would otherwise drain directly to Beaver Brook. With the completion of these BMPs, MassDOT would need to reduce the effective IC by an additional 23.9 acres to meet the target reduction but BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $2,000,000.

Project Limits and BMP Location

Photo 1. Construction of an Infiltration Swale

Photo 2. Construction of an Infiltration Swale

Stormwater Improvements along I-495 and I-95

MassDOT Project #: 608132.1
Project Town: Mansfield
MassDOT District: 5

Water Body Name: Rumford River
Water Body ID: MA62-39

Project Description:

A section of MassDOT's I-495 in the town of Mansfield discharges stormwater to the Rumford River (MA62-39). As part of the Impaired Waters Program, the assessment of the Rumford River identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The Rumford River project is located along I-495 in the town of Mansfield, MA. Direct stormwater runoff from MassDOT's I-495 and its adjacent ramps enters segment MA62-39 through direct discharge from its drainage system; part of the runoff is carried to a main trunk line prior to its discharge to the waterbody while the remaining part is directly discharged through smaller outfalls. The Rumford River is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. This segment of the Rumford River is impaired for physical substrate habitat alterations, aquatic macroinvertebrate bioassessments, dioxin, fecal coliform, fishes bioassessments, pentachlorophenol and sedimentation.

Project Goal:

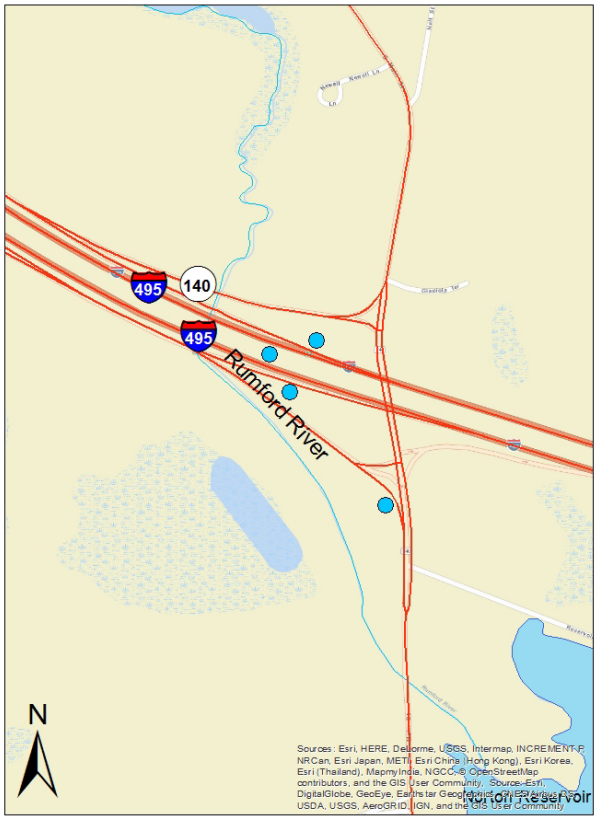
MassDOT's directly discharging area to Rumford River is 21.0 acres. Three existing BMPs, consisting of two dry water quality swales and one infiltration basin were in place to treat stormwater runoff from MassDOT properties to the Rumford River. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 9.4 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed a survey of the project area. Other BMP locations were discarded due to site constraints such as limited right-of-way. MassDOT was able to design **four stormwater BMPs** consisting of **four infiltration basins** to treat stormwater from I-495 and Route 140 prior to draining to Rumford River. The BMPs are located on the median of I-495, in open areas north and south of I-495 and on the west side of Route 140.

The retrofit project began on May 2016 and is still in construction. The BMPs provide approximately 7.3 acres of effective IC reduction that would otherwise drain directly to the Rumford River. With these BMPs complete, MassDOT would need to reduce the effective IC by an additional 2.1 acres to meet the reduction target but BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $646,000.

Project Limits and BMP Location



Stormwater Improvements along I-495 and I-195

MassDOT Project #: 608132.2
Project Town: New Bedford
MassDOT District: 5

Water Body Name: New Bedford Inner Harbor
Water Body ID: MA95-42

Project Description:

A section of MassDOT's Interstate 195 in the town of New Bedford discharges stormwater to the New Bedford Inner Harbor (MA95-42). As part of the Impaired Waters Program, the assessment of the New Bedford Inner Harbor identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The project is located along I-195, north and south of the road, east of the Inner Harbor. Direct stormwater runoff from MassDOT's roadway enters segment MA95-42 by first draining into catch basins and then either to ditches leading to the harbor or to the municipal combined sewer system. The New Bedford Inner Harbor is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired. This segment of the New Bedford Inner Harbor is covered under the Final *Pathogen Total Maximum Daily Load (TMDL) for the Buzzards Bay Watershed (CN 251.1)*. The New Bedford Inner Harbor is impaired for debris/floatables/trash, fecal coliform, oil and grease, dissolved oxygen, PCB in fish tissue, polychlorinated biphenyls, total nitrogen, taste and odor, and other.

Project Goal:

MassDOT's directly discharging area to the New Bedford Inner Harbor is 37.0 acres. No existing BMPs are in place to treat stormwater runoff from MassDOT properties to the New Bedford Inner Harbor. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 32.0 acres.

Project Limits and BMP Location

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that MassDOT was able to design **three stormwater BMPs** consisting of **three constructed stormwater wetlands** to treat stormwater from I-195 prior to draining to the New Bedford Inner Harbor. Constructed wetlands were selected over other BMPs because of high groundwater levels and poorly draining soils.

The retrofit project began June 2016 and the project is under construction. The BMPs will provide approximately 2.4 acres of effective IC reduction that would otherwise drain directly to the New Bedford Inner Harbor. With these BMPs complete, MassDOT would need to reduce the effective IC by an additional 29.6 acres to meet the targets but BMPs were implemented to the maximum extent practicable in addition to the proposed BMPs in retrofit project 608135. The stormwater improvements construction cost of the retrofit project is estimated to be $318,300.

Stormwater improvements along I-495 and I-195

MassDOT Project #: 608132.3
Project Town: Swansea - Somerset
MassDOT District: 5

Water Body Name: Lee River
Water Body ID: MA61-02

Project Description:

A section of MassDOT's I-195 in the towns of Swansea and Somerset discharges stormwater to the Lee River (MA61-02). As part of the Impaired Waters Program, the assessment of the Lee River identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The Lee River project is located along I-195, between the towns of Swansea and Somerset. Direct stormwater runoff from MassDOT's roadway enters segment MA61-02 through outfalls located to the west of the I-195 bridge. Stormwater is captured by catch basins or paved waterways and carried to the shoulders or the median of the highway. Water conveyed to the median is then carried eastward via a manmade ditch to a pipe that discharges directly into the Lee River. The Lee River is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. This segment of Lee River is impaired for debris/floatables/trash, chlorophyll-a, fecal coliform, nitrogen (total), dissolved oxygen, taste and odor.

Project Goal:

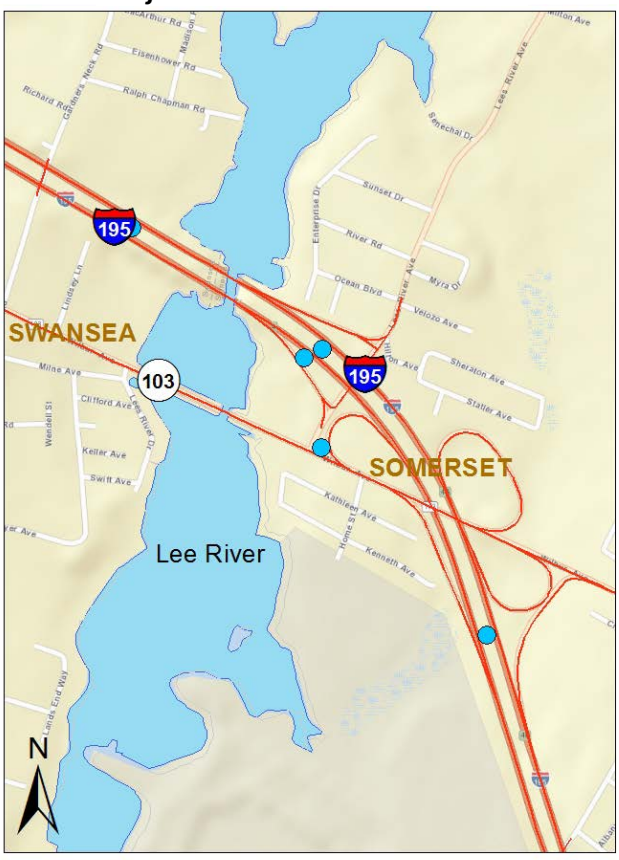
MassDOT's directly discharging area to Lee River is 31.6 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to the Lee River. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 16.1 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that available space to construct BMPs was limited due to right-of-way constraints. In, areas within the highway layout that were available for BMPs, MassDOT was able to design **five stormwater BMPs** consisting of **five infiltration basins** to treat stormwater from I-195 before its discharge to the Lee River. The close proximity of MassDOT stormwater outfalls to resource areas, stormwater infrastructure and grading limits prevented the design of additional BMPs at this location.

The retrofit project began May 2016 and is still in construction. The BMPs provide approximately 12.0 acres of effective IC reduction that would otherwise drain directly to the Lee River. With these BMPs complete, MassDOT would need to reduce the effective IC by an additional 4.1 acres to meet the targets but BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $693,000.

Project Limits and BMP Location



Stormwater Improvements along Route 6/Route 18

MassDOT Project #: 608135
Project Town: New Bedford
MassDOT District: 5

Water Body Name: New Bedford Inner Harbor
Water Body ID: MA95-42

Project Description:

A section of MassDOT's Route 6 and Route 18 in the city of New Bedford discharges stormwater to the New Bedford Inner Harbor (MA95-42). As part of the Impaired Waters Program, the assessment of the New Bedford Inner Harbor identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The New Bedford Inner Harbor project is located along Route 18 and Route 6 in the city of New Bedford, MA. Direct stormwater runoff from MassDOT's Route 18 and its ramps enters segment MA95-42 via its closed drainage system that ultimately discharges directly to this waterbody. Runoff from the bridge crossing the New Bedford Inner Harbor (Route 6) drains via scuppers directly to the harbor while the part of Route 6 in Fairhaven drains stormwater to a culverted stream which then drains to the harbor. The New Bedford Inner Harbor is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and has a TMDL and was assessed with the BMP 7R methodology. This segment of the New Bedford Inner Harbor is covered under the *Final Pathogen TMDL for the Buzzards Bay Watershed (CN 251.1)*. The New Bedford Inner Harbor is impaired for debris/floatables/trash, polychlorinated biphenyls, PCB in fish tissue, taste and odor, fecal coliform, dissolved oxygen, oil and grease, total nitrogen, and other.

Project Goal:

MassDOT's directly discharging area to New Bedford Inner Harbor is 37 acres and had one existing BMP in place to treat stormwater runoff from MassDOT's I-195 to the New Bedford Inner Harbor. MassDOT is currently constructing three BMPs (Project 608132) in the directly contributing watershed to this waterbody to provide extra water treatment. The assessment recommended that an effective IC reduction target of 32 acres must be achieved in order to meet the water quality goal.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed a survey of the project area. During design, it was determined that some of the surrounding areas of the project had soils characterized as soils of hydrologic soil group C, indicating that those soils have poor infiltration capacity. In the surrounding area near the interchange from Route 18 to Route 6 and in north of the interchange, MassDOT was able to design **five stormwater BMPs** consisting of **three infiltration swales with check dams and two infiltration basins** to treat stormwater from Route 18 and Route 6 prior to draining to the New Bedford Inner Harbor. Existing drainage systems, topography, right-of-way, and high groundwater table prevented the design of additional BMPs at this location.

Project Limits and BMP Location

The retrofit project began in September 2016 and is still in construction. The BMPs provide approximately 1.0 acre of effective IC reduction that would otherwise drain directly to the New Bedford Inner Harbor. BMPs from Project 608132 provide an IC reduction of 2.4 acres. With these BMPs complete, MassDOT would need to reduce the effective IC by an additional 29.6 acres to meet the targets but BMPs were implemented to the maximum extent practicable. The construction cost of the retrofit project is estimated to be $554,500.

Photo 1. BMP 1, Route 6 – Existing conditions

Photo 2. BMP 1, Route 6 – Proposed conditions rendering

Stormwater Improvements along Route 116

MassDOT Project #: 608136
Project Town: South Hadley
MassDOT District: 2

Water Body Name: Stony Brook
Water Body ID: MA34-19

Project Description:

A section of MassDOT's Route 116 in the town of South Hadley discharges stormwater to Stony Brook (MA34-19). As part of the Impaired Waters Program, the assessment of Stony Brook identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) reduction.

Site Description:

The project is located along Route 116, south of Brainerd Street/Mosier Street. Direct stormwater runoff from MassDOT's roadway enters segment MA34-19 in catch basins. From the catch basins, stormwater is piped directly into a different unimpaired stream segment, which flows quickly over a sandy bottom for approximately 300 feet before joining Stony Brook. Stony Brook is listed on the *2014 Integrated List of Waters* as a Category 5 impaired water, indicating the waterbody is impaired and requires a TMDL. Stony Brook is impaired for E.coli and turbidity.

Project Goal:

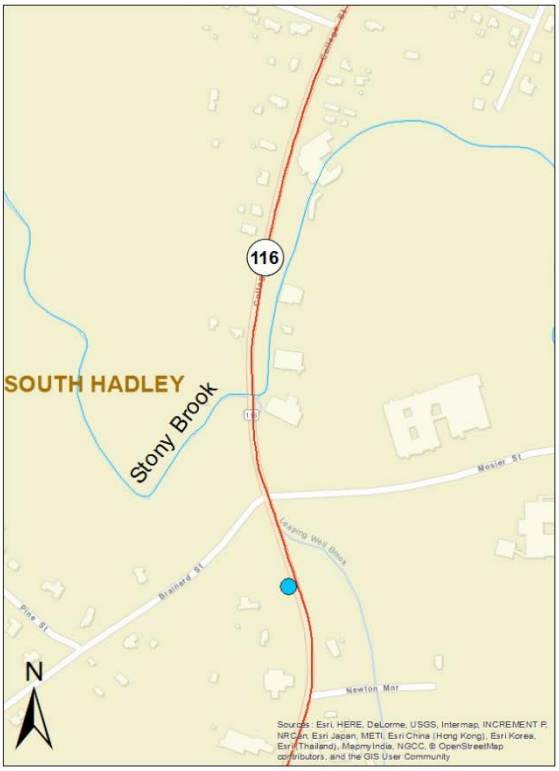
MassDOT's directly discharging area to Stony Brook is 2.6 acres and no existing BMPs were in place to treat stormwater runoff from MassDOT properties to Stony Brook. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 0.2 acres.

Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that MassDOT was able to design **one stormwater BMP** consisting of **one infiltration basin** to treat stormwater from Route 116 prior to draining to Stony Brook.

The retrofit project began September 2016 and has completed construction. The BMP provide approximately 0.2 acres of effective IC reduction that would otherwise drain directly to Stony Brook. With this BMP complete, MassDOT has achieved the reduction targets. The construction cost of the retrofit project is estimated to be $115,000.

Project Limits and BMP Location



MassDOT BMPs

Infiltration Basin

Photo 1: Stormwater BMP looking south from Route 116.

Photo 2: Stormwater BMP looking north from Route 116.

Bridge Replacement, Route 2 over Route I-95/Route 128

MassDOT Project #: 600703
Project Town: Lexington
MassDOT District: 4

Water Body Names: Cambridge Reservoir and Cambridge Reservoir Upper Basin

Project Description:

The bridge replacement project in Lexington proposes to replace the bridges that carry Route 2 eastbound and westbound over the Route Interstate 95. The project includes improvements such as re-aligning ramps to meet design standards, widening shoulders to improve safety, replacing the eastbound and westbound bridges with two new two-span bridges, and improving stormwater management. Proposed Best Management Practices (BMPs) will provide additional runoff treatment from Route 2 stormwater that discharges to the Cambridge Reservoir (MA72014) and Cambridge Reservoir Upper Basin (MA72156).

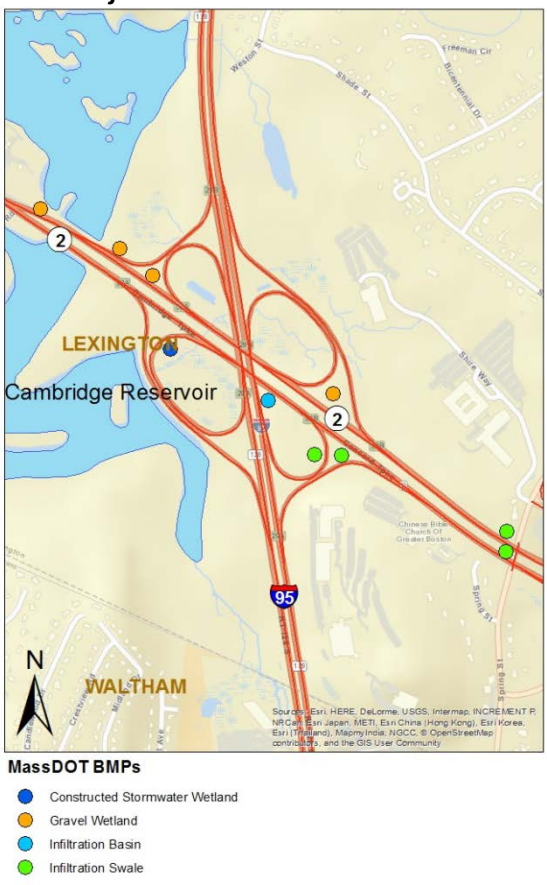
Site Description:

The project is located at the Route 2/Route I-95 interchange. Direct stormwater runoff from MassDOT's roadway enters segments MA72014 and MA72156. Three catch basins on Route 2 discharge along the causeway formed by Route 2 as it passes between the Upper and Middle Basin portions of the reservoir. The Cambridge Reservoir is listed on the *2014 Integrated List of Waters* as a Category 3 impaired water, indicating that there is insufficient data for this waterbody. The Cambridge Reservoir Upper Basin is listed as a Category 5 impaired water, indicating that there are impairments. Cambridge Reservoir Upper Basin is impaired for aquatic plants and turbidity.

Project Goal:

MassDOT's directly discharging area to the Cambridge Reservoir Upper Basin is 34 acres and eight existing BMPs were in place to treat stormwater runoff from MassDOT properties to the Cambridge Reservoir. These existing BMPs have an effective IC reduction of 14.1 acres. In order to meet the water quality goal, the assessment recommended an effective IC reduction target of 10.0 acres, which is already met by the existing BMPs. However, because the reservoir is a drinking water source, additional BMPs were installed during this programmed project.

Project Limits and BMP Location



Stormwater Management Improvements:

MassDOT reviewed the directly contributing area for potential locations to install treatment BMPs and performed survey of project area. During design it was determined that MassDOT was able to design **nine stormwater BMPs** consisting of **four gravel wetlands, four infiltration swales (water quality swales), one constructed wetland (pocket wetland), and one infiltration basin** to treat stormwater from Route 2 prior to draining to the Cambridge Reservoir and Cambridge Reservoir Upper Basin. Right-of-way limitations prevented the design of additional BMPs at this location.

The bridge replacement project began April 2014 and is still in construction. The BMPs provide water quality treatment and spill containment that would otherwise drain directly to the Cambridge Reservoir and Cambridge Reservoir Upper Basin. BMPs were implemented to the maximum extent practicable. The construction cost of the entire project is estimated to be $38,900,000. Separate stormwater costs were unavailable.

Reconstruction and Widening on Route 18

MassDOT Project #: 601630
Project Town: Weymouth and Abington
MassDOT District: 6

Water Body Names: Mill River, French Stream, Old Swamp River, Shumatuscacant River

Project Description:

A section of MassDOT's Route 18 in the towns of Weymouth and Abington discharges stormwater to the Mill River (MA74-04), French Stream (MA94-03), Old Swamp River (MA74-03), and Shumatuscacant River (MA62-33). As part of the Impaired Waters Program, the assessment of these waterbodies identified water quality impairments and any existing stormwater Best Management Practices (BMPs) and identified recommendations for proposed BMPs to provide additional stormwater runoff treatment to meet the program goal of effective impervious cover (IC) and pathogen reduction.

Site Description:

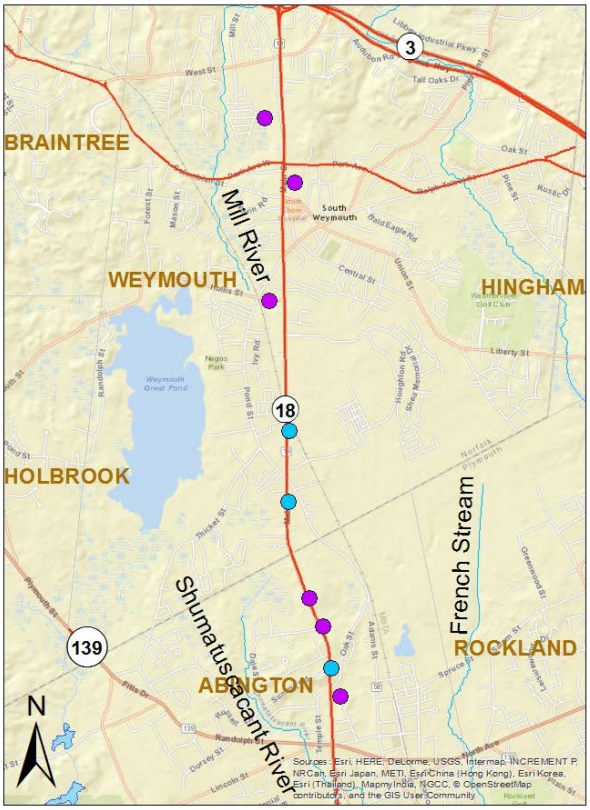
The BMPs in this project are located along Route 18, from the right-of-way south of Oak Street in Abington north to the right-of-way at Whipple Street in Weymouth. Indirect stormwater runoff from MassDOT's roadway enters segments of the four waterbodies aforementioned. All four waterbodies are listed on the *2014 Integrated List of Waters* as Category 5 impaired waters, indicating the waterbodies are impaired and require TMDLs. The waterbodies have various impairments such as fecal coliform, nutrient/eutrophication biological indicators, dissolved oxygen, total phosphorus, fishes bioassessments, whole effluent toxicity, and sedimentation/siltation.

Stormwater Management Improvements:

During design it was determined that the project corridor is very constrained due to high development with little room for adding new stormwater infrastructure. MassDOT was able to design **nine stormwater BMPs** consisting of **six detention basins**. The stormwater BMPs included as part of this project will provide a benefit for surrounding water resources by promoting infiltration and groundwater recharge and reducing flow rates of highway runoff.

The programmed project's bid date opens June 2017 and the construction contract has not been awarded. The construction cost of the entire project is estimated to be $65,329,346.50. The construction cost related to stormwater management improvements was unavailable.

Project Limits and BMP Location



Appendix E: Water Quality Data Forms Submitted in Permit Year 14

Project #	Project type	Project Description	Road(s)	Municipality	District	Final Ownership	TMDL Watershed	# of Waterbodies	Waterbody ID	Waterbody Name	Waterbody Impairment Status	Impairments	Waterbody TMDL	Waterbody 2 ID	Waterbody Name	Waterbody Impairment Status	Impairments	Waterbody TMDL	Conceptual BMP notes	Submittal Date	Reviewer
604655	Bridge	Marshfield - Bridge Replacement, M-07-007, Beach Street over the Cut River	Beach Street	Marshfield	5	Municipality	Yes	1	MA94-11	Green Harbor	Impaired	Fecal Coliform	Bacteria/ Pathogens						Pathogen impaired waterbody, no impervious cover widening- BMPs not warranted	2/17/2015	Bryan Cordeiro
604893	Highway Reconstruction	Worcester- Streetscape Improvements at Main Street & Maywood Street	Main Street, Maywood Street	Worcester	3	Municipality	Yes	1	MA51-07	Beaver Brook	Impaired	(Debris/Floatables/Trash*), (Fish Kills*), (Physical substrate habitat alterations*), Bottom Deposits, Escherichia coli, Taste and Odor	Bacteria/ Pathogens						Significant spatial constraints limit the implementation of BMPs	3/2/2015	Bryan Cordeiro
604961	Highway Reconstruction	Clinton - Resurfacing and Related Work on Route 110 (High Street)	High Street	Clinton	3	Municipality	Yes	1	MA81-08	Nashua River	Not Impaired	N/A	Bacteria/ Pathogens						Per MassDOT policy, no warrants for BMP implementation	7/29/2016	Bryan Cordeiro
605857	Intersection	Norwood- Intersection Improvements @ Route 1 & University Avenue/Everett Street	U.S. Route 1 (Boston-Providence Highway), University Avenue, Everett Street	Norwood, Westwood	5	MassDOT	Yes	1	MA73-24	Purgatory Brook	Impaired	Escherichia coli, Fecal Coliform	Bacteria/ Pathogens						BMPs are required- potential BMPs will be investigated and included at 75% design submission	11/7/2016	Bryan Cordeiro
606134	Intersection	Boston - Traffic Signal Improvements on Blue Hill Avenue and Warren Street	Blue Hill Ave, Morton St, Talbot Ave, American Legion Hwy, Harvard St, Martin Luther King Blvd, Seaver St, Washington St, Warren St	Boston	6	Municipality	Yes	2	MA72-11	Muddy River	Impaired	(Bottom Deposits*), (Non-Native Aquatic Plants*), (Other flow regime alterations*), (Physical substrate habitat alterations*), DDT, Escherichia coli, Oil and Grease, Other, Oxygen, Dissolved, PCB in Fish Tissue, Phosphorus (Total), Taste and Odor, Turbidity	Bacteria/ Pathogens	MA70-03	Dorchester Bay	Impaired	Enterococcus, Fecal Coliform, Other, PCB in Fish Tissue, Total Suspended Solids (TSS), Turbidity	Bacteria/ Pathogens	No BMPs are planned as there are no physical changes to the existing street layout or additional impervious surfaces planned for the project.	1/31/2017	Bryan Cordeiro
607533	Bridge	Waltham- Bridge Replacement, W-04-006, Woerd Avenue over Charles River	Woerd Avenue	Waltham	4	Municipality	Yes	1	MA72-07	Charles River	Impaired	(Fish-Passage Barrier*); (Non-Native Aquatic Plants*); (Other flow regime alterations*); DDT; Escherichia coli; (Eurasian Water Milfoil, Myriophyllum spicatum*); Fishes Bioassessments; Nutrient/Eutrophication Biological Indicators; PCB in Fish Tissue; Phosphorus (Total)	Bacteria/ Pathogens, Phosphorus						Based on discussions with MassDOT- implementation of BMPs are not feasible.	10/19/2016	Bryan Cordeiro
607752	Intersection	Lowell - Intersection & Signal Improvements at 2 Locations: SR 113 (Varnum Avenue & Riverside Street) at Mammoth Road & VFW at Aiken Street	SR 113, Mammoth Road, Riverside Street, VFW Highway, Aiken Street	Lowell	4	MassDOT	Yes	1	MA84A-02	Merrimack River	Impaired	(Low flow alterations*), Escherichia coli, Mercury in Fish Tissue, Phosphorus (Total)	Bacteria/ Pathogens						BMPs will not be included due to the scope of work, which only includes signal optimization and improved pavement markings	2/29/2016	Bryan Cordeiro

607753	Intersection	Barnstable - Intersection & Signal Improvements at SR28 (Falmouth Road) at Strawberry Hill Road	SR 28 (Falmouth Road) at Strawberry Hill Road	Barnstable	5	MassDOT	Yes	1	MA96-04	Centerville River	Impaired	Estuarine Bioassessments, Fecal Coliform, Nitrogen (Total)	Bacteria/ Pathogens, Nitrogen						Existing conditions will be improved	4/14/2016	Bryan Cordeiro
607754	Intersection	Milton- Intersection and Signal Improvements at Granite Avenue & Squantum Street	Granite Avenue & Squantum Street	Milton	6	MassDOT	Yes	1	MA73-30	Gulliver Creek	Impaired	Other, PCB in Fish Tissue, Fecal Coliform	Bacteria/ Pathogens						Feasible BMPs will be included in 75% project design	7/29/2016	Bryan Cordeiro
607860	Intersection	Whitman- Traffic Signal Improvements and Related Work on Bedford Street (Route 18) AT 2 locations: Auburn Street (Route 14) and Temple Street (Route 27)	Bedford Street (Route 18), Auburn Street (Route 14), and Temple Street (Route 27)	Town of Whitman	5	MassDOT	Yes	1	MA62-38	Meadow Brook	Impaired	Fecal Coliform	Bacteria/ Pathogens						Outlet sedimentation trap included in project design, plus drainage system improvements. The corridor is highly constrained for space to provide stormwater treatment	11/4/2015	Bryan Cordeiro
607903	Resurfacing	Grafton - Reclamation on Route 122A (Main Street), From Providence Road to Sutton T.L.	Route 122A (Main Street)	Grafton	3	MassDOT	Yes	2	MA51-03	Blackstone River	Impaired	(Debris/Floatables/Trash*), (Other flow regime alterations*), (Physical substrate habitat alterations*), Ambient Bioassays -- Chronic Aquatic Toxicity, Aquatic Macroinvertebrate Bioassessments, Escherichia coli, Excess Algal Growth, Fishes Bioassessments, Foam/Flocs/Scum/Oil Slicks, Lead, Nutrient/Eutrophication Biological Indicators, Other, Oxygen, Dissolved, Phosphorus (Total), Sedimentation/ Siltation, Taste and Odor, Turbidity	Bacteria/ Pathogens	MA51-04	Blackstone River	Impaired	(Other flow regime alterations*), (Physical substrate habitat alterations*), Aquatic Macroinvertebrate Bioassessments, Cadmium, Copper, DDT, Escherichia coli, Excess Algal Growth, Fishes Bioassessments, Lead, Nutrient/Eutrophication Biological Indicators, PCB in Fish Tissue, Phosphorus (Total), Sedimentation/Siltation, Taste and Odor, Turbidity	Bacteria/ Pathogens	Catch basins within the project area will be upgraded to deep sump, hooded catch basins	1/16/2017	Bryan Cordeiro
607941	Highway Reconstruction	East Bridgewater- Resurfacing and Sidewalk Construction on Bedford Street (Route 18) from Whitman Street (Route 106) to Central Street.	Bedford Street (Route 18)	East Bridgewater	5	MassDOT	Yes	1	MA62-32	Matfield River	Impaired	Aquatic Macroinvertebrate Bioassessments, Excess Algal Growth, Fecal Coliform, Oxygen, Dissolved, Phosphorus (Total), Taste and Odor	Bacteria/ Pathogens						Per discussions with MassDOT, potential BMPs will be investigated to include in the project	9/27/2016	Bryan Cordeiro
607954	Bridge	Danvers- Bridge Replacement, D-03-018, Route 128 Over Waters River	Route 128	Danvers, Peabody	4	MassDOT	Yes	1	MA93-01	Waters River	Impaired	Fecal Coliform	Bacteria/ Pathogens						BMPs will be included in 75% design due to significant impervious cover widening	10/1/2016	Bryan Cordeiro

608013	Intersection	Traffic Signal and Intersection Improvements at Sea Street and Quincy Shore Drive	Sea Street - Quincy Shore Drive	Quincy	6	Municipality	Yes	1	MA74-15	Town River Bay	Impaired	Fecal Coliform, Other, Oxygen, Dissolved, PCB in Fish Tissue	Bacteria/ Pathogens							Potential BMP locations will be investigated for feasibility, likely not feasible due to spatial constraints	4/22/2016	Bryan Cordeiro
608037	Intersection	Westford - Intersection Improvements @ Groton Road (Route 40) & Dunstable Road	Groton Road at Dunstable Road	Westford	3	Municipality	Yes	1	MA84B-03	Stony Brook	Impaired	Aquatic Macroinvertebrate Bioassessments, Fecal Coliform, Turbidity	Bacteria/ Pathogens							BMPs included- geotechnical investigations will confirm treatment mechanism	2/15/2017	Bryan Cordeiro
608146	Intersection	Intersection Improvements at Pleasant Street & Village, Vine, and Cross Streets	Pleasant Street, Village Street, Vine Street, Cross Street	Marblehead	4	Municipality	Yes	1	MA93-22	Marblehead Harbor	Impaired	Fecal Coliform	Bacteria/ Pathogens							BMPs not warranted	3/11/2016	Bryan Cordeiro
608261	Intersection	Lawrence- Intersection Improvements at Marston Street & Ferry Street/Commonwealth Drive	Marston Street, Ferry Street, Commonwealth Drive	Lawrence	4	Municipality	Yes	1	MA84A-04	Merrimack River	Impaired	Escherichia coli, PCB in Fish Tissue, Phosphorus (Total)	Bacteria/ Pathogens							BMPs not feasible due to spatial constraints	2/24/2017	Bryan Cordeiro
608406	Highway Reconstruction	Milton- Reconstruction of Granite Avenue from Neponset River to Granite Avenue	Granite Avenue	Milton	6	MassDOT	Yes	2	MA73-04	Neponset River	Impaired	(Debris/Floatables/Trash*), Enterococcus, Fecal Coliform, Other, Oxygen, Dissolved, PCB in Fish Tissue, Turbidity	Bacteria/ Pathogens	MA73-30	Gulliver Creek	Impaired	Other, PCB in Fish Tissue, Fecal Coliform	Bacteria/ Pathogens	Creek Located West of Granite Avenue, parallel to Interstate 93	2/7/2017	Bryan Cordeiro
608707	Resurfacing	Sea Street Corridor Improvements	Sea Street	Quincy	3	Municipality	No	2	MA74-15	Town River Bay	Impaired	Fecal Coliform, Other, Oxygen, Dissolved, PCB in Fish Tissue	Bacteria/ Pathogens	MA70-04	Quincy Bay	Impaired	Enterococcus, Fecal Coliform, Other, PCB in Fish Tissue	Bacteria/ Pathogens	Indirect discharge to Quincy Bay - Deep sump catch basins, street sweeping.	2/7/2017	Bryan Cordeiro

Project #	Project Type	Project Description	Road(s)	Municipality	District	WPA Filing	Change in Impervious Cover	# of Waterbodies	Waterbody 1 ID	Waterbody Name	Impairment Status	# of BMPs	# of Deep Sump Catch Basins	BMP Notes	Waterbody 2 ID	Waterbody Name	Impairment Status	# of BMPs	# of Deep Sump Catch Basins	BMP Notes	Waterbody 3 ID	Waterbody Name	Impairment Status	# of BMPs	# of Deep Sump Catch Basins	BMP Notes	Waterbody 4 ID	Waterbody Name	Impairment Status	# of BMPs	# of Deep Sump Catch Basins	BMP Notes	Reviewer
600867	Bridge	Boston- Bridge Rehabilitation- B-16-237, Massachusetts Avenue (Route 2A) Over Commonwealth Avenue	Massachusetts Avenue, Commonwealth Avenue	Boston	6	None	0	1	MA72-38	Charles River	Impaired	0	0	Physical Constraints prevent implementation of BMPs. Scope of work too minor to implement BMPs.																			Bryan Cordeiro
601630	Highway Reconstruction	WEYMOUTH-ABINGTON-RECONSTRUCTION & WIDENING ON ROUTE 18 (MAIN STREET) FROM HIGHLAND PLACE TO ROUTE 139 (4.0 MILES) INCLUDES REPLACING W-32-013, ROUTE 18 OVER THE OLD COLONY RAILROAD (MBTA)	Route 18 from Highland Place to Rt 139	Wemouth, Abington	6	Variance	322350	4	MA94-03	French Stream	Impaired	4	77	Seasonal high groundwater throughout the project was too high to incorporate any infiltrating BMPs. Wet ponds and any BMP that would hold water for an extended period of time were not considered due to public concern brought to us druing the hearing process over creating mosquito breeding habitat in this residential area. We took it especially seriously for this project since it was something we could offer the public to ease some of the tension created over the impacts from the widening and bridge construction.	MA62-33	Shumatuscacant River	Impaired	2	51		MA74-03	Old Swamp River	Impaired	1	0		MA74-04	Mill River	Impaired	2	59		Bryan Cordeiro
603778	Bridge	LANESBOROUGH - BRIDGE REPLACEMENT, L-03-024, NARRAGNASETT AVENUE OVER PONTOOSUC LAKE	NARRAGNASETT AVENUE	LANESBOROUGH	1	Bridge Exempt	5630	1	MA21083	Pontoosuc Lake	Impaired	2	9																				Bryan Cordeiro
604033	Highway Reconstruction	SOUTHWICK-RECONSTRUCTION CONGAMOND ROAD (ROUTE 168) - FROM COLLEGE HIGHWAY & ENDS 250 FEET SHORT OF STATE LINE (1.2 MILES)	Congamond Road	Southwick	2	NOI	86000	1	MA32021	Congamond Lakes	Impaired	1	17	At the Middle Pond (Congamond Lakes) discharge, there is no available area for implementation of a water quality swale or basin. To comply with DEP and protect the Congamond Lakes, the Town has mandated the inclusion of Stormwater Treatment Units on all stormwater improvement projects which discharge to the Lake system. The Stormwater Treatment Unit will be performance specified and will reduce both TSS and contaminants in the stormwater discharge.																				Bryan Cordeiro
604597	Highway Reconstruction	NORTHAMPTON - I-91 INTERCHANGE 19 IMPROVEMENTS AT ROUTE 9 AND DAMON ROAD	Bridge Street (Route 9), Damon Road, I-91	Northampton	2	NOI	61000	1	MA34-04	Connecticut River	Impaired	2	60																				Bryan Cordeiro
604810	Highway Reconstruction	Reconstruction of Route 85 (Maple Street)	Route 85 (Maple Street)	Marlborough	3	NOI	4499	1	MA82106	Sudbury Reservoir	Impaired	0	44	Consideration was given to BMPs in several locations, however several issues were raised with further evaluation. The roadway is lower than the surrounding areas, making it difficult to utilize drainage swales and rain gardens. Further, in areas where adequate space was available for basins and rain gardens there would be significant impacts to existing public parks, which the City is not in favor of. Consideration was also given to leaching basins, but shallow rock ledge was located, via several borings, throughout the project limits, significantly limiting the oportunity for infiltration.																				Bryan Cordeiro

604864	Intersection	WESTBOROUGH - INTERSECTION & SIGNAL IMPROVEMENTS AT ROUTE 9 & LYMAN STREET	ROUTE 9 & LYMAN STREET	WESTBOROUGH	3	NOI	50965	1	MA82017	Chauncy Lake	Impairment Not Caused By Pollutant	2	48	The project is a redevelopment project and therefore must meet Stormwater Standards to the maximum extent practicable. The Stormwater BMPs included herein have been incorporated to the extent feasible given existing site discharge locations, Right-of-way constraints, and the extensively developed properties adjacent to the intersection and approach roadways. Additional pre-treatment devices and BMP accessories have been proposed including a grass channel, sediment forebay, and level spreader to provide improvements at the existing discharge locations.																						Bryan Cordeiro
604893	Highway Reconstruction	WORCESTER-STREETSCAPE IMPROVEMENTS AT MAIN STREET & MAYWOOD STREET	Main Street, Maywood Street	Worcester	3	None	0	1	MA51-07	Beaver Brook	Impaired	0	5	Conditions effecting selection of BMP's include land use area, topography, impacts to existing utilities, aesthetics, setback requirements, limited right-of-way, maintenance and permitting requirements. Further, MassDOT Environmental Section stated the following during their 25% review "The project has been reviewed by MassDOT Environmental Services' Stormwater Unit for potential stormwater management improvements. Under the current scope of work, the existing closed drainage system will be retrofitted by relocating or providing new deep sump/hooded catch basins, piping, and drainage manholes, where applicable. These																						Bryan Cordeiro
604935	Highway Reconstruction	WOBURN-RECONSTRUCTION OF MONTVALE AVENUE, FROM I-93 INTERCHANGE TO CENTRAL STREET (APPROX. 1,850 FT)	Montvale Avenue, Washington Street, Central Street	Woburn	4	NOI	13748	1	MA71-01	Aberjona River	Impaired	1	9	The project corridor is highly developed and the right-of-way is very restricted.																				Bryan Cordeiro
605011	Highway Reconstruction	LUDLOW-RECONSTRUCTION OF CENTER STREET (ROUTE 21), FROM 35' WEST OF BEACHSIDE DRIVE WESTERLY TO GAS LINE BESIDE MTA OVERPASS (3,500 FEET)	Center Street,	Ludlow	2	RDA	15246	1	MA36-42	Higher Brook	Not Impaired	0	20	Drainage is directed to the road. Existing roadway right-of-way limits implementation of structural BMPs.																				Bryan Cordeiro
605314	Bridge	Hadsell Street Bridge Replacement over Umpachene River	Hadsell Street at Umpachene Falls Road	New Marlborough	1	Bridge Exempt	188	1	MA21-25	Konkapot River	Impaired	0	1	Stormwater runoff from the Hadsell Street Bridge Reconstruction flows to the Umpachene River an unassessed water body which is tributary to the impaired Konkapot River. We note the impairment associated with the Konkapot River is mercury in fish tissue which is not related to highway runoff.																				Bryan Cordeiro
605367	Intersection	TAUNTON - INTERSECTION IMPROVEMENTS AT THE HON. GORDON M. OWEN RIVERWAY AND WILLIAMS STREET	Hon. Gordon M. Owen Riverway and Williams Street	Taunton	5	NOI	3705	1	MA62-02	Taunton River	Impaired	1	4	Site constraints in the area of the project intersection consist of limited right-of-way, the presense of wetland resources, and high groundwater																				Bryan Cordeiro

605384	Bridge	AGAWAM - WEST SPRINGFIELD - BRIDGE REPLACEMENT, A-05-002=W-21-014, ROUTE 147 OVER THE WESTFIELD RIVER & INTERSECTION & SIGNAL IMPROVEMENTS @ 3 LOCATIONS	Memorial Avenue (Route 147)	City of Agawam and Town of West Springfield	2	Bridge Exempt	23300	1	MA32-07	Westfield River	Not Impaired	0	60	Will look into existing ditch at STA 110+20 as potential BMP location.																		Bryan Cordeiro
605721	Other	WEYMOUTH-INTERSECTION IMPROVEMENTS @ MIDDLE STREET, LIBBEY INDUSTRIAL PARKWAY AND TARA DRIVE	MIDDLE STREET, LIBBEY INDUSTRIAL PARKWAY AND TARA DRIVE	Weymouth	6	None	4310	3	MA74025	Whitmans Pond	Impaired	0	0	The site has a restrictive right of way and easements are necessary in some areas to construct the roadway and sidewalk. There are no feasible areas to install BMP's within the right of way. There are no new catch basins proposed in this watershed area; only existing catch basins to be adjusted.	MA74-03	Old Swamp River	Impaired	0	3	The site has a restrictive right of way and easements are necessary in some areas to construct the roadway and sidewalk. There are no feasible areas to install BMP's within the right of way.	MA74-04	Mill River	Impaired	0	0	The site has a restrictive right of way and easements are necessary in some areas to construct the roadway and sidewalk. There are no feasible areas to install BMP's within the right of way. There are no new catch basins proposed in this watershed area; only existing catch basins to be adjusted.							Bryan Cordeiro
606118	Highway Reconstruction	New Bedford - Reconstruction of Route 18 (JFK Highway), from Cove Street to Griffin Court (Phase II)	Route 18 (JFK Highway) from Cove Street to Griffin Court	New Bedford	5	None	6700	1	MA95-42	New Bedford Inner Harbor	Impaired	0	35	Area is urban and there are not many opportunities for larger type BMPs such as bioretention basins. Tree box filters are proposed.																		Bryan Cordeiro
606206	Highway Reconstruction	OXFORD - RECONSTRUCTION ON CHARLTON STREET, BETWEEN MAIN STREET AND DUDLEY ROAD	Charlton Street	Oxford	3	NOI	12325	1	MA42-04	French River	Impaired	4	52	The two roadway drainage discharges at Sta 5+90 and 12+85 Left are located at existing unstabilized discharge points on steep embankments ending at the bank of the French River or BVW to the French River with no room for BMPs at the discharges. Slope stabilization is proposed with Rip Rap bowls for the discharge points and modified rock fill side slopes covered by seeded compost mulch. The water shed area is urban and developed mostly by residential single family housing and a few businesses.																		Bryan Cordeiro
606440	Resurfacing	Reconstruction of Route 140, from Sterling T.L. through East Princeton Village to Route 31, including rehab of P-16-017	Route 140	Princeton	3	NOI	46161	2	MA81-40	Keyes Brook	Not Impaired	1	31	All proposed reconstruction work on Route 140 within the Keyes Brook watershed will be captured by deep sump catch basins prior to discharging. Right of way constraints and the proximity to adjacent BVW resource areas prohibits construction of significant structural BMPs along the roadway. A constructed stormwater wetland with a sediment forebay is proposed to provide treatment to the maximum extent practicable.	MA81-41	Justice Brook	Not Impaired	2	25	All proposed reconstruction work on Route 140 within the Justice Brook watershed will be captured from the roadway by deep sump catch basins prior to discharging. BMPs are proposed to mitigate peak flows and provide stormwater treatment to the maximum extent practicable.														Bryan Cordeiro

606548	Bridge	GREENFIELD-BRIDGE REPLACEMENT, G-12-052(0XR) & G-12-053(0XT), I-91 (NB & SB) OVER BMRR	I-91 NB, I-91 SB	Greenfield	2	Bridge Exempt	37000	1	MA33-30	Green River	Impaired	0	24	Except for Bridges G-12-052 and -053, the project area is comprised of interstate highway constructed on continuous fill sections across areas of wooded marsh and marsh/bog wetland areas associated with the Cherry Rum Brook tributary to the Green River. Fill sections for northbound and southbound highway lanes are separated by an unmaintained median area containing widespread wetland areas.The narrow highway shoulder widths provided by the fill sections, together with their steep side slopes, preclude the siting of any BMPs along either side of the highway pavement. Wetlands within the median and along the outward slopes on each side of I-91 make these areas poor choices to site BMPs.																				Bryan Cordeiro
606553	Bridge	State Route 3 Over High Street & State Route 123 (Webster Street) (Bridge Nos. N-24-003 &H-06-010)	Route 3, High Street, Webster Street	Norwell, Hanover	5	Bridge Exempt	71936	2	MA94-21	Drinkwater River	Impaired	2	31	steep slopes along the northern and southern edges of Route 3 prevent the construction of wet/dry water quality swales. Also the location of BVW's within the median prevent the construction of water quality basins and/or swales near the watershed discharge locations. Water Quality Swale length is 2,615 LF.	MA94-27	Third Herring Brook	Impaired	1	14	limited right of way and grades prevent the construction of BMP's on the outer edges of the roadway. Only the median area can be used for water quality BMP's. The total length of Water Quality Swales in this watershed is 600 LF.														Bryan Cordeiro
606638	Bridge	SUTTON- BRIDGE REPLACEMENT, S-33-005, BLACKSTONE STREET OVER BLACKSTONE RIVER	Blackstone Street	Town of Sutton	3	Bridge Exempt	3715	1	MA51-03	Blackstone River	Impaired	2	8	The project corridor has limited right-of-way, steep slopes, and historical resources in close proximity, which severely restrict the opportunity for stormwater improvements.																		Bryan Cordeiro
606707	Highway Reconstruction	Dennis-Corridor and Streetscape Improvements on Main Street (Route 28), from Dennis Commons Drive to Upper County Road	Main Street (Route 28)	Dennis	5	NOI	1	1	MA96-14	Swan Pond River	Impaired	8	36	site developent along the project corridor including driveways and parking lots has restricted installation of BMPs in a number of locations. Improvements and BMPs have been added were possible to maximize imporvements to stormwater runoff treatment.																		Bryan Cordeiro
606888	Resurfacing	WORCESTER - BLACKSTONE CANAL STREETSCAPE IMPROVEMENTS ON HARDING STREET	HARDING STREET	WORCESTER	3	None	-1115	1	MA51-07	Beaver Brook	Impaired	0	9	The project is located in heavily developed downtown urban area, with buildings and parkings lots located at the back of sidewalk. In addition, there are several shallow underground utilities which prevent the installation of additional deep sump catch basins or other BMP's.																		Bryan Cordeiro
607113	Other	Dudley-Bridge demolition, D-12-009, Carpenter Road over Quinnebaug Rail Trail	North Road	Dudley	3	RDA	740	2	MA42040	Packard Pond	Impairment Not Caused By Pollutant	5	0	There is one existing catch basin and no new catch basins proposed. The existing catch basin controls a very small quantity of impervious surface area, and drains to a proposed grassed swale within the limits of the former railroad right-of-way/new right-of-way for the proposed Quniebaug River Rail Trail, which is not being constructed at this time. The existing bridge to be removed is wooden, and will be replaced with an at-grade roadway.	MA42-06	French River	Impaired	0	0	Project drains into a bordering vegetated wetland associated with Packard Pond, which eventually drains into the French River. However, there are no direct discharges into either Packard Pond/French River.														Bryan Cordeiro

607309	Intersection	Hingham - Reconstruction and Related Work on Derby Street, from Pond Park to Cushing Street	Derby Street	Hingham	5	NOI	71588	1	MA74-01	Crooked Meadow River	Impaired	2	39	Steep slopes and close proximity to commercial developments limits the potential for many BMP's to be implemented. Stormwater will mainly be collected through deep sump catch basins and will travel approximately 2.6 miles through the Plymouth River (not assessed) and a tributary stream before being deposited into Cushing Pond (not assessed) before reaching the Crooked Meadow River. In the Northbound Ramps, two outlet sediment traps are proposed to collect discharge from 5 deep sump catch basins before outletting. These outlet sediment traps will be constructed of Loam & Seed - Upland/Basin mix and Stone for Pipe Ends.																				Bryan Cordeiro
607411	Highway Reconstruction	TISBURY- BIKE & PEDESTRIAN IMPROVEMENTS ALONG BEACH ROAD, FROM THE TERMINATION OF THE EXISTING SHARED USE PATH WESTERLY TO THE FIVE CORNERS INTERSECTION	Beach Road	Tisbury	5	NOI	1826	2	MA97-09	Vineyard Haven Harbor	Impaired	0	17	Limited ROW	MA97-11	Lagoon Pond	Impaired	0	12	Limited ROW												Bryan Cordeiro
607527	Bridge	ORANGE- BRIDGE REPLACEMENT, O-03-009, HOLTSHIRE ROAD OVER MILLERS RIVER	HOLTSHIRE ROAD	ORANGE	2	Bridge Exempt	-325	1	MA35-04	Millers River	Impaired	0	7	The project is a footprint replacement of the existing bridge, within the existing right-of-way. In order to minimize impacts to the River and BVW areas, only deep sump catch basins are feasible within the project area.																				Bryan Cordeiro
607539	Highway Reconstruction	Route 2/ Colrain-Shelburne Road Intersection Improvement	Route 2, Colrain-Shelburne Road	Shelburne	1	NOI	2371	1	MA33-20	Dragon Brook	Not Impaired	0	0	Since the site is not in an urbanized area and the receiving water body is not impaired, the use of BMPs is not needed.																				Bryan Cordeiro
607573	Highway Reconstruction	HAVERHILL- RECONSTRUCTION ON ROUTE 97 (BROADWAY), FROM SILVER BIRCH LANE TO RESEARCH DRIVE	Route 97 (Broadway)	Haverhill	4	NOI	40200	1	MA84A-37	Creek Brook	Impaired	6	56																				Bryan Cordeiro
607735	Intersection	South Hadley - Signal & Intersection Improvements at Route 202 (Granby Road) & Route 33 (Lyman Street)	Route 202 (Granby Road) & Route 33 (Lyman Street)	South Hadley	2	None	220	2	MA34040	Leaping Well Reservoir	Impaired	0	0	This is an intersection improvement project that includes upgrades to existing signal equipment, pavement milling and overlay, minor roadway widening for improved shoulders, new signage and pavement markings, and pedestrian ramp reconstruction. No temporary easements or takings will be required to construct the project. Silt Sacks are to be installed in all catch basins; compost filters are included if required by the engineer during construction.	MA34-42	Buttery Brook	Impaired	0	1	One deep sum catch basin is proposed to collect stormwater adjacent to a relocated pedestrian ramp in the southwest corner of the intersection.																Bryan Cordeiro
607752	Intersection	Lowell - Intersection & signal improvements at 2 locations: SR 113 (Varnum Avenue & VFW Highway) at Mammoth Road & VfW at Aiken Street	SR 113, Mammoth Road, VFW Highway, Aiken Street	Lowell	4	RDA	0	1	MA84A-02	Merrimack River	Impaired	0	10	Right-of-way constraints.																				Bryan Cordeiro

607860	Intersection	WHITMAN - TRAFFIC SIGNAL IMPROVEMENTS & RELATED WORK ON BEDFORD STREET (ROUTE 18) AT TWO LOCATIONS AUBURN STREET (ROOUTE 14) & TEMPLE STREET (ROUTE 27)	Bedford Street (Route 18), Auburn Street (Route 14), Temple Street (Route 27)	Whitman	5	NOI	15685	1	MA62-38	Meadow Brook	Impaired	0	27	Right-of-way constraints, existing soil conditions (Type C and D) and high groundwater limit the installation of open infiltration BMPs.																				Bryan Cordeiro
607900	Intersection	PITTSFIELD- TRAFFIC SIGNAL AND INTERSECTION IMPROVEMENTS AT CENTER STREET AND WEST HOUSATONIC STREET (ROUTE 20)	West Housatonic, Center Street, Elizabeth Street	Pittsfield	1	RDA	4433	1	MA21-18	West Branch Housatonic River	Impaired	1	5																					Bryan Cordeiro
607901	Highway Reconstruction	DEDHAM - PEDESTRIAN IMPROVEMENTS ALONG ELM STREET & RUSTCRAFT ROAD CORRIDORS	Elm Street, Rustcraft Road	Dedham	6	NOI	29000	1	MA72-07	Charles River	Impaired	8	21	Location of project BMPs is limited throughout the project corridor due to minimal right-of-way and proximity of private features and wetland resources. BMPs and Low Impact Development techniques have been proposed to the maximum extent practicable and will preserve existing drainage patterns and provide an improvement over the existing conditions. Proposed BMPs have also been selected to provide compliance with the Charles River Watershed TMDL.																				Bryan Cordeiro
607999	Highway Reconstruction	Revere - Improvements at Garfield Elementary & Middle School (SRTS)	North Shore Road, Garfield Avenue, Centennial Avenue, Dix Street, Blake Street, Alger Road, Dana Street, Waverly Avenue	Revere	4	NOI	0	1	MA71-12	Sales Crrek	Not Impaired	0	13	The project area consists of an urban neighborhood composed of an Urban Minor Arterial and Local Roads. The area is heavily constrained by ROW, existing fences and retaining walls, narrow pavement width, and existing utilities.																				Bryan Cordeiro
608220	Resurfacing	Concord - Resurfacing & related work on Route 2	Route 2	Concord	4	None	0	2	MA82B-07	Assabet River	Impaired	0	0	Right of way constraints	MA82B-14	Nashoba Brook	Impaired	0	0	Right of way constraints														Bryan Cordeiro
608544	Resurfacing	Bourne - Resurfacing and related work on route 6 & 28 Bypass Road	Route 6, Route 28, St Margarets Street	Bourne	5	None	0	1	MA95-01	Buttermilk Bay	Impaired	0	0	Right of way constraints																				Bryan Cordeiro

Appendix F: Design Public Hearings Table

Design Public Hearings

Date	Event	Event Type	Location
4/6/2016	HOLBROOK - Roadway Reconstruction	Design Public Hearing	Selectman Noel C. King Meeting Room 2nd Floor, Holbrook Town Hall 50 North Franklin Street Holbrook, MA 02343
4/6/2016	NEW MARLBOROUGH- SUPERSTRUCTURE REPLACEMENT, N-08-022, HADSELL STREET OVER UMPACHENE RIVER	Design Public Hearing	New Marlborough Town Hall, 807 Mill River Southfield Road (PO Box 99), Mill River, MA 01244-0099
4/6/2016	WEYMOUTH - Intersection Improvements Middle Street, Libby Parkway And Tara Drive	Public Information Meeting	Council Chambers, Weymouth Town Hall 75 Middle Street East Weymouth, MA 02189
4/7/2016	I-90 Allston Interchange Improvement Project Taskforce Meeting #25	Public Information Meeting	Fiorentino Community Center - 123 Antwerp Street, Boston (Allston), MA
4/7/2016	ORANGE- BRIDGE REPLACEMENT, O-03-009, HOLTSHIRE ROAD OVER MILLERS RIVER	Design Public Hearing	Orange Fire Department – Tully Station, 50 Millyard Road, Orange, MA 01364
4/7/2016	WORTHINGTON - Reconstruction And Related Work On Route 143	Design Public Hearing	Worthington Town Hall, Main Meeting Hall 160 Huntington Road Worthington, MA 01098
4/7/2016	HAVERHILL - Route 97, Broadway Reconstruction	Design Public Hearing	Haverhill City Hall – Room 301 4 Summer Street Haverhill, MA 01830-5885
4/12/2016	LANESBOROUGH And PITTSFIELD - Ashuwilticook Rail Trail	Design Public Hearing	Morningside Community School Cafeteria 100 Burbank Street Pittsfield, MA 01201
4/13/2016	HEATH- BRIDGE REPLACEMENT, H-14-009, SADOGA ROAD OVER THE BURRINGTON BROOK	Design Public Hearing	Town of Heath, Heath Community Hall, 1 West Main Street, Heath, MA 01346
4/14/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
4/21/2016	SUTTON- BRIDGE REPLACEMENT, S-33-005, BLACKSTONE STREET OVER BLACKSTONE RIVER	Design Public Hearing	Town Hall, Wally Johnson Memorial Meeting Room, 3rd Floor, 4 Uxbridge Road, Sutton, MA 01590
4/28/2016	I-90 Allston Interchange Improvement Project Taskforce Meeting #26	Public Information Meeting	Fiorentino Community Center - 123 Antwerp Street, Boston (Allston), MA
4/28/2016	LANESBOROUGH- BRIDGE REPLACEMENT, L-03-024, NARRAGANSETT AVENUE OVER PONTOOSUC LAKE	Design Public Hearing	Newton Memorial Town Hall – Town Community Room, 83 North Main Street, Lanesborough, MA 01237

Date	Event	Event Type	Location
4/28/2016	HANOVER- NORWELL- SUPERSTRUCTURE REPLACEMENT, H-06-010, ST 3 OVER ST 123 (WEBSTER STREET) & N-24-00	Design Public Hearing	Hanover Town Hall, Large Hearing Room, 1st Floor, 550 Hanover Street, Hanover, MA 02339
4/28/2016	PRINCETON - ROUTE 140 RECONSTRUCTION PROJECT	Design Public Hearing	Town Hall Annex 4 Town Hall Drive Princeton, MA 01541
5/2/2016	W.BOYLSON - Stormwater Improvements on Beaman St., (Rte 140)@ Wachusett Reservior Project S. Bay in	Design Public Hearing	Town of West Boylston, Board Meeting Room 140 Worcester Street West Boylston, MA 01583
5/9/2016	BILLERICA - Transportation Improvement Project, Middlesex Turnpike, Phase 3	Design Public Hearing	Billerica Town Hall Auditorium 365 Boston Road Billerica, MA 01821
5/10/2016	GEORGETOWN - Southern Georgetown Section Of The Boarder To Boston Trail Project	Public Information Meeting	Georgetown Town Hall, Third Floor Meeting Room 1 Library Street Georgetown, MA 01833
5/11/2016	COHASSET- SUPERSTRUCTURE REPLACEMENT & SUBSTRUCTURE REHABILITATION, C-17-002, ATLANTIC AVENUE OVER	Public Information Meeting	Wilcutt Commons, Cohasset Senior Center, 90 Sohier Street, Cohasset, MA 02025
5/12/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
5/17/2016	COLRAIN- BRIDGE REPLACEMENT, C-18-020, HEATH ROAD OVER WEST BRANCH NORTH RIVER	Design Public Hearing	Colrain Central School, 22 Jacksonville Road, Colrain, MA 01340
5/17/2016	COLRAIN- BRIDGE REPLACEMENT, C-18-020, HEATH ROAD OVER WEST BRANCH NORTH RIVER	Design Public Hearing	Colrain Central School, 22 Jacksonville Road, Colrain, MA 01340
5/18/2016	QUINCY- SUPERSTRUCTURE REPLACEMENT, Q-01-039, ROBERTSON STREET OVER I-93/US 1/SR 3	Design Public Hearing	Old City Hall, Lower Level Meeting Room, 1305 Hancock Street, Quincy, MA 02169
5/19/2016	I-90 Allston Interchange Improvement Project Taskforce Meeting #27	Public Information Meeting	Fiorentino Community Center - 123 Antwerp Street, Boston (Allston), MA
5/19/2016	MARSHFIELD- BRIDGE REPLACEMENT, M-07-007, BEACH STREET OVER THE CUT RIVER	Design Public Hearing	Ventress Memorial Library, Library Program Room, 15 Library Plaza, Marshfield, MA 02050

Date	Event	Event Type	Location
5/26/2016	Performance and Asset Management Advisory Council Meeting	Public Meeting	MassDOT Board Room, 10 Park Plaza, 3rd Floor, 3830
5/26/2016	WINCHENDON- BRIDGE REPLACEMENT, W-39-015, NORTH ROYALSTON ROAD OVER TARBELL BROOK	Design Public Hearing	Winchendon Town Hall, 2nd Floor Auditorium, 109 Front Street, Winchendon, MA 01475
5/26/2016	SOUTH HADLEY - Signal & Intersection Improvements @ Rte 202 & Rte 33	Public Information Meeting	South Hadley Town Hall - Auditorium 116 Main Street South Hadley, MA 01075
6/2/2016	Commonwealth Avenue Bridge Reconstruction Community Meeting	Public Meeting	Jacob Sleeper Auditorium (CGS 129), Boston University, 871 Commonwealth Avenue, Boston, MA
6/2/2016	NORTHAMPTON - I-91 Interchange 19 Improvements project	Design Public Hearing	City Hall 210 Main Street Hearing Room Northampton, MA
6/2/2016	Littleton/Ayer - Traffic Signal at Rte. 2A/Rte. 110 and Willow Road/Bruce Street	Public Information Meeting	Littleton Police Station Community Room/ 500 Great Rd. Littleton 01460
6/2/2016	PLYMOUTH - Reconstruction Of Taylor Avenue From White Horse Road To Manomet Point Road	Design Public Hearing	Plymouth Town Hall – Mayflower Room 11 Lincoln St. Plymouth, MA 02360
6/8/2016	DOUGLAS - Webster Street (Route 16) Resurfacing And Related Work	Public Information Meeting	Douglas Municipal Center/Town Hall 29 Depot Street Douglas, MA 01516
6/9/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
6/9/2016	SEEKONK - Intersection For Route 114A (Fall River Avenue) At County Street	Design Public Hearing	Town Hall, Selectmen's Meeting Room 100 Peck Street Seekonk MA 02771
6/22/2016	WESTON - Demolition of Legacy Toll Plaza Along I-90	Design Public Hearing	Town Hall Auditorium 11 Town House Road Weston, MA 02493
6/23/2016	WEYMOUTH - Intersection & Improvements of Washington St. (Rte 53) @ Mutton Lane & Pleasant St.	Design Public Hearing	Town Hall 5 Middle Street, Council Chambers, 2nd Floor Weymouth, MA 02188
6/27/2016	I-90 Allston Interchange Improvement Project Taskforce Meeting #27	Public Information Meeting	Fiorentino Community Center – 123 Antwerp Street, Boston (Allston), MA
6/30/2016	Performance and Asset Management Advisory Council Meeting	Public Meeting	MassDOT Board Room 10 Park Plaza, 3rd Floor, 3830 Boston, MA 02116
7/7/2016	FALL RIVER - Bridge deck replacement project	Design Public Hearing	City Council Hearing Room, 1st Floor One Government Center Fall River, MA 02722

Date	Event	Event Type	Location
7/12/2016	SALEM - Stormwater Improvements along Route 107	Design Public Hearing	Salem City Hall, Medium Conference Room 120 Washington Street Salem, MA 01970
7/13/2016	I-90 Allston Interchange Improvement Project Taskforce Meeting #28	Public Information Meeting	Fiorentino Community Center 123 Antwerp Street, Boston (Allston), MA
7/13/2016	GARDNER - roadway resurfacing project at Matthew Street	Design Public Hearing	Mayor's Conference Room #128 City Hall, 95 Pleasant Street Gardner, MA 01440
7/13/2016	LAWRENCE - traffic signal and ADA improvements on Common Street and Lowell Street	Design Public Hearing	Lawrence- Office of Planning and Development Planning Conference Room 225 Essex Street Lawrence, MA 01840
7/14/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
7/14/2016	EASTON - Washington Street (Route 138) and Union Street intersection improvements	Design Public Hearing	Easton Town Hall Colleen A. Corona Board Room North Easton, MA 02356
7/14/2016	EVERETT - Safe Routes to School-Madelaine English School	Design Public Hearing	Connolly Center 90 Chelsea Street Everett, MA 02149
7/19/2016	WORCESTER - Streetscape Improvment At Main And Maywood Street	Design Public Hearing	Clark University, Higgins University Center Grace Conference Room, 1st Floor 950 Main Street Worcester, MA 01610
7/20/2016	HOLYOKE - Resurfacing & Related Work on Heritage Street, Front Street & Dwight Street	Design Public Hearing	Auditorium of the War Memorial 310 Appleton Street Holyoke MA
7/26/2016	WORCESTER - Winthrop Street Improvements	Design Public Hearing	Union Hall 2 Washington Street, Union Station - 2nd Floor Worcester, MA 01604
7/28/2016	Performance and Asset Management Advisory Council Meeting	Public Meeting	MassDOT Board Room, 10 Park Plaza, 3rd Floor, 3830
7/28/2016	LOWELL - intersection improvement project along Route 38	Design Public Hearing	Pollard Memorial Library Meeting Room 401 Merrimack Street Lowell, MA 01852
8/2/2016	AMESBURY - Transportation Improvement Project on Elm Street	Design Public Hearing	City Hall Auditorium 62 Friend Street Amesbury, MA 01913
8/9/2016	LUDLOW - Center Street Reconstruction project	Design Public Hearing	Ludlow High School Auditorium 500 Chapin Street Ludlow, MA 01056
8/11/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
8/11/2016	LEE - Bridge replacement project in the Towns of Lee and Lenox, MA.	Design Public Hearing	The Lee Memorial (Town) Hall 32 Main Street Lee, MA 01238

Date	Event	Event Type	Location
8/16/2016	WHITMAN - Traffic Signal Improvements & Related Work on Bedford Street (Route 18)	Design Public Hearing	Whitman Town Hall Town Hall Auditorium, 1st Floor 54 South Avenue Whitman, MA 02382
8/24/2016	LAWRENCE - proposed improvements project under the "Safe Routes to School" program	Design Public Hearing	Alexander B. Bruce School Cafeteria 135 Butler Street Lawrence, MA 01841
8/25/2016	Performance and Asset Management Advisory Council Meeting	Public Meeting	MassDOT Board Room 10 Park Plaza, 3rd Floor Suite 3830 Boston, MA
8/31/2016	AGAWAM/WEST SPRINGFIELD - Bridge replacement of State 147 (Springfield St) over the Westfield River	Design Public Hearing	Agawam Senior Center 954 Main Street Agawam, MA 01001
9/7/2016	LEICESTER - Bridge (L-06-017) replacement, Rawson Street over Cedar Meadow Pond Inlet	Design Public Hearing	Selectmen's Conference Room Town Hall 3 Washburn Square Leicester, MA 01524
9/8/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
9/8/2016	AGAWAM/WEST SPRINGFIELD - Bridge replacement of State 147 (Springfield St) over the Westfield River	Design Public Hearing	West Springfield Town Hall Auditorium, 26 Center Street, West Springfield, MA 01089
9/8/2016	BARNSTABLE - Intersection and signal improvements project at Route 28 and Strawberry Hill Road	Design Public Hearing	Barnstable Town Hall Town Council Hearing Room 367 Main Street Hyannis, MA 02601
9/13/2016	AET Public Meeting - Framingham	Public Meeting	Framingham Town Hall
9/14/2016	TISBURY - Bike & Pedestrian Improvements along Beach Road	Design Public Hearing	Tisbury Senior Center 34 Pine Tree Road Vineyard Haven, MA 02568
9/14/2016	BOSTON - Replacement of the North Washington Street Bridge over the inner harbor	Public Information Meeting	The MGH Institute of Health Professions 36 1st Avenue Charlestown Navy Yard Charlestown, Massachusetts 02129
9/14/2016	AET Public Meeting - Springfield	Public Meeting	Springfield City Hall
9/14/2016	AET Public Meeting - Allston	Public Meeting	Jackson Mann School in Allston
9/15/2016	AET Public Meeting - Lenox	Public Meeting	Highway District 1, Lenox MA
9/16/2016	Proposed amendments to the regulations of the MassDOT Highway Division 700 CMR 7.00 and 700 CMR 11.0	Public Hearing	10 Park Plaza, 2nd Floor Boston, Massachusetts 02116

Date	Event	Event Type	Location
9/19/2016	GOSHEN - Resurfacing Project From Chesterfield T.L. To Intersection Of West St. With South Main St.	Design Public Hearing	Town Hall 40 Main Street Goshen, MA 01032
9/21/2016	LOWELL - Intersection and signal improvements at 2 locations	Design Public Hearing	Lowell Senior Center 276 Broadway Street Lowell, MA 01854
9/29/2016	ORANGE - Proposed Route 2 over Route 202 Bridge replacement project	Design Public Hearing	American Legion Function Room 40 Daniel Shays Highway Orange, MA 01364
10/4/2016	WESTFORD - Intersection Improvements at Groton Road (Route 40) & Oak Hill Road	Design Public Hearing	Westford Town Hall, 2nd Floor Meeting Room 55 Main Street Westford, MA 01886
10/13/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
10/13/2016	I-90 Allston Interchange Improvement Project Taskforce Meeting #29	Public Information Meeting	Fiorentino Community Center – 123 Antwerp Street, Boston (Allston), MA
10/17/2016	Sumner Tunnel Entrance Reconstruction And Toll Plaza Demolition Project Public Information Meeting	Public Information Meeting	East Boston High School Auditorium 86 White Street
10/19/2016	WILLIAMSTOWN - Reconstruction and Related work on Route 43 (Water Street)	Design Public Hearing	Williamstown Municipal Building, Board of Selectmen Room 31 North Street, 1st Floor Williamstown, MA 01267
10/25/2016	CHARLEMONT - Roadway Reconstruction and Village Center Traffic Calming on Route 2	Design Public Hearing	Hawlemont Regional Elementary School School Cafeteria 10 School Street Charlemont, MA 01339
10/25/2016	NORTH ANDOVER - Chickering Road (Route 125) and Massachusetts Avenue intersection improvement projec	Design Public Hearing	Stevens Memorial Library 345 Main Street North Andover, MA 01845
10/27/2016	ROYALSTON - Bridge replacement project	Design Public Hearing	Town Hall - Hearing Room - Cafeteria 13 The Common Royalston, MA 01368
10/27/2016	BARNSTABLE - Intersection and signal improvements project at Osterville-W. Barnstable Rd	Design Public Hearing	Barnstable Town Hall Town Council Hearing Room 367 Main Street Hyannis, MA 02601
11/2/2016	SAUGUS - Replace the Belden Bly Bridge on Route 107 over the Saugus River	Design Public Hearing	Saugus Town Hall Auditorium 298 Central Street Saugus, MA 01906

Date	Event	Event Type	Location
11/10/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
11/15/2016	AMHERST - Reconstruction of the Mill Street Bridge over the Mill River	Design Public Hearing	Town Hall 4 Boltwood Avenue Amherst, MA 01002
11/16/2016	QUINCY - Sea Street/ Quincy Shore Drive Intersection Improvements Project	Design Public Hearing	Broad Meadows Middle School 50 Calvin Road, Quincy, MA 02169
11/17/2016	CONCORD - Bruce Freeman Rail Trail (Phase- 2B)	Design Public Hearing	Harvey Wheeler Community Center 1276 Main Street Concord, MA 01742
11/30/2016	STONEHAM - Proposed Route 28 at North Street Intersection Improvement Project	Design Public Hearing	Town of Stoneham Town Hall (Banquet Room) 35 Central Street Stoneham, MA 02180
12/6/2016	ASHLAND - improvements to the Route 126 (Pond Street)	Design Public Hearing	Warren Elementary School 73 Fruit Street Ashland, MA 01721
12/7/2016	WORCESTER - Proposed Central Business District Streetscape Improvements	Design Public Hearing	Central Massachusetts Regional Planning Commission 2 Washington Square, Union Station, 2nd floor Worcester, MA 01604
12/8/2016	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
12/8/2016	ALLSTON - I-90, Massachusetts Turnpike Interchange Improvement Project in the City of Boston	Public Information Meeting	The Jackson Mann Community Center Auditorium 500 Cambridge Street Allston, Massachusetts, 02134
12/12/2016	SHELBURNE - proposed Bardwells Ferry Road over Dragon Brook	Design Public Hearing	Shelburne Town Hall 51 Bridge Street Shelburne Falls, MA 01370
1/11/2017	NATICK - Cochituate Rail Trail Project in the Towns of Framingham and Natick, MA.	Design Public Hearing	Wilson Middle School, Joseph Keefe Auditorium 22 Rutledge Road Natick, MA 01760
1/12/2017	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
1/12/2017	SHELBURNE - proposed Bardwells Ferry Road over Dragon Brook	Design Public Hearing	Shelburne Town Hall 51 Bridge Street Shelburne Falls, MA 01370
1/12/2017	WORCESTER - Replacement of Plantation Street Bridge over the CSX railroad line	Design Public Hearing	MassDOT District 3 Offices 403 Belmont Street Worcester, MA 01604
1/12/2017	RAYNHAM - proposed Bridge Replacement, R-02-013 (3PA), US 44 (Cape Highway) over SR 24 project	Design Public Hearing	Raynham Town Hall Sullivan Meeting Room 558 South Main Street Raynham, MA 02767

Date	Event	Event Type	Location
1/19/2017	BOSTON - Roadway Improvements along Route 203 from West Selden Street to Gallivan Boulevard	Design Public Hearing	Mildred Avenue Middle School, Auditorium, 5 Mildred Avenue, Mattapan, MA 02126
1/19/2017	PLYMOUTH - Reconstruction and related work on Obery Street and South Street	Design Public Hearing	Plymouth Library-Fehlow Room 132 South Street Plymouth, Massachusetts 02360
1/24/2017	CARVER - Rochester Road over the Weweantic River Bridge Replacement project in Carver and Middleboro	Design Public Hearing	Town Hall of Carver Meeting Room 4 108 Main Street Carver, MA 02330
1/25/2017	CHESTERFIELD - Bridge replacement project of the Ireland Street Bridge over Bronson Brook	Design Public Hearing	Chesterfield Town Office Building 422 Main Road Chesterfield, MA 01012
1/25/2017	CHELMSFORD - Intersection improvements at Route 4 & I-495 (exit 33)	Design Public Hearing	Chelmsford Town Hall, 2nd floor, room 205 50 Billerica Road Chelmsford, MA 01824
1/26/2017	Performance and Asset Management Advisory Council Meeting	Public Meeting	Transportation Board Room, 10 Park Plaza, 2nd Floor Mezzanine Boston, MA 02116
1/31/2017	WESTFIELD - proposed Route 20 Access Improvement Project	Design Public Hearing	South Middle School Auditorium 30 West Silver Street Westfield, MA 01085
2/1/2017	WOBURN - New Boston Street Bridge Replacement project	Design Public Hearing	Woburn City Hall, City Council Chambers 10 Common St. Woburn, MA 01801
2/9/2017	Cancelled - MassDOT Office of Outdoor Advertising Public Hearing - Cancelled	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
2/9/2017	AMHERST - Meeting Cancelled - Proposed Routes 9 & 116 Improvement project	Design Public Hearing	Amherst Town Hall, Town Room 4 Boltwood Ave Amherst, MA 01002
2/16/2017	AMESBURY - Powwow Riverwalk Multi-use Path	Design Public Hearing	Amesbury Town Hall Auditorium 62 Friend Street Amesbury, MA 01913
2/23/2017	Rescheduled to Feb 23 - Toll Plaza Demolition and Reconstruction Project Public Information Meeting	Public Hearing	District 1 Highway Office, 270 Main Street, Lenox
2/23/2017	DARTMOUTH - proposed Intersection Improvements & Related Work at Chase Road & Old Westport Road	Design Public Hearing	Dartmouth Town Hall Select Board Meeting Room, Room #304 400 Slocum Road Dartmouth, MA 02747
3/2/2017	WEYMOUTH - Improvements to Pingree Elementary School - Safe Routes to School (SRTS)	Design Public Hearing	Weymouth Town Hall Town Council Hearing Room 75 Middle Street, Weymouth, MA 02189

Date	Event	Event Type	Location
3/6/2017	NORTHAMPTON - Proposed Route 5/10 and Hatfield Street intersection roundabout project	Design Public Hearing	Northampton City Hall – Hearing Room 210 Main Street Northampton, MA
3/9/2017	MassDOT Office of Outdoor Advertising Public Hearing	Public Hearing	10 Park Plaza, Conference Rooms 5 & 6 (2nd floor), Boston, MA 02116
3/15/2017	WATERTOWN - (RESCHEDULED) "Safe Routes to School" improvements for the Hosmer Elementary School	Design Public Hearing	Hosmer Elementary School Cafeteria 1 Concord Road Watertown, MA 02472
3/29/2017	MILTON - Granite Avenue and Squantum Street Intersection and Signal Improvement project	Design Public Hearing	Milton Public Library, Keys Community Room 476 Canton Avenue Milton, MA 02186

Appendix G: Active MassDOT Construction NOIs in Permit Year 14

Appendix G – Projects with NOI Submissions/Developed SWPPPs

Tracking Number	Owner/ Operator	Project/Site Name	Project State	Project City	Status	Date Submitted	Date of Coverage
MAR12BH09	MASSDOT D2	ROADWAY RECONSTRUCTION & RELATED WORK ALONG A SECTION OF MONTAGUE CITY ROAD	Massachusetts	Montague	Active	4/22/2016	5/6/2016
MAR12BO85	MassDOT Highway Division District 5	West Bridgewater- Route 106 over Hockomock River Bridge Repalcement	Massachusetts	West Bridgewater	Active	10/20/2016	11/3/2016
MAR12BH80	MassDOT Highway Division	I-290 Roadway resurfacing and Drainage Improvement Project	Massachusetts	Marlborough, Northborough	Active	4/15/2016	4/29/2016
MAR12BH76	MassDOT Highway Division District 5	Reconstruction of Faunce Corner Road	Massachusetts	Dartmouth	Active	4/15/2016	4/29/2016
MAR12BH85	MassDOT Highway Division District 5	Safe Routes to School Project on East Street	Massachusetts	Mansfield	Active	4/15/2016	4/29/2016
MAR12BI01	MASSDOT D2	HADLEY, MA - ROADWAY RECONSTRUCTION AT ROUTE 9 (RUSSELL ST) AND ROUTE 47 (MIDDLE ST)	Massachusetts	HADLEY	Active	4/26/2016	5/10/2016
MAR12BK13	MassDOT Highway Division	Roadway Reconstruction and Related Work	Massachusetts	Wayland	Active	6/16/2016	6/30/2016
MAR12BK71	MassDOT Highway Division	Dartmouth-Padanaram Bridge Causeway Reconstruction	Massachusetts	Dartmouth	Active	7/22/2016	8/5/2016
MAR12BH46	MASSDOT D2	Roadway Reconstruction & Related Work along a Section of Main Street (Route 116) and Adjacent Streets in Springfield, MA	Massachusetts	Springfield	Active	4/22/2016	5/6/2016
MAR12BI03	massDOT Highway Division	Charlton-Southbridge Resurfacing along a Section of Route 169	Massachusetts	Southbridge	Active	4/27/2016	5/11/2016
MAR12BH36	MassDOT Highway Division	Resurfacing and Related Work along a Section of Route 20 (Charlton Road), Sturbridge, MA	Massachusetts	Sturbridge	Active	4/5/2016	4/19/2016
MAR12BH47	MassDOT-Highway Division-District 5	Roadway Reconstruction Along Route 14	Massachusetts	Pembroke	Active	5/19/2016	6/2/2016
MAR12BJ29	MassDOT Highway Division	I-290 Roadway Resurfacing and Drainage Improvement Project	Massachusetts	Marlborough/ Northborough	Active	6/1/2016	6/15/2016

Tracking Number	Owner/ Operator	Project/Site Name	Project State	Project City	Status	Date Submitted	Date of Coverage
MAR12BI57	MassDOT Highway Division	Interstate Maintenance & related Work/I-190	Massachusetts	Worcester/West Boylston	Active	6/7/2016	6/21/2016
MAR12BD85	MassDOT	Quequechan River Rail Trail Phase 3	Massachusetts	Fall River	Active	7/14/2016	7/28/2016
MAR12BJ84	MassDOT Highway Division	Resurfacing and Related Work along a Section of Route 148	Massachusetts	Brookfield	Active	6/10/2016	6/24/2016
MAR12BJ94	MassDOT Highway Division	Franklin W. Central St. bridge (F-08-005) over the MBTA & CSX Railroads	Massachusetts	Franklin	Active	6/14/2016	6/28/2016
MAR12BJ08	MassDOT Highway Division	Main St. Bridge (S-21-002) Bridge Rehabilitation over the Quinebaug River	Massachusetts	Southbridge	Active	6/15/2016	6/29/2016
MAR12BK03	MassDOT Highway Division District 5	Taunton-Reconstruction Route 140	Massachusetts	Taunton	Active	6/17/2016	7/1/2016
MAR12BK58	MassDOT Highway Division	Assabet Rail Trail	Massachusetts	Maynard	Active	7/29/2016	8/12/2016
MAR12BM72	MassDOT	(607971)W. Stockbridge Toll Plaza I-90	Massachusetts	West Stockbridge	Active	8/10/2016	8/25/2016
MAR12BO63	MASSDOT D2	Demolition and Removal of Existing Toll Plaza Structures & Ramp Reconstruction at Interchanges Nos 3 through 8 on Interstate 90 in District 2	Massachusetts	Westfield, West Spfld, Chicopee, Spfld, Ludlow, Palmer	Active	10/6/2016	10/20/2016
MAR12BQ61	MASSDOT D2	Brimfield-Sturbridge, Rte 20 Resurfacing & Related Work	Massachusetts	Brimfield to Sturbridge	Active	1/23/2017	2/6/2017
MAR12BL70	MassDOT Highway Division	Drainage Improvements along Sections of Rtes 2A, 146 and 122	Massachusetts	Shirley/Worcester /Uxbridge	Active	7/20/2016	8/3/2016
MAR12BM25	MassDOT-Highway Division-District 5	North Attleboro-Intersection Improvements at Routes 1 & 120	Massachusetts	North Attleboro	Active	8/8/2016	8/23/2016
MAR12BM73	MassDOT, Highway Division	(607971) Lee Toll Plaza I 90	Massachusetts	Lee	Active	8/10/2016	8/25/2016
MAR12BL62	MassDOT Highway Division	I-90 Plaza 10A Tandem Lot - District 3	Massachusetts	Millbury	Active	7/19/2016	8/2/2016
MAR12BP04	MassDOT Highway	Demo of toll plazas at Weston, MA	Massachusetts	Weston	Active	10/31/2016	11/14/2016
MAR12BP05	MassDOT Highway Division	Demolition and Removal of Existing Toll Plaza Structures and Ramp Reconstruction at Interchanges 9, 10, 10A, 11, 11A, 12 & 13 along Interstate 90	Massachusetts	Sturbridge	Active	10/12/2016	10/26/2016

Tracking Number	Owner/ Operator	Project/Site Name	Project State	Project City	Status	Date Submitted	Date of Coverage
MAR12BP07	MASSDOT D2	Roadway Reconstruction of a Section of Route 187 in Westfield, MA	Massachusetts	Westfield	Active	10/17/2016	10/31/2016
MAR12BP22	MASSDOT D2	Roadway Recosntruction at Routes 9 and 67 in West Brookfield, MA	Massachusetts	West Brookfield	Active	10/17/2016	10/31/2016
MAR12BP09	MassDOT Highway	Demo of toll plazas 31 and 37	Massachusetts	Boston	Active	10/31/2016	11/14/2016
MAR12BN55	MassDOT Highway Division	Resurfacing & related Work along I-90 in Grafton-Millbury	Massachusetts	Millbury - Grafton	Active	9/1/2016	9/15/2016
MAR12BN73	MassDOT	Colrain-Jacksonville Rd Bridge (606551)	Massachusetts	Colrain	Active	9/8/2016	9/22/2016
MAR12BO62	MassDOT Highway Division District 5	Brockton-Rte. 123 & Manley St.	Massachusetts	Brockton	Active	10/4/2016	10/18/2016
MAR12BO81	MassDOT Highway	Commonwealth Ave. Route 20 Phase 2A	Massachusetts	Boston/Brookline	Active	10/31/2016	11/14/2016
MAR12BO86	MassDOT Highway	toll plazas 18, 19, 20, interstate 90 Boston	Massachusetts	Allston/Brighton	Active	12/7/2016	12/21/2016
MAR12BQ17	MassDOT Highway Division District 5	Barnstable-Route 28 & Bearses Way Intersection Reconstruction	Massachusetts	Hyannis	Active	11/18/2016	12/2/2016
MAR12BR54	MassDOT Highway Department District 5	Routes 6 & 18 drainage Improvments	Massachusetts	New Bedford	Active	2/1/2017	2/15/2017
MAR12BR59	MassDOT Highway Division District 5	Intersection Improvements on Coggeshall Street	Massachusetts	New Bedford	Active	2/1/2017	2/15/2017
MAR12BQ32	MassDOT Highway Division District 5	Attleboro-I-95 over North Avenue	Massachusetts	Attleboro	Active	12/1/2016	12/15/2016
MAR12BR22	MassDOT Highway Division District 5	Nantucket Multi-use Trail Reconstruction along Goose Pond Lane and Orange Street	Massachusetts	Nantucket	Active	1/18/2017	2/1/2017
MAR12BR49	MassDOT Highway Division	Intersection Improvements on Main Street at Cranberry Highway & at South Orleans Road	Massachusetts	Orleans	Active	2/1/2017	2/15/2017
MAR12BO98	MassDOT Highway Division District 5	Mansfield to Franklin- I-495 Resurfacing and related work	Massachusetts	Mansfield	Active	11/8/2016	11/22/2016

Tracking Number	Owner/ Operator	Project/Site Name	Project State	Project City	Status	Date Submitted	Date of Coverage
MAR12BQ21	MassDOT Highway Division	Bridge Rehabilitation - Interstate 90 over the Foss Reservoir	Massachusetts	Framingham	Active	11/18/2016	12/2/2016
MAR12BH47_2016-06-02	MassDOT-Highway Division-District 5	Roadway Reconstruction Along Route 14	Massachusetts	Pembroke	Terminated	4/14/2016	4/28/2016

Appendix H: Maintenance Schedule Summary

Summary of Compliance with Maintenance Matrix - Statewide Permit Year 14

		Activity Schedule					Permit Year 12 Statewide	
Drainage Asset	**Area/ Note**	**Mow**	**Sweep**	**Inspect**	**Clean**	**Repair**	**Was Schedule Met?**	**Comments**
	Maintenance Facilities/ Material Storage Yards	Annually	ANI	Annually	--	ANI	Yes	Some districts have the HazMat coordinator inspect monthly.
Roads	Roads/ Weigh Stations/ Rest Areas	Annually	Annually	Annually	--	ANI	Yes	Some districts perform maintenance on an as needed basis.
STORMWATER BMPS								
	Maintenance Facilities/ Material Storage Yards	--	--	Annually (after snow melt)	ANI	ANI	Yes	Maintenance and repairs done on an as needed basis.
Catch Basins	Roads/ Weigh Stations/ Rest Areas	--	--	Annually	ANI	ANI	Yes	
	Maintenance Facilities/ Material Storage Yards	Annually	--	Annually (after snow melt)	ANI	ANI	Yes	Not applicable to all Districts.
Extended Detention Basins	Roads/ Weigh Stations/ Rest Areas	Annually	--	Annually	ANI	ANI	Yes	Not applicable to all Districts. In one district roads only.
	Maintenance Facilities/ Material Storage Yards	--	--	Annually (after snow melt)	ANI	ANI	Yes	In one district, maintenance and repairs done on an as needed basis. Not applicable to all Districts.
Water Quality Swales (including dry swales, bio-filter swales, and wet swales)	Roads/ Weigh Stations/ Rest Areas	--	--	Annually	ANI	ANI	Yes	
	Maintenance Facilities/ Material Storage Yards	--	--	Annually (after snow melt)	ANI	ANI	Yes	
Sediment Forebays	Roads/ Weigh Stations/ Rest Areas	Twice per year	--	Annually	ANI	ANI	Yes	
Channel Systems		Annually	--	--	Annually	ANI	Yes	Not applicable to all Districts.
Outlet Sediment Traps		--	--	Annually	ANI	--	Yes	Not applicable to all Districts.
Vegetated Filters Strip		Annually	--	Annually	ANI	ANI	Yes	Not applicable to all Districts.
Wet Pond		--	--	Annually	ANI	ANI	Yes	Not applicable to all Districts.
Enhanced Wet Pond		--	--	Annually	ANI	ANI	Yes	Not applicable to all Districts.
Constructed Storm Water Wetlands		--	--	Annually	ANI	ANI	Yes	Not applicable to all Districts.
Recharge Basin		--	--	Twice per year	ANI	ANI	Yes	Maintenance and repairs done on an as needed basis.
Leaching Catch Basins		--		Annually	ANI	ANI	Yes	Maintenance and repairs done on an as needed basis.
Subsurface Recharge Systems		--	--	Twice annually	ANI	ANI	Yes	Not applicable to all Districts.
Recharge Trenches and Beds		--	--	Annually	ANI	ANI	Yes	Not applicable to all Districts
Recharge Dry Wells and Galleys		--	--	Annually	ANI	ANI	Yes	Not applicable to all Districts
Filter Systems		Regular Raking	--	Annually	Annually	ANI	N/A	None known
Sand Filters		--	--	Annually	ANI	ANI	N/A	None known
Organic Filters		--	--	Annually	ANI	ANI	N/A	None known
Water Quality Inlet		--	--	Annually	Annually	ANI	Yes	Not applicable to all Distrcits.
Flow Splitters		--	--	Annually	ANI	ANI	N/A	None known
Impoundment Structures		--	--	Annually	ANI	ANI	N/A	None known
Check Dams		--	--	Annually	ANI	ANI	Yes	Not all inspected, repaired and cleaned as needed in one district.
OTHER								
Oil/ Water Separators	Self-test alarm, if so equipped	--	--	Weekly	--	--	Yes	Maintenance and repairs done on an as needed basis.

Summary of Compliance with Maintenance Matrix - Statewide Permit Year 14

		Activity Schedule					Permit Year 12 Statewide	
Drainage Asset	**Area/ Note**	**Mow**	**Sweep**	**Inspect**	**Clean**	**Repair**	**Was Schedule Met?**	**Comments**
Holding Tanks - UST	Gauge tank to determine if greater than 75% full.	--	--	Weekly	--	--	Yes	Some districts perform repairs/maintenance as needed or quarterly instead of weekly inpections (based on historic review and usage). Tanks Equipped with High-Level Alarms
Holding Tanks - AST	Gauge tank to determine if greater than 75% full.	--	--	Monitor and set appropriate schedule	--	--	Yes	
Septic System	Record water meter readings and report to DHC.	--	--	Quarterly	--	--	Yes	In one District cleaned annually.
NPDES Construction Site - Site Inspections		--	--	Weekly	--	--	Yes	Both by MassDOT and Construction Contractor as required by SWPPP.
NPDES Construction Site - Repair of erosion controls		--	--	Weekly	ANI	--	Yes	Both by MassDOT and Construction Contractor as required by SWPPP.
NPDES Construction Site - Cleaning of storm water structures		--	--	Weekly	ANI	--	Yes	Both by MassDOT and Construction Contractor as required by SWPPP.
District 3 Specific Maintenance Requirements								
Roads	Quinsigamond and Flint Pond Watershed Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	Annually	Annually	Annually	--	ANI	Yes	
	Salisbury Pond Watershed	Annually	Annually	Annually	--	ANI	Yes	
Catch Basins	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	--	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	--	--	6 months	ANI	ANI	Yes	
Extended Detention Basins	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	Annually	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	Annually	--	6 months	ANI	ANI	Yes	
Water Quality Swales (including dry swales, bio-filter swales, and wet swales)	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	--	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	--	--	6 months	ANI	ANI	Yes	
Sediment Forebays	Roads within Quinsigamond and Flint Pond Sub-basin; Leesville Pond in Kettle Brook Sub-basin; Mill Brook Tributary Basin; and Monoosnoc Basin	--	--	6 months	ANI	ANI	Yes	
	Roads within Salisbury Pond Watershed	--	--	6 months	ANI	ANI	Yes	
ANI - As Needed per Inspection								
N/A - Not Applicable								

Appendix I: Public Well Supply Matrix and Salt Remediation Program

APPENDIX I

Property Owner	***Owner/Town***	***Address***	***Date of Initial Complaint***	***Last Data Point (mg/l)***	***General Comment Section***
Andover	Andover	Chris Cronin, Acting Director Department of Public Works 397 Lowell Street Andover, Ma 01810-4416 Telephone (978) 623-8350	2/22/2000	March 2017 Raw: Na=56, Finished: Na=67,	Poly style storage was constructed in 2001 where there previously was no outside storage from 1998 through 2001. Based on monthly sampling, the town requested a reduced salt zone along I-93 and I-495 and relocation of the salt storage shed via July 2004 correspondence. A section of I-495 and I-93 has been designated as a reduced salt zone (RSZ). The RSZ was first implemented in 2005-2006 winter season. A new salt shed at Andover River Road/I-93 was in use for the 2014/2015 winter season. I-93/I-495 has been decommissioned as an active depot. During the 2015-2016 season, MassDOT snow & ice ops eliminated the RSZ and is piloting 200 lb/lane mile application rate in this area.
Cambridge	Cambridge Reservoir	Timothy MacDonald, Director of Water Operations Cambridge Water Dept. 250 Fresh Pond Parkway Cambridge, MA 02138 (671) 349-4773	Regular monitoring began 1987	February 2017 Hobbs Brook (at intake), Na=169, Cl=289 Stoney Brook (at intake) Na =98, Cl= 195 Fresh Pond(at intake) Na=98, Cl=232	Cambridge Reservoir is adjacent to Route 128 in the Towns of Lexington, Lincoln, Waltham, and Weston. There is a designated RSZ for this area covering 24.6 linear miles and 177.8 lane miles in the vicinity of the water supply covering sections of Routes 2, 2A and 128. MassDOT met with Cambridge Water Department in 2015.
Dedham/ Westwood	Dedham/ Westwood	Eileen Commane Executive Director Dedham-Westwood Water Dept. 50 Elm Street Dedham, MA 02027-9137 Telephone (781) 329-7090	File alluded to 3/7/88 correspondence from DWWD requesting MHD refrain from using salt along sections of Rt 128. 12/19/97 telecon b/w Sam Pollock and Mark Hollowell of Anderson-Nichols regarding DEP req'd monthly monitoring and concerns for White Lodge Well #5	May 25, 2016 Well #5, Na = 125 Cl = 262	Concern is over a municipal well located to the north of I-95/Route 128 near University Avenue. The well is located in the Fowl Meadow Aquifer that recharges to White Lodge Well No. 5. Correspondence written in March 2004 indicated that we would monitor salt application. MassDOT with UMass has installed monitoring wells and stormwater outfall monitors to evaluate NaCl sources to Fowl Meadow. MassDOT and UMass have been conducting monthly sampling of the well network. The town contacted MassDOT following completion of the study in 2010 to request a RSZ. The results of a mass-balance study indicated that MassDOT's contribution of NaCl was 78%. On Dec 17, 2011 MassDOT held tailgate training at the Dedham depot, identified an overlap, and committed equipment with closed-loop controllers to this section of I-95. Additionally, MassDOT met with DWWD in November 2011 and explained that with improved BMPs, new technology and operational improvements, there should be a significant reduction in NaCl without designating a RSZ; however it may take a few years to validate. The DWWD sent MassDOT a letter in February 2012 stating that although they appreciate the changes made, they are still requesting a RSZ. A tailgate training session was held at the Westwood depot on Dec 1, 2012. MassDOT committed to monitor BMPs and look for opportunities to improve operations. The most recent tailgate training was held 10/24/2015.

APPENDIX I

Property Owner	***Owner/Town***	***Address***	***Date of Initial Complaint***	***Last Data Point (mg/l)***	***General Comment Section***
North Chelmsford	North Chelmsford	Bruce J. Harper Superintendent North Chelmsford Water District 64 Washington Street PO Box 655 North Chelmsford, MA 01863-0655 Telephone (978) 251-3931	mid 1980s	March 8, 2017 # 1 Na=203, Cl=404 # 2 Na=106, Cl=198 # 3 Na=170, Cl=391 # 4 Na=155, Cl=304	There is a RSZ in East and North Chelmsford for 153 lane miles consisting of sections of Routes 3, 3A, 4 and Lowell Connector. High arch gambrel salt shed constructed in fall 2011.
Auburn	Auburn	Kenneth R. Smith, Supt Auburn Water District P.O. Box 187 Auburn, MA 01501 (508)832-5336 ksmith@auburnwaer.com	7/2013	February 2017 Church 1 finished –Na= 171 Church 2 finished – Na=489 Church 3 finished- Na= 201 Results are not from a certified lab.	Stream stage and conductivity data are being logged at six locations within Dark Brook Watershed. Runoff discharge and conductivity data for I-90 surface drainage outlet was logged as well due to a result of elevated sodium concentrations in their public water supply well.
Middleboro	Middleboro	Joseph Silva, Water Superintendent Dept. of Public Works 48 Wareham Street Middleboro, MA (508) 946-2482	8/15/1989 & 2/91	March 2017 Miller Na=42.1 Cl=71.2 Rock 1 Na=58.5 Cl=104 Rock 2 Na =69.3, Cl=131 Tispaquin Na=47.7, Cl=75.9 East Grove Na=122, Cl=242	A meeting on March 20, 2006 between District 5 and Environmental Personnel discussed town wells and operational improvements. A letter was forwarded on March 29, 2006 to water district. MassDOT continues to implement RSZ in the area for 40 lane miles of Routes 28 and 495. A tailgate training session was held in Middleboro on November 21, 2013. A meeting between the town and MassDOT Ops/Env to discuss operation in the vicinity of the PWS wells held on January 24, 2014.

APPENDIX I

Property Owner	***Owner/Town***	***Address***	***Date of Initial Complaint***	***Last Data Point (mg/l)***	***General Comment Section***
Wilmington	Wilmington	Shelly Newhouse, R.S. Director of Public Health 12 Glen Road, Wilmington, MA 01887 (978) 658-4298	4/29/2005 & 10/19/2011	September 2016 Browns Crossing (raw) Na=160, Cl=293 Barrows (raw) Na=203, Cl=387	Wilmington applied for RSZ in 2005 but MassDOT was not the primary source. The town reached out to MassDOT in 2011 with concerns regarding elevated sodium in their PWS. MassDOT sent a letter to Wilmington in December 2011 and explained that improved BMPs, new technology and operational improvements, should lead to a significant reduction of NaCl without a RSZ. Due to the highly developed area MassDOT expressed to the town that they should explore BMPs to address NaCl concentrations. Tailgate training in January discussed the BMPs. On March 15, 2012 a meeting was held with the BOH, MassDOT, and MassDEP to discuss their concerns. MassDOT agreed to improved BMPs and to a follow up meeting in the fall. MassDEP expressed that BMPs seem appropriate and should be given an opportunity to work. Despite MassDOT's efforts, they submitted another request for a RSZ. A meeting was held with the Wilmington and DEP on Nov 26, 2012 and MassDOT held tailgate training on December 8, 2012 to discuss BMPs. Another meeting between the town, DEP and MassDOT was held on November 19, 2013. The most recent training was held in December 2014.

Appendix J: TMDL Review Table

Basin/TMDL Name	Pollutant of Concern	WLA Included	MassDOT relevant BMP recommendation included?	If yes, what are the recommendations?	How is MassDOT currently meeting these recommendations or how does MassDOT plan to meet them in the future?
Allen, Wychmere & Saquatucket Harbors	Nitrogen	Yes	Yes	TMDL states that runoff from impervious surfaces is a negligible source of nitrogen load to the embayments when compared to other sources. The TMDL suggests that compliance with MS4 permit requirements will contribute to the goal of reducing the nitrogen load for Allen, Wychmere, and Saquatucket Harbors watersheds.	MassDOT will continue to comply with its Stormwater Management Plan under the NPDES MS4 Permit.
Blackstone River/ Final TMDLs of Phosphorus for Indian Lake (BMP 7K)	Phosphorus	Yes	Yes	TMDL suggests that MassDOT implement the following: 1. Reduce impervious surfaces, institute increased street sweeping and catch basin cleaning; install detention basins, etc. 2. Comply with a new Phase II Stormwater discharge permit. In addition, the Regional DEP office in Worcester has submitted a written request to the Regional office of MassDOT to give the roads in the Mill Brook drainage area (including parts of Indian Lake Watershed) priority for increased Best Management Practices such as sweeping and catch basin cleaning.	MassDOT's Impaired Waters Program assessments include the review of the need for BMPs to address the TMDL. MassDOT has received authorization from EPA to discharge stormwater under the general permit for discharges in this watershed.
Blackstone River/ Final TMDLs of Phosphorus for Lake Quinsigamond and Flint Pond **(BMP 7P)**	Phosphorus	Yes	Yes	1. MassDOT should begin the Storm Water Management Plans required under Phase II to reduce discharge of pollutants to the "maximum extent practicable." 2. MassDOT will also be required to apply for the EPA Phase II General Stormwater NPDES Permit by March 10 of 2003. 3. The regional office of MassDOT has offered to target high priority watersheds in the region of higher frequency of BMPs and maintenance. 4. Visually inspect the roads monthly and sweep as needed. At a minimum, roads must be swept at least twice a year as soon after snowmelt as possible or by April 1st of each year and again in the fall 5. Inspect catch basins at least twice a year and any other settling or detention basins once a year to measure depth of solids. If solids are one half or more of design volume for solids, then completely remove all solids 6. Inspect and maintain all structural components of stormwater system on a yearly basis 7. Develop methodology to calculate loadings from highways 8. Conduct pilot project to assess loadings and test BMPs on highways 9. Initiate twice yearly sweeping and catch basin inspection and cleaning program along I-290 and other roadways. Install additional BMPs as needed to address pollutant loadings identified above.	MassDOT has received authorization from EPA to discharge stormwater under the general permit for discharges in this watershed. MassDOT's Impaired Waters Program includes the review of the need for BMPs to address the TMDL. District 3 has agreed to increased maintenance schedule within this watershed In a letter written to DEP and dated June 19, 2002, District 3 committed to an increased schedule of inspection of catch basins every six months, with cleaning as determined necessary in inspections, and annual sweeping of roads in this watershed Projects are reviewed through MassDOT's Impaired Waters Program and the assessment methods have been developed and reviewed with EPA. See response above (#7) See response above (#4) regarding CBs. MassDOT's Impaired Waters Program includes the review of the need for BMPs to address the TMDL.
Blackstone River/ Final TMDLs of Phosphorus for Leesville Pond **(BMP 7L)**	Phosphorus	Yes	Yes	TMDL suggests that: 1. MassDOT should conduct loading study and develop methodology to calculate loadings from highways 2. MassDOT and towns of Auburn, Leicester, Paxton, and Millbury and City of Worcester should initiate twice yearly sweeping and catch basin inspection and cleaning program along I-290 and other roadways and install additional BMPs as needed to address pollutants loadings identified above. 3. MassDOT and towns of Auburn, Leicester, Paxton and Millbury should prepare Storm Water Management Plan for Phase II. 4. MassDOT and town or city Dept of Public Works should reduce impervious surfaces, institute street sweeping program, catch basin cleaning, install detention basin, etc	USGS performed a loading study for MassDOT. The results have been used in the SELDM FHWA/ USGS model. Projects are reviewed through MassDOT's Impaired Waters Program and the assessment methods have been developed for the program and reviewed with the EPA. MassDOT District 3 has committed to an increased schedule of inspection of catch basins every six months, with cleaning as determined necessary in inspections, and annual sweeping of roads in this watershed. District 3 has committed to inspection and cleaning, if necessary, of all sumped drainage structures twice a year and more often if necessary; inspection/ cleaning of drainage outlet locations where sediment build up is evident; and inspection and repair of damaged and/or clogged drainage conveyances. MassDOT's Impaired Waters Program will include the review of the need for BMPs to address the TMDL. MassDOT has received authorization from EPA and DEP to discharge stormwater under the general permit for discharges in this watershed. See response above (#2)
Blackstone River/ TMDLs of Phosphorus for Selected Northern Blackstone Lakes (BMP 7N)	Phosphorus	Yes	Yes	TMDL suggests that MassDOT should regulate road sanding, salting, regular sweeping, and installation of BMPs (for these impaired waterbodies).	MassDOT regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications.

Basin/TMDL Name	Pollutant of Concern	WLA Included	MassDOT relevant BMP recommendation included?	If yes, what are the recommendations?	How is MassDOT currently meeting these recommendations or how does MassDOT plan to meet them in the future?
Blackstone River/ Final TMDLs of Phosphorus for Salisbury Pond **(BMP 7O)**	Phosphorus	Yes	Yes	TMDL indicates that: 1. MassDOT should develop methodology to calculate loadings from highways and conduct pilot projects to assess loadings and test BMPs on highways. 2. MassDOT and town or city Dept. Public Works should reduce impervious surfaces, institute more frequent street sweeping and catch basin cleaning, install detention basin, dredge and maintain stormwater detention basin, etc. 3. MassDOT will also be required to apply for the EPA Phase II General Stormwater NPDES Permit by March 10 of 2003.	USGS performed a loading study for MassDOT. The results were used in the SELDM FHWA/ USGS model. Projects are reviewed through MassDOT's Impaired Waters Program and the assessment methods were developed for that program and reviewed with EPA. MassDOT has committed to DEP in its January 23, 2002 letter that streets will be swept at least once a year (usually in spring) and more often if necessary. All sumped drainage structure will be inspected and cleaned, if necessary, twice a year and more often if necessary. MassDOT will inspect/ clean drainage outlet locations where sediment build-up is evident. MassDOT will inspect and repair damaged and/ or clogged drainage conveyances. MassDOT has received authorization from EPA and DEP to discharge
Boston Harbor/ Final TMDLs of Bacteria for Neponset River Basin (BMP7Q)	Bacteria	Yes	Yes	Regulated municipalities should prepare Storm Water Management Plans for Phase II.	MassDOT has received full authorization to discharge under the general permit and continues to respond to EPA suggestions in finalizing their Storm Water Management Plans.
Addendum: Final TMDL of Bacteria for Neponset River Basin (CN 121.5)	Bacteria	Yes	No	--	--
Buzzards Bay/Final TMDL of Total Phosphorus for White Island Pond	Phosphorus	Yes	No	--	--
Cape Cod/ Final Lagoon Pond TMDLs for Total Nitrogen	Total Nitrogen	Yes	No	--	--
Cape Cod/ Final Nutrient TMDL for Centerville River/East Bay	Total Nitrogen	Yes	No	--	--
Cape Cod /Final Nitrogen TMDL for Little Pond	Total Nitrogen	Yes	No	--	--
Cape Cod/ Final Nitrogen TMDL for Oyster Pond	Total Nitrogen	Yes	No	--	--
Cape Cod/ Final Nitrogen TMDL for Phinneys Harbor	Total Nitrogen	Yes	No	--	--
Cape Cod/Final Nitrogen TMDL for Pleasant Bay System	Total Nitrogen	Yes	No	--	--
Cape Cod/Final Nitrogen TMDL Report for Five Sub-Embayments of Popponesset Bay	Total Nitrogen	Yes	No	--	--
Cape Cod/Final Nitrogen TMDL Report for the Quashnet River, Hamblin Pond, Little River, Jehu Pond, and Great River in the Waquoit Bay System	Total Nitrogen	Yes	No	--	--
Cape Cod/Final Pathogen TMDL for the Three Bays Watershed	Pathogens	Yes	Yes	The Massachusetts Highway Department should determine the Route 28 roadway drainage area discharging to the Marstons Mills River and install best management structures and/or operational practices to the maximum extent practicable and at a minimum, be designed to meet the water quality standard for bacteria in SA waters. Given this is a waterway with an approved TMDL, the MHD must meet the requirements of EPA's NPDES General Permit for Stormwater Discharges from Small MS4s (Phase II0, Part ID(1-4), as it pertains to approved TMDLs. Infiltration structures and devices that have been installed to control the road runoff from Route 28 into the Martsons Mills River should be inspected to determine their performance and condition. MassDOT should also continue to identify and implement to the maximum extent practicable best management practices so that the water quality standard for bacteria in SA waters is met.	MassDOT has completed the statewide review of TMDL watersheds for the need for additional BMPs to meet the TMDL recommendations. If additional BMPs were identified, they have been or will be included in future construction projects. MassDOT has completed the statewide review of TMDL watersheds for MassDOT has completed the statewide review of TMDL watersheds for additional BMPs were identified, they have been or will be included in future construction projects.

Basin/TMDL Name	Pollutant of Concern	WLA Included	MassDOT relevant BMP recommendation included?	If yes, what are the recommendations?	How is MassDOT currently meeting these recommendations or how does MassDOT plan to meet them in the future?
Cape Cod/Final Pathogen TMDL Report for the Cape Cod Watershed	Pathogens	Yes	No	1. Development of comprehensive stormwater management programs, particulary in close proximity to each embayment, inlcuding identification and implementation of BMPs 2. Illicit discharge detection and elimination (where applicable).	MassDOT has completed the statewide review of TMDL watersheds for the need for additional BMPs to meet the TMDL recommendations. If additional BMPs were identified, they have been or will be included in future construction projects. MassDOT has reviewed outfalls for potential illicit discharges and found that the linear nature of their roads leads to minimal chances for illicit connections. MassDOT has focused on education of staff and following up on potential illicit connections and focusing reviews on sensitive receiving waters. MassDOT is currently prioritizing watersheds for focused illicit discharge review. Remaining potential pollution sources to Oyster Pond are believed to be several large stormwater discharges discharging into the east end of the pond. These stormwater discharges drain from Route 28, and Main St. MassDOT has plans to fix the problems coming off Route 28, and the Town of Chatham has performed engineering projects to eliminate/treat the stormwater components coming off Main St.
Approval of the Pathogen TMDL Addendum for the Cape Cod Watershed	Bacteria	Yes	No	--	--
Cape Cod Final Nitrogen TMDL Report for the Three Bays System	Total Nitrogen	Yes	No	--	--
Cape Cod/Final Nitrogen TMDL for West Falmouth Harbor	Total Nitrogen	Yes	No	--	--
Cape Cod/Final Nitrogen TMDL Report for Five Chatham Embayments (Stage Harbor, Sulphur Springs, Taylors Pond, Bassing Harbor and Muddy Creek)	Total Nitrogen	Yes	No	--	--
Cape Cod /Final TMDL Report of Bacteria for Frost Fish Creek, Chatham (BMP7F)	Bacteria	Yes	Yes	The Massachusetts Highway Department should determine the Route 28 roadway drainage discharging to Frost Fish Creek and install best management structures and/or operational practices to the maximum extent practicable with a goal of meeting the water quality standard for bacteria in SA waters. Given this is a waterway with an approved TMDL, MassDOT must meet the requirements of EPA's NPDES General Permit for Stormwater Discharges from small MS4s (Phase II), Part i D(1-4), as it pertains to approved TMDLs." MassDEP has not deferred to the Route 28 reconstruction project since we do not have any information about the extent or the time schedule for it. MassDEP also suggests that the MassDOT Dept. work with the Town of Chatham to work out a reasonable schedule for these activities.	MassDOT has completed the statewide review of TMDL watersheds for the need for additional BMPs to meet the TMDL recommendations. If additional BMPs were identified, they have been or will be included in future construction projects.
Cape Cod/Final TMDLs of Nitrogen for Great, Green, and Bournes Pond Embayment Systems	Total Nitrogen	Yes	No	--	--
Cape Cod/ Final TMDL Report of Bacteria for Muddy Creek, Chatham (BMP 7G)	Bacteria	Yes	Yes	The Massachusetts Highway Department should determine the Route 28 roadway drainage discharging to Muddy Creek and install best management structures and/or operational practices to the maximum extent practicable with a goal of meeting the water quality standard for bacteria in SA waters. Given this is a waterway with an approved TMDL, the MHD must meet the requirements of EPA's NPDES General Permit for Stormwater Discharges from small MS4s (Phase II), Part i D(1-4), as it pertains to approved TMDLs." MassDEP has not deferred to the Route 28 reconstruction project since we do not have any information about the extent or the time schedule for it. MassDEP also suggests that the MassDOT Dept. work with the Town of Chatham to work out a reasonable schedule for these activities.	MassDOT has completed the statewide review of TMDL watersheds for the need for additional BMPs to meet the TMDL recommendations. If additional BMPs were identified, they have been or will be included in future construction projects. The Route 28 culvert over the Muddy Creek has been replaced through a project funded my Massachusetts Department of Environmental Restoration. The new roadway crossing eliminated the tidal restriction and included leaching basins to treat stormwater discharge before entering Muddy Creek. This project has implemented all improvements feasible to improve water quality of Muddy Creek as it relates to Route 28.
Charles River/Final Phosphorus TMDL Report for the Lower Charles River Basin	Total Phosphorus	Yes	Yes	TMDL suggests MassDOT: 1. Collect source monitoring data and additional drainage area information to better target source areas for controls and evaluate the effectiveness of on-going control practices. 2. Enhance existing stormwater management programs to optimize reductions in nutrient loadings with initial emphasis on source controls and pollution prevention practices.	MassDOT's Impaired Waters Program includes the review of the need for BMPs to address the TMDL.
Charles River/ Final Pathogen TMDL Reports for the Charles River Watershed	Pathogens	Yes	Yes	--	--

Basin/TMDL Name	Pollutant of Concern	WLA Included	MassDOT relevant BMP recommendation included?	If yes, what are the recommendations?	How is MassDOT currently meeting these recommendations or how does MassDOT plan to meet them in the future?
Charles River/ TMDL for Nutrients in the Upper/Middle Charles River	Phosphorus	Yes	Yes	TMDL suggests MassDOT: 1. Collect source monitoring data and additional drainage area information to better target source areas for controls and evaluate the effectiveness of on-going control practices. 2. Enhance existing stormwater management programs to optimize reductions in nutrient loadings with initial emphasis on source controls and pollution prevention practices.	MassDOT's Impaired Waters Program assessments includes the review of the need for BMPs to address the TMDL.
Chicopee River/Final TMDLs of Phosphorus for Quaboag and Quacumquasit Ponds	Total Phosphorus	Yes	es	The TMDL suggests that MassDOT: 1. Regulate road sanding, salting, regular sweeping, and installation of BMPs. 2. Perform roadway sweeping and catch basin inspection/cleaning twice a year. 3. MH along with the town of Spencer, control nonpoint source pollution targeting for State Routes 9, 31 and 49 by requiring roadway sweeping and catch basin inspection/cleaning twice a year or other approved BMPs. 4. MH and the town of Spencer must maintain or improve all existing BMPs or the permittee may install infiltration or other BMPs and document a total reduction of 29% of the total phosphorus loading to receiving waters to control the stormwater discharges within the watershed. To do this, MH and the town of Spencer must either conduct roadway sweeping in the spring and fall combined with annual catch basin inspection and cleanout to restore 80% or more of the solids storage volume anytime the available solids storage volume is less than 50%.	MassDOT regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassDOT's Impaired Waters Program will include the review of the need for BMPs to address the TMDL. MassDOT has proposed a catch basin inspection and maintenance record system in its SWMP (BMP 6C-4). MassDOT has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set. MassDOT has proposed a catch basin inspection and maintenance record system in its SWMP (BMP 6C-4). MassDOT has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set. MassDOT's Impaired Waters Program assessments include the review of the need for BMPs to address the TMDL.
Chicopee River /Final TMDLs of Phosphorus for Selected Chicopee Basin Lakes **(BMP 7H)**	Phosphorus	Yes	No	TMDL suggests MassDOT should regulate road sanding, salting, regular sweeping, and installation of BMPs for these ponds.	MassDOT regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassDOT's Impaired Waters Program will include the review of the need for BMPs to address the TMDL.
Connecticut River/ Final TMDLs of Phosphorus for Selected Connecticut Basin Lakes **(BMP 7I)**	Phosphorus	Yes	No	TMDL suggests MassDOT and towns should develop Storm Water Management Plans for Phase II NPDES and initiate additional BMPs in critical areas. MassDOT should regulate road sanding, salting, regular sweeping, and installation of BMPs	MassDOT regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassDOT' s Impaired Waters Program will include the review of the need for BMPs to address the TMDL
Edgartown Great Pond	Total Nitrogen	Yes	No	--	--
Farm Pond Estuarine System	Total Nitrogen	Yes	No	--	--
Final Pathogen TMDL for the Buzzards Bay Watershed	Pathogens	Yes	Yes	Development of comprehensive storm water management programs including identification and implementation of BMPs. Bacteria Source Tracking: TMDL identifies potential sources of bacteria as illicit sewer connections and stormwater runoff, among others. Recommendations are to prioritize dry weather bacteria source tracking. Further recommendations include evaluating impaired waterbody segments for BMPs starting with intensive application of less costly non- structural practices such as street sweeping and monitoring of their success.	MassDOT has completed the statewide review of TMDL watersheds for the need for additional BMPs to meet the TMDL recommendations. If additional BMPs were identified, they have been or will be included in future construction projects. MassDOT has reviewed outfalls for potential illicit discharges and found that the linear nature of their roads leads to minimal chances for illicit connections. MassDOT has focused on education of staff and following up on potential illicit connections and focusing reviews on sensitive receiving waters. MassDOT is currently prioritizing watersheds for focused illicit discharge review.
Final Pathogen TMDL for the North Coastal Watershed	Bacteria	Yes	No	--	--
Final Pathogen TMDL for the Taunton River Watershed	Bacteria	Yes	No	--	--

Basin/TMDL Name	Pollutant of Concern	WLA Included	MassDOT relevant BMP recommendation included?	If yes, what are the recommendations?	How is MassDOT currently meeting these recommendations or how does MassDOT plan to meet them in the future?
French River/ Final TMDLs of Phosphorus for Selected French Basin Lakes **(BMP 7J)**	Phosphorus	Yes	Yes	TMDL suggests: 1. MassDOT conduct loading study and develop methodology to calculate loadings from highways. 2. MassDOT and local towns should initiate twice yearly sweeping and catch basin inspection and cleaning program along MassDOT I-395, and other roadways. 3. MS4s should install additional BMPs as needed to address pollutant loadings identified above. 4. MassDOT and the towns of Charlton, Leicester and Oxford should prepare Storm Water Management Plans for Phase II. (implementation activity specific to these impaired waterbodies) 5. MassDOT should regulate road sanding, salting, regular sweeping, and installation of BMPs (implementation activity specific to these impaired waterbodies).	USGS performed a loading study for MassDOT. The results will be used in the FHWA/ USGS model when updated. Projects will be reviewed through MassDOT's Impaired Waters Program and the assessment methods developed for that program and reviewed with EPA. MassDOT has proposed a catch basin inspection and maintenance record system in its SWMP (BMP 6C-4). MassDOT has very limited maintenance budgets and staff, therefore we feel that the cost-effectiveness, and necessity of cleaning catch basins twice per year should be closely evaluated rather than arbitrarily set. A summary of maintenance activities across the state is included as Appendix E of the annual report. MassDOT's Impaired Waters Program includes the review of the need for BMPs to address the TMDL. MassDOT has received full authorization to discharge under the general permit and continues to respond to EPA suggestions in finalizing their Storm Water Management Plans. MassDOT regulates road sanding and salting through its Snow and Ice Program and the procedures approved in the GEIR. Roads are swept on an annual basis after winter deicing applications. MassDOT will review projects within this watershed for opportunities to include additional BMPs within proposed projects if MassDOT determines they will help address the pollutant loading issue. MassDOT believes that the most cost-effective approach to improving stormwater quality is to focus on source control measures, rather than end-of-pipe BMPs. Two important examples include reducing winter road sand application rates, and stabilizing shoulder areas that erode onto road surfaces. Source reduction measures are described in this NPDES Stormwater Management Plan.
Herring River	Nitrogen	Yes	Yes	TMDL states that runoff from impervious surfaces is a negligible source of nitrogen load to the river when compared to other sources. The TMDL suggests that compliance with MS4 permit requirements will contribute to the goal of reducing the nitrogen load for the Herring River Estuarine System.	MassDOT will continue to comply with its Stormwater Management Plan under the NPDES MS4 Permit. MassDOT has designed and is planning to construct a stormwater BMP (water quality swale) to treat direct discharges to the Herring River from Route 6 at the Route 6/Herring River crossing. Construction is scheduled to begin in the Fall of 2017.
Lewis Bay and Halls Creek System	Total Nitrogen	Yes	No	--	--
Madaket Harbor and Long Pond Estuarine system	Total Nitrogen	Yes	No	--	--
Millers River/Final TMDLs of Phosphorus for Selected Millers River Basin Lake (BMP 7M)	Phosphorus	Yes	Yes	TMDL suggests that MassDOT should better manage road sanding, salting, regular sweeping, and installation of BMPs (specific to these impaired waterbodies).	MassDOT's Impaired Waters Program includes the review of the need for BMPs to address the TMDL.
Multi-State /Final Bacteria and Total Phosphorus TMDL Report for the Kickemuit River (Rhode Island-Massachusetts)	Bacteria, Phosphorus	Yes	Yes	MassDOT will need to comply with MS4 regulations. Phase II Stormwater Management Plans submitted and general permits as required which include six minimum measures and prioritization of outfalls for BMP construction. MassDOT needs educational programs on pollution prevention and good housekeeping practices.	MassDOT has received full authorization to discharge under the general permit. The NOI submitted with the application for coverage includes many educational programs on pollution prevention and good housekeeping practices. MassDOT and EPA continue to work together to finalize the programs included in the Storm Water Management Plan.
Multi-State/ Northeast Regional Mercury Total Maximum Daily Load	Mercury	Yes	No	--	--
Approval of the Northeast Regional Mercury TMDL: Addendum for Massachusetts	Mercury	Yes	No	--	--
Nantucket Harbor	Nitrogen	Yes	No	--	--
Narragansett Bay/ Final Bacteria TMDL for Palmer River Basin	Bacteria	Yes	No	--	--
Narragansett Bay/Final Pathogen TMDL for the Narragansett/Mt. Hope Bay Watershed	Pathogen	Yes	No	Segments that remain impaired during wet weather should be evaluated for stormwater BMP implementation opportunities starting with less costly non-structural practices first (such as street sweeping, and/or managerial approaches using local regulatory controls), and lastly, more expensive structural measures. Structural stormwater BMP implementation may require additional study to identify cost efficient and effective technology.	MassDOT's Impaired Waters Program includes the review of the need for BMPs to address impaired waters potentially impacted by MassDOT urban area roads.
Nashua River/ Final TMDL for Bare Hill Pond	Nuisance Aquatic Plants	Yes	No	--	--

Basin/TMDL Name	Pollutant of Concern	WLA Included	MassDOT relevant BMP recommendation included?	If yes, what are the recommendations?	How is MassDOT currently meeting these recommendations or how does MassDOT plan to meet them in the future?
Sengekontacket Pond Estuarine System	Total Nitrogen	Yes	No	--	--
Shawsheen River/Final TMDLs of Bacteria for Shawsheen River Basin	Bacteria	Yes	No	--	--
South Coastal/ Final Pathogen TMDL for the South Coastal Watershed	Pathogens	Yes		Development of comprehensive storm water management programs including public education and participation, illicit discharge detection and elimination, construction and post construction runoff control, and pollution prevention/good housekeeping. MassDOT is not specifically identified and the focus is instead on the municipalities within the watershed.	MassDOT has received full authorization to discharge under EPA's NPDES MS4 general permit. MassDOT's Storm Water Management Program (SWMP) includes comprehensive measures for each of the six minimum control measures. MassDOT's Impaired Waters Program includes the review of the need for BMPs to address impaired waters potentially impacted by MassDOT urban area roads.
South Coastal/ Final TMDLs of Bacteria for Little Harbor, Cohasset	Fecal Coliform	Yes	No	--	--
SuAsCo/Assabet River TMDL for Total Phosphorus	Phosphorus	Yes	No	--	--
SuAsCo/ Final TMDLs of Phosphorus for Lake Boon (Boons Pond)	Phosphorus	Yes	No	--	--

Appendix K: - Environmental Compliance Audit Checklist

massDOT
Massachusetts Department of Transportation

ENVIRONMENTAL COMPLIANCE AUDIT CHECKLIST

Facility Information

Facility Name:_____

Address:_____

City, State, Zip:_____

Facility Representative:_____

Title:_____

Telephone: _____

Fax: _____

Auditing Information

Date of Audit:_____

Auditor:_____

Signature:_____

Environmental Compliance Coordinator:_____

Persons Interviewed:_____

Inaccessible Areas:_____

General Comments:_____

Regulated Activities

- ☐ Vehicle Fueling
- ☐ Vehicle Washing
- ☐ Wastewater Recycling System
- ☐ Industrial Wastewater Discharge
- ☐ Oil Water Separator
- ☐ Industrial Wastewater Holding Tank
- ☐ Waste Oil Generation
- ☐ RCRA Hazardous Waste Generation
- ☐ Universal Waste Generation
- ☐ Hazardous Materials Use/Storage
- ☐ Solid Waste Accumulation
- ☐ On-Site Sewage Disposal
- ☐ On-Site Drinking Water Well
- ☐ Natural Resources: ☐ wetlands
- ☐ Riverfront Area
- ☐ USTs ☐ ASTs
- ☐ MCP Site
- ☐ Existing Clean State Matters
- ☐ AULs
- ☐ Other:_____

Facility Operations

- ☐ Vehicle/Equipment Maintenance
- ☐ Highway Maintenance Support / Staging
- ☐ Snow/Ice Operations
- ☐ Stockroom
- ☐ District Offices
- ☐ Other:_____

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SECTION 1: HAZARDOUS WASTE (310 CMR 30.000 and SOP ENV-03)

YES	NO	N/A		Citation
			Verification of Generator Status (310 CMR 30.060 and 30.303)	
			Has the facility registered as a Generator of Hazardous Waste and/or Waste Oil? Generator ID No: _____	30.303(1)
			Facility Hazardous Waste Generator Status: ☐ **VSQG** ☐ **SQG** Facility Waste Oil Generator Status: ☐ **VSQG** ☐ **SQG**	SQG 30.351(1) VSQG 30.353(1) Waste Oil 30.253(5)
			Is the registered generator status appropriate? VSQG <100 kg/month (~25 gal/month) or SQG <1000 kg/month (~250 gal/month). Review manifests for confirmation.	SQG 30.351(1)(a) VSQG 30.353(1)(a)
			Have appropriate hazardous waste determinations been made for wastes generated at the facility?	30.302
			Verification of the Accumulation Limits	
			If the facility is a VSQG, is the facility within its accumulation limit (<1,000 kg or approximately 250 gallons) of hazardous waste/waste oil?	30.353(1)(b)
			If the facility is an SQG, are there fewer than twenty-seven 55-gallon drums (6,000 kg or approximately 1,500 gallons) of hazardous waste/waste oil at the facility?	30.351(1)(b)
			IF the facility has DUAL STATUS (e.g. VSQG of hazardous waste and SQG of waste oil), are the quantities of hazardous waste and waste oil stored at the facility below the maximum allowed for each status? (e.g. < 4 drums of hazardous waste and < 27 drums of waste oil)	30.253(5)
			Waste Container Management (310 CMR 30.253; 30.351; 30.353)	
			Are all hazardous waste containers in good condition? (Note any dents, rust, or damage)	SQG: 30.351(8)(b) VSQG: 30.353(6)(g)
			Are all hazardous waste containers tightly closed (bungs sealed and bolt ring secured, except when adding/removing waste)?	SQG: 30.351(8)(b) VSQG: 30.353(6)(g)
			Are all hazardous waste containers labeled with the words "Hazardous Waste"?	SQG: 30.351(8)(a) VSQG: 30.353(6)(g)
			Do the labels identify the waste (acetone, toluene, etc.)?	SQG: 351(8)(a) VSQG: 30.353(6)(g)
			Is the waste hazard type (toxic, ignitable, corrosive, and/or reactive) included on each label?	SQG: 30.351(8)(a) VSQG: 30.353(6)(g)
			If the facility is a Small Quantity Generator (SQG), is the date when accumulation began clearly marked on the container label?	30.351(5)
			Is the accumulation time within regulatory limits? (180-days for SQGs)	30.351(5) and (6)
			Are containers compatible with the waste being accumulated?	SQG: 30.351(8)(b) VSQG: 30.353(6)(g)
			Are containers of hazardous waste stored in the designated accumulation area?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Hazardous Waste Accumulation Areas (310 CMR 30.253; 30.351; 30.353)	
			If the facility maintains a Hazardous Waste Accumulation Area:	
			Is the accumulation area secured to prevent unauthorized entry?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Is the accumulation area adequately demarcated? (e.g., visible line on floor and only hazardous waste stored therein)?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Is the accumulation area located on a surface free of cracks/gaps and is impervious to the hazardous wastes being stored, or is secondary containment in use?	SQG: 30.351(8)(b) VSQG: 30.353(6)(h)
			Is the accumulation area labeled as "HAZARDOUS WASTE" with lettering at least 1-inch high?	SQG: 30.351(8)(a) VSQG: 30.353(6)(h)
			Is Emergency Information/Contact List posted at the facility phone?	SQG: 30.351(9)(c)(6)
			Is emergency equipment (spill, fire, etc.) located nearby?	SQG: 30.351(9)(c)(3)
			Is secondary containment in use where required (e.g., if located outside)?	SQG: 30.351(8)(b) VSQG; 30.353(6)(h)
			Is the accumulation area in good order (e.g minor spills cleaned up, waste oil drip pans & buckets emptied into waste oil drum)?	SQG: 30.351(8)(b) VSQG; 30.353(6)(h)
			Does the accumulation area have adequate aisle space between drums to allow for inspections of the containers? Does aisle spacing for ignitable or reactive waste meet NFPA requirements?	SQG: 30.351(8)(b)

SECTION 1: HAZARDOUS WASTE (CONT'D)

YES	NO	N/A		Citation
			If the facility does NOT maintain a Hazardous Waste Accumulation Area:	
			Is the waste transported to a designated facility on the day of generation or within 3 days of filling a container?	VSQG: 30.353(6)(i)
			Hazardous Waste Satellite Accumulation Areas (310 CMR 30.253; 30.351; 30.353):	
			If the facility maintains a Satellite Hazardous Waste Accumulation Area:	SQG: 30.351(4) VSQG: 30.353(6)(i)
			Is there only one drum/container for each waste type? (limit one container up to 55-gallons)	See above
			Is the satellite accumulation area at or near the waste's point of generation?	See above
			Is the satellite accumulation area managed by the person responsible for the area/operations generating the waste?	See above
			Are container labels complete? (e.g. "Hazardous Waste," type of waste, & hazard associated with waste)	See above
			Are wastes moved to the accumulation area or shipped within 3 days of the satellite container becoming filled?	See above
			Are containers compatible with the waste?	See above
			Are containers closed when not adding/removing waste?	See above
			Is secondary containment in use where required/warranted? (e.g., if located outside)	See above
			Are containers in good condition?	See above
			If the facility is an SQG, are weekly inspections conducted and any problems fixed?	See above
			Hazardous Waste Recordkeeping (310 CMR 30.253; 30.351; 30.353; 30.310; 30.330; 30.750)	
			All Hazardous Waste Generators:	
			If SQG, are weekly inspection records of the hazardous waste and satellite accumulation areas maintained? (One Year)	30.351(8)(b)
			If the facility is a VSQG and self-transports hazardous waste:	
			Is a receipt received from the destination facility and on file?	30.353(7)
			If the facility does NOT self-transport hazardous waste (VSQG, SQG):	
			Are hazardous waste manifests used when shipping hazardous wastes?	30.311(1)
			Are manifest records maintained for three years?	30.331(1)
			Has the facility received all return copies of manifests from receiving facilities and maintained for 3 years?	30.331(1)
			Is the hazardous waste generator ID number properly written on each manifest?	30.311(1)
			If the facility has not received a return copy of a manifest from the disposal facility in 45 days, has the facility filed an Exception Report and are these Exception Reports maintained for 3 years?	30.333(1) and (2) 30.331(3)(b)
			Are copies of Land Ban Certifications completed and maintained for 3 years?	40 CFR 268.7
			Did the manifests reviewed demonstrate that the facility is appropriately disposing of all waste to only licensed facilities via licensed transporters?	30.311(2) and (3)
			If SQG of Hazardous Waste or Waste Oil:	
			Has the facility made an attempt to notify the police department, fire department, local board of health, and emergency response teams as to the facility layout, the hazards associated with the wastes, location of the hazards, and possible emergency evacuation routes? (e.g., with a signed and dated letter)	30.351(9)(j) and (k)
			Are applicable employees trained as to their duties related to hazardous waste handling?	30.351(9)(g)
			Universal & Special Waste (310 CMR 30.1000 and ENV-07)	
			Universal Waste Batteries (skip subsection if not generated)	
			Are universal waste batteries stored in a container or other manner suitable for preventing/containing possible leakage? (This is only required if there is evidence of leakage, spillage, or damage that could cause leakage.)	30.1034(1)
			Is battery container labeled with "Universal Waste – Batteries"?	30.1034(1)(d)
			Is battery container labeled with accumulation start date?	30.1034(6)(c)
			Is the accumulation date no more than one year old?	30.1034(6)(a)
			Universal Waste Mercury Containing Lamps and/or Devices *(skip subsection if not generated)*	
			Are devices stored in a container or other manner suitable for preventing/containing possible breakage? (This is only required if the device or lamp is leaking or broken)	30.1034(4) and (5)
			Is storage container labeled with "Universal Waste-Mercury Containing Devices" or "Universal Waste-Mercury Containing Lamps" for fluorescent bulbs?	30.1034(4)(d) 30.1034(5)(e)
			Are containers labeled with the start date of accumulation?	30.1034(6)(c)
			Is the accumulation date no more than one year old?	30.1034(6)(a)

SECTION 1: HAZARDOUS WASTE (CONT'D)

YES	NO	N/A	Lead Acid Batteries (310 CMR 30.280, SOP ENV-05)	Citation
			Are used lead acid batteries appropriately stored and not open or leaking? Leaking batteries must be handled as a hazardous waste.	310 CMR 30.280(2)
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Hazardous Waste Management at MassDOT Highway Facilities?	ENV-01-03
			Used Vehicle Battery Disposal at MassDOT Highway Division Facilities?	ENV-01-05
			Universal Waste Management at MassDOT Highway Division Facilities?	ENV-01-07
			Roadside Unknown Waste Handling?	ENV-01-25
			Used Oil Fired Space Heaters (310 CMR 30.200, 527 CMR 4.03, 310 CMR 7.04(9), and SOP -37)	
			Does the facility have a DEP Class A Recycling Permit that was issued by February 27, 2004?	30.222(5)(b)
			If not, was a one-time Class A Recycling Notification Form submitted to the DEP?	30.222(5)(b)
			Does the facility have approval to operate a waste oil burner from the local fire department?	527 CMR 4.03(1)
			Can the facility demonstrate that no speculative accumulation has occurred?	30.205(14)
			Are all Used Oil FUEL containers properly labeled? (Burner Tank: Regulated Recyclable Material, USED OIL FUEL, Toxic; Drums: Regulated Recyclable Material, USED OIL FUEL, Toxic, and labeled with the accumulation start date.)	30.205(19)
			Is the space heater operated only between September 15th and June 15th? (7.04(9)(d)4.)	7.04(9)(d)4.

SECTION 2: HAZARDOUS MATERIALS

YES	NO	N/A	Hazardous Materials Management (454 CMR 21.00, 40 CFR 355, and SOPs ENV-02, -06, -08, 09, -11)	
			Are hazardous material containers labeled with the name of their contents?	MGL 111F Chapter 7(a)
			Are storage tanks/dispensers and containers having capacities greater than 5 gallons labeled with an NFPA label?	MGL 111F Chapter 7(a)
			Does the Facility have any Extremely Hazardous Substances equal to or greater than the Threshold Planning Quantity?	40 CFR 355
			If Yes, has there been a release above and RQ?	40 CFR 355
			If Yes was the SERC or LEPC notified?	40 CFR 355
			Are SDS maintained at the Facility or available upon request?	MGL 111F Chapter 11
			Has a list of hazardous materials been filed with DEP? (e.g., with a signed and dated letter)	MGL Ch 111F(16)
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Handling, Storage, and Disposal of Compressed Gas Cylinders at MassDOT Highway Division Facilities?	ENV-01-06
			Management of Sand and Deicing Chemicals at MassDOT Highway Division Facilities?	ENV-01-08
			Hazardous Materials Management at MassDOT Highway Division Facilities?	ENV-01-11

SECTION 3: SOLID WASTE AND RECYCLABLE MATERIALS

YES	NO	N/A	Solid Waste Management (310 CMR 16.00 & 19.000 and SOPs ENV-10 and -12)	
			Are the solid wastes and/or recyclable materials present at the facility separated by type and/or stored in designated accumulation areas and trash stored in a covered dumpster?	ENV-01-12
			Are street sweepings stored in accordance with requirements of DEP Policy?	DEP Policy #BWP-94-092
			Is there any evidence of restricted/banned materials in the trash dumpster (batteries, lamps, waste oil, metal, whole tires, recyclable paper/cardboard, yard waste, etc.)?	310 CMR 19.017
			Are cathode ray tubes (CRTs) collected, stored, handle and transported in a manner that prevents and minimizes breakage and stored/segregated from other solid waste?	310 CMR 19.017(3)(c)
			Is there an active or inactive landfill or dumping ground at the Facility?	
			If yes, has the landfill/dumping ground been approved or closed or is it being closed in accordance with a DEP approved plan?	310 CMR 19
			If the landfill/dumping ground has been closed, is it in compliance with the post-closure requirements?	310 CMR 19.142
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Disposal of Animal Carcasses?	ENV-01-10
			Temporary Storage of Solid Waste and Recyclable Materials at MassDOT Highway Division Facilities?	ENV-01-12

SECTION 4: STORAGE TANKS

YES	NO	N/A	Storage Tank Management (310 CMR 80 and SOPs ENV-01-28 and -38)	
			Underground Storage Tanks (310 CMR 80)	
			Is a sign indicating what steps to follow in the event of a UST system emergency, including but not limited to the name and phone number of the person or person to contact in the event of an emergency, posted and readable from 10 feet away?	310 CMR 80.25
			Are the USTs equipped with secondary containment, spill and overflow protection, and leak detection?	310 CMR 80
			Are steel USTs/underground piping equipped with cathodic protection?	80.22
			Are cathodic protection systems tested and calibrated every annually or triennially, as applicable?	80.29(2)
			Are leak detection systems tested annually in accordance with manufacturer recommendations?	80.26(3)(d)
			Is leak detection equipment maintained in operating condition?	80.26(2)
			Has the tank been inspected by a third party within the past three years?	80.49
			Have spill buckets been appropriately maintained, inspected, and tested? (by 1/2/17)	80.28
			Has overfill prevention equipment been appropriately inspected and tested?	80.28(3)
			Is the UST system's compliance certification up to date?	80.34
			Is the UST system inspected monthly?	80.35
			Are all required records being kept (may be on-site or easily accessible off-site)?	80.36
			If the UST system is inoperable or a testing or functional failure has occurred:	
			Has the facility taken steps to initiate repair of the system?	80.26, 80.33
			If the Facility Dispenses Gasoline (310 CMR 7.24)and is equipped with a Stage I vapor recovery system:	
			Is the gasoline dispensing operation equipped with a Stage I vapor recovery system?	7.24(3)(b)
			Is the Stage I system inspected weekly and results recorded on an inspection checklist?	7.24(3)(d)
			Is a Stage I Annual In-use Compliance Certification submitted to MassDEP yearly?	7.24(3)(e)
			Are all of the Stage I inspection checklists, training records, compliance testing results, and maintenance records for the last twelve months and the Stage I system's most recent In-use Compliance Certification or Installation/Substantial Modification Certification retained on-site in either hard copy or electronic format?	7.24(3)(d)
			All Tanks (310 CMR 80)	
			Are there any abandoned tanks at the facility?	80.44
			If yes, describe out of service date(s) and status of any DEP notification and/or closure/removal:	
			Spill Prevention (40 CFR 112)	
			Does the facility store oil in aboveground tanks or drums in quantities equal to or greater than 1,320 gallons?	40 CFR 112.1(d)(2)(ii)
			If Yes, does the facility have an up-to-date and P.E.-certified SPCC Plan?	40 CFR 112.3(d)
			If Yes, is the facility implementing the SPCC Plan?	40 CFR 112.3
			In addition to the specific compliance areas above, is the facility in compliance with the following SOP:	
			Inspection And Repair Of Stage I And Stage II Recovery Systems Associated With Underground Storage Tanks?	ENV-01-28

SECTION 5: WATER QUALITY

YES	NO	N/A		
			Drinking Water Supply (310 CMR 22.22)	
			What is the Facility's water supply source? ☐ Private Well ☐ Municipal Public Water Supply ☐ Other: If the facility is supplied with municipal water answer backflow devices questions below.	
			Does the facility have backflow prevention devices on threaded hose connections?	22.22(2)(b)
			Have applicable devices been registered with the Public Water Supplier?	22.22(2), 22.22(7)(b)
			Septic Systems (310 CMR 15.000, SOP ENV-17)	
			Does the facility discharge to a subsurface sewage disposal system (septic system)?	
			If present and installed on or after 3/31/95, has the facility received a certificate of compliance (COC) for the septic system?	310 CMR 15.021
			If present, is only sanitary wastewater discharged to the septic system (i.e., no process water/chemicals)?	310 CMR 15.004
			Drainage Systems (314 CMR 1-15)	
			Does the facility have a floor drain(s)? ☐ Yes ☐ No If yes, where do they discharge to: ☐ POTW ☐ Surface Water ☐ Ground ☐ Holding Tank ☐ Other Describe:	
			If floor drains are located in an area of hazardous material storage or maintenance areas, do the drains discharge to a sanitary sewer or to an industrial wastewater holding tank?	
			If the facility discharges process wastewater to a municipal sewer system, has the facility notified the POTW of the discharge to determine whether a permit is required?	314 CMR 7.00
			If floor drains, have been sealed, did the facility file a WS-1 form with the DEP? (NA for drains connected to sanitary sewer)	310 CMR 27.10
			If floor drains discharged to the ground, did facility close underground structure(s) and file UIC Notification Form with DEP?	310 CMR 27.10
			Are there any oil/water separators on-site?	
			If present, are oil/water separators inspected and serviced periodically (as required in some areas, such as MWRA)? If a permit has been issued, are the facility oil/water separators in compliance with permit requirements?	MWRA: 360 CMR 10.016(4) or permit
			Stormwater Discharges (310 CMR 27.00; 314 CMR 3.00; 314 CMR 5.00, SOP ENV-19)	
			Are there stormwater catchbasins on the property?	
			If Yes, where do the catch basins discharge? ☐ POTW ☐ Surface Water ☐ Ground ☐ Other, describe:	
			If present, have leaching catch basins located within process areas been registered with the DEP (Class V Injection Well Registration)?	310 CMR 27.08
			Vehicle Washing (310 CMR 1-15; 40 CFR 122, SOP ENV-22)	
			If facility is a Designated Vehicle Washing Facility:	
			Are vehicles washed only indoors?	
			Is the facility equipped with floor drains connected to either the municipal sewer or wash water recycling system, or Is the facility equipped with an approved holding tank?	
			If facility is NOT a Designated Vehicle Washing Facility:	
			Are vehicles only rinsed onsite (no detergents or heated water/steam)?	
			If the facility has an Industrial Wastewater Holding Tank: **(Existing Permits; 314 CMR 18.00)**	
			If the tank was installed before November15, 2002, does the facility have a DEP Industrial Wastewater Holding Tank plan approval?	314 CMR 18.00
			For applicable holding tanks, has the Facility submitted a one-time compliance certification to DEP (due by February 15, 2003, or within 60 days for new tanks)? (Not required if the Facility has a DEP-issued plan approval for the holding tank.)	18.10(1)
			Does the Facility maintain holding tank construction and installation records (until tank is decommissioned) and records on pumping and wastewater shipments/disposal (three years)?	18.09(1)
			If an existing holding tank was not installed in accordance with PE Certified Plans, has the holding tank undergone an integrity assessment (due by November 15, 2003)?	18.08(2)
			Is the Holding Tank labeled as "Non-Hazardous Industrial Wastewater?" (required for underground and aboveground tanks)	18.07(6)
			Is the Holding Tank equipped with a high level alarm? If yes, is the alarm functioning properly?	18.07 or 18.08
			If the tank was installed on or after November 15, 2002, is the holding tank inspected for leakage weekly?	18.08(3)(c)
			Is the alarm system tested by an electrician on a semi-annual basis?	ENV-01-18
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Groundwater Monitoring Well Maintenance at MassDOT Highway Division Facilities?	ENV-01-16

			Maintenance of Subsurface Sewage Disposal Systems at MassDOT Highway Division Facilities?	ENV-01-17
			Maintenance of Wastewater Holding Tanks and Proper Disposal of Accumulated Wastewater at MassDOT Highway Division Facilities?	ENV-01-18
			Inspection and Maintenance of Stormwater Catch Basins at MassDOT Highway Facilities?	ENV-01-19
			Vehicle Washing at MassDOT Highway Facilities?	ENV-01-22
			Inspection And Maintenance of Oil/Water Separators (OWS) at MassDOT Highway Division Facilities?	ENV-01-27

SECTION 6: NATURAL RESOURCE AREAS

YES	NO	N/A	**Wetlands, Buffer Zones, and Riverfront Zones (310 CMR 9.00 & 10.00, SOP ENV-15)**	
			Are there any Natural Resource Areas (wetland, buffer zone, or riverfront zone) at the property? (If NO, go to next section)	10.02(1) and 10.03
			Is the facility conducting work in a Natural Resource Area (e.g. removing, filling, dredging, or altering)?	9.05 10.02-10.05(6)
			If the facility is conducting work in a Resource Area, was a Request for Determination of applicability, or NOI submitted to and approved by the local Conservation Commission, and was a Certificate of Compliance received upon work completion?	10.05(4), 10.05(9)
			If issued, is the facility is compliance with wetlands Order of Conditions or enforcement order?	310 CMR 10.02-05
			In addition to the specific compliance areas above, is the facility in compliance with the following SOPs:	
			Protection of Wetland Resource Areas at MassDOT Highway Facilities?	ENV-01-15

SECTION 7: POLLUTION PREVENTION

YES	NO	N/A	**Spills/Releases (310 CMR 40.0000; 40 CFR 300; 40 CFR 355, SOPs ENV-03, -07, -11, and -20.)**	
			Is there an indication of a release or threat of release of oil and/or hazardous material at the facility?	310 CMR 40.0000
			If yes, describe event(s) and actions taken, including notifications made.	
			Is there an MCP site at the facility in which a permanent solution has not been achieved?	310 CMR 40.0000
			If yes, have MCP/Clean State timelines been met? Describe status and conditions:	
			Is there an AUL at the facility?	310 CMR 40.0000
			Is the facility in compliance with the terms of the AUL?	
			Asbestos (310 CMR 7.09 & 7.15; 453 CMR 6.00)	
			Has the facility conducted building renovations/demolitions or asbestos abatement projects?	453 CMR 6.01 - .02
			If yes, was an asbestos survey conducted prior to renovation/demolition?	310 CMR 7.15(4)
			Prior to renovation/demolition, was DEP properly notified using ANF 001 Form?	310 CMR 7.09 and 7.15 453 CMR 6.12
			If an asbestos abatement project was conducted, were licensed contractors used?	453 CMR 6.03
			If an asbestos abatement project was conducted, was asbestos containerized for offsite disposal at a licensed facility?	453 CMR 6.13(2)(b) 453 CMR 6.14(4)(h)
			Outdoor Operation/Maintenance Equipment Storage at MassDOT Highway Facilities?	ENV-01-20
			Management of Asbestos Containing Materials at MassDOT Highway Division Facilities?	ENV-01-29

SECTION 8: AIR QUALITY

YES	NO	N/A	Air Emissions, Permits & Recordkeeping (310 CMR 7.00)	
			Parts Cleaners	
			Is a solvent parts cleaner used?	310 CMR 7.18(8)
			If yes, is the unit a sink-like work area with a remote solvent reservoir with an open drain area less than 100 square cm?	310 CMR 7.18(8)
			If this is not the case, is the unit equipped with a functioning cover, which is kept closed when not in use?	310 CMR 7.18(8)
			Refrigerant Management	
			Does the facility conduct vehicle refrigeration maintenance?	40 CFR 82
			If yes, are personnel who perform refrigerant work certified by EPA?	40 CFR 82.34(a)(2)
			Is refrigerant recovery equipment EPA-certified?	40 CFR 82.34(a)(1)
			Has the facility submitted a Notification Form with EPA for use of the refrigeration equipment?	40 CFR 82.42(a)

SECTION 9: TRAINING

YES	NO	N/A	Training Records	
			Does the facility have the following training records on file, where applicable:	
			Hazardous Waste Management training?	SQG: 30.351(9)(g)
			Universal Waste Management Training?	30.1035
			Stage I Vapor Recovery System training?	7.24(6)(b)2.
			Spill Prevention, Control, and Countermeasure Plan training?	40 CFR 112.7(f)
			UST Class A/B/C Operator Training?	310 CMR 80.37
			Other (list)?	

SECTION 10: CLEAN STATE PROGRAM

YES	NO	N/A	Clean State Program Management	
			Are there any existing Clean State Matters for the facility?	Policy ENF-05-001
			If Yes, list and describe status:	

Appendix L: Litter Program Summary

MassDOT Litter Program Summary: Permit Year 14

Litter Collection Summary

District*	Inmate Litter Program	Adopt-a-Highway Program	Private Contracted Assistance	
1	7,709 bags collected	20 bags collected		7,729 bags collected
2	1,627 bags collected	553 bags collected		2,180 bags collected
4	15,238 bags collected	4,830 bags collected		20,068 bags collected
5	17,617 bags collected		12,037 bags collected	29,654 bags collected
Total	42,191 bags collected	5,403 bags collected	12,037 bags collected	**59,631 bags collected statewide**

*Note: No values reported by Districts 3 and 6. However, litter collection is occurring in all districts.

Litter Collection Details

District 1

Inmate Litter Program:

- 7,709 total bags collected
- 420 total miles collected from
- Inmates in D1 had not yet started collecting in 2017 yet

Community service Adopt-a-Highway groups have collected approximately 20 bags for D1 in 2017

District 2

Inmate Litter Program: 1,627 bags

Adopt-a-Highway Program: 553 bags

District 4

Inmate Litter Program, FY2016

- Concord: no crews provided
- Middlesex: 197 crews / 5,337 bags
- Essex: 229 crews / 7,311 bags
- Suffolk: 93 crews / 2,590 bags

Adopt-a-Highway/Visibility Site Crews FY2016

Month	Participants	Bags
April	167	280
May	540	665
June	540	698
July	602	704
August	458	750
September	590	701
October	502	730
November	138	302
Totals	3,537	4,830

District 5

Overall: Approximately 30,000 bags picked were up and 24 trailer loads of debris (mixed metals, construction debris, large litter, etc) were collected; the increase in contract assistance allowed for D5 to routinely target areas where significant litter and debris returns quickly.

Inmate Litter Program:

- Bristol County (worked April 13, 2016 to March 29, 2017) – 12,423 bags
- Barnstable County (worked April 28, 2016 to March 30, 2017) – 4,563 bag
- Dukes County (worked April 1st , 2016 to October 21st, 2016) – 631 bags
- Total = 17,617 bags

Private contracted assistance:

- Area A,B & C – 8,511 bags and various debris (worked from mid-March 2016 until mid-December 2016)
- Area D - 3,526 bags and various debris (worked from mid-March 2016 until mid-November 2016)

Appendix M: Baystate Roads Trainings

Baystate Roads Trainings from April 2016-March 2017

Workshop	City	Date	# Registered/Capacity
Complete Streets 101 - Benefits, Eligibility & Funding	Hadley	4/5/2016	7/30
Complete Streets 101 - Benefits, Eligibility & Funding	Sturbridge	4/6/2016	22/30
Proposals For Cleaner Water: A Grant Writing Workshop	Sturbridge	4/7/2016	43/44
Complete Streets 101 - Benefits, Eligibility & Funding	Pittsfield	4/12/2016	4/30
Complete Streets 101 - Benefits, Eligibility & Funding	Haverhill	4/14/2016	12/30
Complete Streets 101 - Benefits, Eligibility & Funding	Springfield	4/15/2016	8/30
Complete Streets 101 - Benefits, Eligibility & Funding	Woburn	4/22/2016	8/30
Complete Streets 101 - Benefits, Eligibility & Funding	Boston	4/25/2016	5/30
Creating Revenue Stream for Stormwater Management	Salem	4/26/2016	38/40
Complete Streets 101 - Benefits, Eligibility & Funding	Brockton	4/26/2016	20/30
Complete Streets 101 - Benefits, Eligibility & Funding	Worcester	4/29/2016	13/30
Pavement Management Boot Camp	Buzzard's Bay	6/1/2016	17/30
Pavement Management Boot Camp	West Boylston	6/9/2016	21/30
Principles of Drainage	Taunton	6/14/2016	35/35
Principles of Drainage	Bedford	6/15/2016	35/35
Principles of Drainage	Springfield	6/16/2016	31/31
MASSACHUSETTS DRIVER SKILLS AND SAFETY SNOW PLOW EVENT	Princeton	7/12/2016	59/120
Concrete Sidewalk Installation	Westfield	7/13/2016	14/15
Full Depth Reclamation with Asphalt Stabilization	Becket	7/27/2016	16/30
Concrete Sidewalk Installation	Grafton	8/23/2016	11/16
Pavement Management Boot Camp	Pittsfield	9/7/2016	21/30

Workshop	City	Date	# Registered/Capacity
Trenching & Excavating Safety: Competent Person	Marlborough	9/8/2016	8/30
Pavement Management Boot Camp	Lowell	9/14/2016	27/40
Concrete Sidewalk Installation	Swansea	9/15/2016	14/16
Gravel Roads: When the Dust Settles	Marlborough	9/26/2016	6/30
Trenching & Excavating Safety: Competent Person	Hadley	9/27/2016	10/30
Concrete Sidewalk Roundtable	Lowell	9/27/2016	18/30
Moving Together Conference	Boston	9/29/2016	750/750
Small Bridge Program FAQ	Hadley	10/4/2016	30/30
Small Bridge Program FAQ	Taunton	10/5/2016	25/30
Advanced Complete Streets 201	Boston	10/5/2016	20/24
Advanced Complete Streets 201	Falmouth	10/6/2016	20/25
Concrete Sidewalk Installation	Leominster	10/6/2016	14/17
Small Bridge Program FAQ	Worcester	10/7/2016	27/30
Small Bridge Program FAQ	Pittsfield	10/11/2016	25/30
Advanced Complete Streets 201	Sterling	10/11/2016	8/25
Snow and Ice Operations	Worcester	10/11/2016	28/30
Snow and Ice Operations	Springfield	10/13/2016	12/30
Advanced Complete Streets 201	Lowell	10/13/2016	21/25
Small Bridge Program FAQ	Boston	10/14/2016	19/30
Advanced Complete Streets 201	Springfield	10/14/2016	22/25
Advanced Complete Streets 201	Greenfield	10/17/2016	15/25
Small Bridge Program FAQ	Bedford	10/18/2016	30/30
Advanced Complete Streets 201	Needham	10/18/2016	11/25
Advanced Complete Streets 201	Worcester	10/19/2016	16/25
Trenching & Excavating Safety: Competent Person	Taunton	10/20/2016	26/30
Complete Streets 101 - Benefits, Eligibility & Funding	Worcester	10/20/2016	30/30
Snow and Ice Operations	Pittsfield	10/25/2016	18/30

Workshop	City	Date	# Registered/Capacity
Advanced Complete Streets 201	Taunton	10/25/2016	21/25
Advanced Complete Streets 201	Leominster	10/26/2016	24/25
Advanced Complete Streets 201	Needham	10/27/2016	16/25
Advanced Complete Streets 201	Pittsfield	10/31/2016	21/25
Snow and Ice Operations	Taunton	11/1/2016	33/33
Snow and Ice Operations	Woburn	11/2/2016	34/34
Advanced Complete Streets 201	Worcester	11/2/2016	12/25
Snow and Ice Operations	Concord	11/3/2016	31/32
Advanced Complete Streets 201	Hyannis	11/8/2016	6/25
Advanced Complete Streets 201	Hadley	11/15/2016	12/25
Snow and Ice Operations	Taunton	11/16/2016	32/33
Advanced Complete Streets 201	Fall River	11/17/2016	8/25
Advanced Complete Streets 201	Greenfield	11/29/2016	8/25
Snow and Ice Operations	Bedford	11/29/2016	23/30
FHWA-NHI-135056 Culvert Design	Marlborough	11/29/2016-12/1/2016	31/40
Advanced Complete Streets 201	Taunton	12/2/2016	23/25
Advanced Complete Streets 201	Beverly	12/6/2016	16/25
FHWA-NHI-135056 Culvert Design	Springfield	12/6/2016-12/8/2016	19/30
Alternative Intersections and Interchanges: Concepts and Applications	Marlborough	12/7/2016	22/30
Advanced Complete Streets 201	Lowell	12/8/2016	24/30
Advanced Complete Streets 201	Worcester	12/12/2016	20/25
Alternative Intersections and Interchanges: Concepts and Applications	Hadley	12/13/2016	22/30
Snow and Ice Operations	Hadley	12/14/2016	29/30

Workshop	City	Date	# Registered/Capacity
Advanced Complete Streets 201	Boston	12/14/2016	19/19
Advanced Complete Streets 201	Pittsfield	12/20/2016	9/25
Trenching & Excavating Safety: Competent Person	Needham	2/21/2017	16/30
Trenching & Excavating Safety: Competent Person	Beverly	2/23/2017	29/30
Trenching & Excavating Safety: Competent Person	Pittsfield	3/2/2017	31/31
MassDOT Innovation & Tech Transfer Exchange	Worcester	3/7/2016-3/8/2017	898/975

Total # of Participants: 3179

Total # of Workshops: 77

Types of Workshops:

- Advanced Complete Streets 201
- Alternative Intersections and Interchanges: Concepts and Applications
- Complete Streets 101 - Benefits, Eligibility & Funding
- Concrete Sidewalk Installation
- Concrete Sidewalk Roundtable
- Creating Revenue Stream for Stormwater Management
- FHWA-NHI-135056 Culvert Design
- Full Depth Reclamation with Asphalt Stabilization
- Gravel Roads: When the Dust Settles
- Massachusetts Driver Skills and Safety Snow Plow Event
- MassDOT Innovation & Tech Transfer Exchange
- Moving Together Conference
- Pavement Management Boot Camp
- Principles of Drainage
- Small Bridge Program FAQ
- Snow and Ice Operations
- Trenching & Excavating Safety: Competent Person

See all Baystate Roads Trainings at the old Baystate Roads Website and at the UMass Transportation Center Website.