Municipality/Organization:	Town of Lunenburg
EPA NPDES Permit Number:	1206
MaDEP Transmittal Number:	W-040561
Annual Report Number & Reporting Period:	**No. 4: March 06-March 07**

NPDES PII 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: Laura Williams

Printed Name: Laura Williams

Title: Interim CAFO

Date: 9/7/07

STATUS REPORT

A. PURPOSE

In accordance with our stormwater services agreement, Earth Tech is pleased to submit to the Town of Lunenburg a status report for the Town's work to date in complying with their NPDES Phase II Stormwater permit.

Lunenburg's NPDES general permit for stormwater discharges expires in March 2008. At that time, Lunenburg must have addressed the measurable goals identified in the Notice of Intent (NOI), including the development of an Illicit Discharge Detection and Elimination Program (IDDE). The Environmental Protection Agency and Massachusetts DEP require that an IDDE program contain the following:

1. Develop a storm sewer map showing the location of all outfalls, and the names and locations of all waters of the U.S. that receive discharges from those outfalls;
2. Prohibit through ordinance, or other regulatory mechanism, illicit discharges into the separate storm sewer system and implement appropriate enforcement procedures;
3. Develop and implement a plan to detect and address illicit discharges, including illegal dumping, into the storm sewer system; and
4. Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

Based on the FY07 scope of work which assists the Town of Lunenburg in addressing elements of the NOI, the following items are included as part of this status report:

- Map noting the location of all inspected outfalls and receiving bodies of water. Map indicates flowing outfalls identified during dry weather inspections performed as part of Task 2 (Task 1);
- Inventory of Lunenburg's storm sewer system (Tasks 1 and 2);
- Map noting the location of all inspected storm sewer system attributes (Tasks 1 and 2);
- Map indicating areas of concern identified as a result of review of drinking water protection areas, locations of critical habitat, areas of repeated flooding, and suspected problems identified by interviews with Town employees (Task 2);
- Map noting location of outfalls which may potentially be a source of illicit discharge (Task 2);
- Recommended program for identifying and removing current or future sources of illicit or illegal discharges to the storm sewer system (Task 3);
- Recommendations for by-laws prohibiting illicit and illegal discharges to the storm sewer system (Task 4);
- Recommendations for by-laws requiring stormwater management both during and post construction (Task 4);
- Identification of eligible funding programs and status of requested assistance (Task 5); and
- Stormwater Workshop and Final Report (Task 6).

B. STORM SEWER SYSTEM INVENTORY AND CONDITION ASSESSMENT

In the spring of 2006, Earth Tech began mapping the Town's storm sewer outfalls using sub-meter grade GPS data collection equipment. With the assistance of the Town's Highway Department personnel, outfalls were located, GPS coordinates gathered, photographed, and visually inspected with the following information (attribute data) collected for each outfall:

- Pipe size,
- Pipe material,
- Presence of sediments,
- Presence of stains,
- Presence of sheens,
- Presence of vegetative growth, and
- Structural condition.

At that time, **376** outfalls and **179** culverts were located, inspected and mapped. In the fall of 2006, Earth Tech inspected these structures during "dry weather" and noted the presence of dry weather flow. Dry weather is typically considered to be at least 48 hours after a rainfall event. During the dry weather inspections, an additional **25** outfalls and **2** culverts were: located, GPS coordinates gathered, photographed, and attribute data collected.

From the initial five-hundred fifty-five (555) inspections conducted in the spring of 2006, a summary of inspection findings is listed below:

- One-hundred seventy-two (172) structures were found to have sediment,
- One (1) structure was found to have sheen,
- Ten (10) structures were found to have vegetated growth, and
- Forty (40) structures needed follow-up due to structural damage or heavy sediment that prevented the outfall or culvert from functioning as designed and in some cases prevented inspection.

In late summer, fall of 2006, Earth Tech inspected these structures during "dry weather" and noted the presence of dry weather flow. Dry weather is typically considered to be at least 48 hours after a rainfall event. During the dry weather inspections any additional outfalls or culverts located in the field were mapped and inspected.

Based on the dry weather inspections, a summary of inspection findings is listed below:

- Thirty-two (32) outfalls were found to have dry weather flow,
- One hundred thirty-five (135) outfalls were found to have sediment,
- Six (6) outfalls were found to have staining,
- Nine (9) outfalls were found to have vegetated growth, and
- One hundred twenty nine (129) outfalls need follow-up due to structural damage or heavy sediment that is preventing the outfall from functioning as designed and in some cases prevented inspection.

Also in the fall of 2006, Earth Tech began mapping the location of additional storm sewer features (manholes, drop inlets, catch basins, and culverts). In addition, any new outfalls found as a result of this mapping were also mapped at this time. Based on the mapping efforts, 401 outfalls have been identified and mapped. Mapping of storm sewer structures in addition to outfalls is incomplete at this time; however, to date, a total of

683 storm sewer system structures (**401** outfalls, **15** manholes, **14** drop inlets, **72** catch basins and **181** culverts) have been mapped within the Town of Lunenburg. It is anticipated that the Town will continue to map the additional storm sewer structures during the spring and fall of 2007.

Using the knowledge of DPW staff and making assumptions based on surface configuration of these features, the Project Team identified connectivity among the mapped storm sewer system components. Identifying connectivity among storm sewer structures will assist the Town of Lunenburg in identifying and removing illicit or illegal discharges into Lunenburg's storm sewer system.

As part of the storm sewer system mapping, the Project Team also began conducting a condition assessment of the storm sewer system structures. The Project Team was able to complete 101 structure assessments for manholes, drop inlets and catch basins. From the inspections, the following was found:

- Priority Structures needing immediate attention (8 manholes, 1 drop inlet and 13 catch basins) as a result of flow present during dry weather conditions;
- Immediate Repair/Replacement (2 catch basins) due to structural issues;
- Maintenance Needed (3 manholes, 4 drop inlets and 12 catch basins) due to presence of sediment or other issue affecting performance;
- Observation Needed (1 Manhole, 4 drop inlets, and 16 catch basins) due to presence of standing water or other issue affecting performance;
- No Action Necessary (3 manholes, 5 drop inlets, 28 catch basins); and
- Follow-up Inspection Needed (1 catch basin) due to obstructions present at the time of inspection.

Appendix A provides an inventory of the data collected to date for the Town's storm sewer system and also provides a summary of the storm sewer system condition assessment. Maps showing all the storm sewer system outfalls and other structures mapped to date are provided in Appendices B and C. Connectivity among storm sewer structures is provided in AutoCAD format and can be viewed and printed from the AutoCAD file, which is included electronically in Appendix D.

The data collected for each storm sewer system structure and photographs have been provided in separate reports entitled:

- "National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Management Plan, Dry Weather Inspection Photograph, Attribute Data and Location Maps, Outfalls and Culverts", dated February 2007, and
- "National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Management Plan, Stormwater Structure Inspection Photograph, Attribute Data and Location Maps, Manholes, Catch Basins and Drop Inlets", dated February 2007.

All of the data gathered and mapping developed as part of this scope of work is provided in electronic form (refer to Appendix D for CD).

C. AREAS OF CONCERN

As part of the Town's NPDES Phase II Comprehensive Stormwater Management Program, a Town-wide Map was created showing the following environmentally significant areas within the Town of Lunenburg:

- approved Zone II Wellhead Protection Area,
- 100-year flood plain
- Interim Wellhead Protection Area,
- Natural Heritage and Endangered Species Program (NHESP) Certified Vernal Pool,
- NHESP Priority Habitats of Rare Species,
- NHESP Estimated Habitats of Rare Wildlife, and
- Outstanding resource waters (ORW) watershed.

Mapping the above information enables the Town to readily identify those outfalls whose discharges have the potential to impact drinking water protection areas, locations of critical habitat, etc. The Areas of Concern Map is provided in Appendix B of this Status Report.

Based on a review of the Areas of Concern map, the following outfalls are important to note as they are located within these environmentally significant areas, within drinking water protection areas, etc.:

Outfalls Located Within the Approved Zone II Wellhead Protection Area:

- Nos. 06, 07, 16, 17, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 118, 120, 496, 497, 508, 509 and 632

Outfalls Located Within the 100 Year Floodplain

- Nos. 07, 17, 34, 35, 36, 37, 51, 65, 66, 207, 214, 243, 244, 245, 257, 270, 272, 279, 478 and 656

Outfalls Located Within the Interim Wellhead Protection Area

- Nos. 33, 34, 463, 464, 466, 468, 472, 479, 480, 481, 482, 483, 484, 485, 486, 487 and 489

Outfalls Located Within 100 feet of the NHESP Certified Vernal Pool (2006 data)

- None

Outfalls Located Within the NHESP Priority Habitats of Rare Species (2006 data)

- Nos. 39, 42, 43, 45, 48, 60, 62, 102, 104, 170, 185, 393, 395, 405, 425, 441, 442, 462, 489, 493, 497, 505, 506, 511, 539, 543, 547 and 667.

Outfalls Located Within the NHESP Estimated Habitats of Rare Wildlife (2006 data)

- Nos. 39, 42, 43, 45, 48, 60, 62, 102, 104, 170, 185, 393, 395, 405, 425, 441, 442, 462, 489, 493, 497, 505, 506, 511, 539, 543, 547 and 667.

Outfalls Located Within the Outstanding Resource Waters Watershed

- Nos. 312, 313, 318, 319 and 509

D. LOCATION OF INSPECTED OUTFALLS, RECEIVING WATER BODIES AND FLOWING OUTFALLS

The Areas of Concern map (Appendix B) provides the location of all outfalls and culverts inspected to date. The storm sewer system map (Appendix C) provides the locations of all additional storm sewer system components (manholes, drop inlets and catch basins) mapped to date. Each map shows the location of the stormwater structure in relation to receiving water bodies.

The following structures were reported as having dry weather flow at the time of our inspection:

Outfalls:

- 39, 49, 93, 140, 149, 174, 178, 181, 203, 219, 249, 250, 258, 269, 272, 287, 327, 370, 372, 378, 391, 392, 451, 466, 471, 482, 499, 500, 518, 554, 628, and 634

Culverts:

- Nos. 02, 04, 05, 18, 19, 20, 25, 26, 30, 31, 40, 44, 47, 53, 61, 74, 78, 80, 122, 124, 129, 130, 132, 138, 145, 156, 171, 175, 179, 180, 182, 191, 201, 209, 228, 233, 271, 302, 340, 352, 379, 382, 390, 394, 398, 448, 454, 470, 490, 533, 544, 549, and 672

Note, flowing culverts are not necessarily an issue as they are intended to carry flow such as stream beds beneath roadways, etc.

Manholes

- Nos. 627, 678, 681, 684, 691, 692, 700, 711, and 712

Catch Basins:

- Nos. 603, 673, 682, 685, 693, 713, 714, and 715

Drop Inlets

- None

The Areas of Concern map also provides the location of dry weather flowing outfalls. No stormwater outfalls should be flowing during a dry weather inspection, which is defined as 48 or more hours following a rainfall event. The presence of flow during dry weather inspections indicates that there is a potential illicit discharge to the stormwater outfall or to the storm sewer system components connected to the outfall. Therefore, the location of the dry weather flow outfalls in relation to the environmentally significant areas, within drinking water protection areas, etc. is an important consideration in setting priorities for identifying and removing sources of illicit discharges:

Outfalls Located Within the Approved Zone II Wellhead Protection Area:

- None

Outfalls Located Within the 100 Year Floodplain

- No. 272

Outfalls Located Within the Interim Wellhead Protection Area
- Nos. 466 and 482

Outfalls Located Within 100 feet of the NHESP Certified Vernal Pool (2006 data)
- None

Outfalls Located Within the NHESP Priority Habitats of Rare Species (2006 data)
- No. 39

Outfalls Located Within the NHESP Estimated Habitats of Rare Wildlife (2006 data)
- No. 39

Outfalls Located Within the Outstanding Resource Waters Watershed
- None

E. CONFIRMED SOURCES OF ILLICIT DISCHARGES

The Earth Tech Project Team, in coordination with the Town of Lunenburg, will determine protocols to investigate and identify and remove the sources of suspected illicit or illegal discharges identified during outfall inspections. The team will review appropriate techniques to identify the source of illicit discharges. These techniques include manhole observation, video inspection, smoke testing, dye testing, or other appropriate means. The Project Team will also recommend means to remove identified illicit discharges from the storm sewer system. This may include adoption and enforcement of stormwater regulations, storm sewer improvements to eliminate cross connections or infiltration by groundwater, or removal of illegal connections.

The number of confirmed illicit discharges and appropriate methods to follow-up, identify, and remove the sources are unknown at this time. The Town of Lunenburg will begin investigations by performing a follow-up inspection of each outfall with dry weather flow on a periodic basis to determine if flow quantity and/or content changes depending on the time of day/or elapsed time following a rain event. These follow-up inspections will assist the Town in identifying what type of source may be contributing to the dry weather flow, or whether the flow is a result of delayed inflow and provide the Team with guidance to move forward with identification and removal of illicit discharges.

F. RECOMMENDATIONS FOR BYLAWS PROHIBITING ILLICIT AND ILLEGAL DISCHARGES AND RECOMMENDATIONS FOR BY-LAWS REQUIRING STORM WATER MANAGEMENT BOTH DURING AND POST CONTRUCTION

In FY06 the Earth Tech Project Team examined whether Lunenburg has adequate legal authority to regulate illicit discharges and recommended Draft bylaws to address illicit discharges. In FY06, Earth Tech prepared a DRAFT Bylaw Governing Discharges to the Municipal Storm Sewer System for the Town for review and comment. The Draft bylaw follows the model bylaw put forth by the Massachusetts Attorney General. The Draft bylaw identified the Lunenburg Board of Selectmen as the Responsible Authority for administering and enforcing the bylaw, establishes reasonable fines for not complying with the bylaw, and established a reasonable timeframe for compliance with the bylaw once adopted by the Town.

In FY06, Earth Tech prepared a DRAFT Stormwater Management Bylaw. The Draft bylaw followed the Massachusetts Attorney General's model bylaws for Stormwater Management and Land Disturbance (Construction by-law) and Post-construction Management for New Developments and Redevelopments. These two model bylaws were incorporated into a Stormwater Management bylaw which is included in Appendix E.

On March 1, 2007 Bethany Leavitt, PE and Mary Monahan-Burgess met with Town Planner Marion Benson to review Lunenburg's requirement under EPA's NPDES Phase II Program to adopt bylaws that require stormwater management and review for construction activities that disturb one acre or more, that address post-construction stormwater management, and prohibit illicit and illegal discharges into the storm sewer system.

Marion spoke about a very effective local review process already in place for new development and redevelopment activities. She felt that this process can be modified to include stormwater management. Marion has copies of the Attorney General's recommended language. Marion proposed that local stakeholders will review bylaw models, develop draft language for Lunenburg, and submit the draft to Earth Tech for comment. Prior to submission at a future town meeting (likely a special in the fall), Town Council will also have the opportunity to review and comment.

Marion felt that incorporating the illicit discharge bylaw into the zoning bylaws would provide more meat to enforcement. In all cases, Marion feels that the good working relationship among all boards, particularly DPW and Planning will be an effective tool in adoption and implementation of these bylaws.

Earth Tech will assist the Town as needed to further develop the bylaws based on feedback from the Town as part of future work.

G. IDENTIFICATION OF ELIGIBLE FUNDING PROGRAMS AND STATUS OF REQUESTED ASSISTANCE

Through-out the program, Earth Tech has assisted the Town by identifying eligible funding sources for the Town.

The Earth Tech Project Team, with the assistance of the CAFO and DPW Director, successfully secured funding assistance from the FFY 2006 State Revolving Fund for comprehensive GIS mapping and inspection of Lunenburg's storm sewer infrastructure. The proposed project would have funded GIS mapping of Lunenburg's storm sewer and sanitary sewer systems through low interest loans. Lunenburg Water District had agreed to be a partner with the Town for purposes of mapping the District's drinking water distribution system. The final product would have provided the Town a detailed description of the Town's infrastructure that would serve as a tool for planning, operations and maintenance, and emergency response. Town Meeting in the spring of 2006 failed to approve the project.

This service was provided by Earth Tech at no cost to the Town of Lunenburg and will continue to be provided in FY08. The Earth Tech Project Team continues to monitor funding programs to identify eligible tasks within Lunenburg's stormwater management program.

H. MARCH 05 TO MARCH 06 ANNUAL REPORT

On behalf of the Town of Lunenburg, Earth Tech prepared and submitted to the Town its Permit Year 4 (March 2006 to March 2007) NPDES Phase II Annual Report.

I. STORMWATER WORKSHOP AND FINAL REPORT

As part of Earth Tech's agreement with the Town of Lunenburg, Earth Tech provided assistance to the Town in attaining particular Stormwater Management goals. Earth Tech assisted the Town of Lunenburg with the following tasks as part of our FY07 contract:

- Provided an inventory of Lunenburg's storm sewer system (outfalls, culverts, catch basins, drop inlets and manholes), including Global Positioning System (GPS) location, attribute data, photographs and indication of dry weather flow;
- Developed a map noting the location of all inspected storm sewer system attributes;
- Developed a map indicating areas of concern identified based on a review of drinking water protection areas, locations of critical habitats, areas of repeated flooding, and suspected problem areas identified by the Town;
- Developed a map indicating the dry weather flowing structures within storm sewer system;
- Map noting location of outfalls which may potentially be a source of illicit discharge;
- Recommended bylaw language governing discharges to the municipal storm drain system;
- Recommended bylaw language requiring stormwater management both during and post construction;
- Identified eligible funding programs and status of requested assistance; and
- Continued to monitor the Town's stormwater IDDE Program to ensure compliance with their NPDES Phase II Permit.

The results of the Town's FY07 Stormwater Management Program and the next steps for the Town were presented to the Town in the spring of 2007. A stormwater program status update meeting was held with the Town on March 1, 2007. Appendix F provides meeting minutes for the March 1, 2006 meeting. Based on the update meeting discussions and progress made to date during FY07, some of the items the Town will need to implement prior to March 2008 are as:

- Continue Storm Sewer System Mapping and Inspections in Spring and Fall 2007;
- Submit Annual Status/Progress Report (May 2007);
- Adopt Bylaw prohibiting illicit and illegal discharges to the storm sewer system (2007 ATM);
- Adopt Bylaw for stormwater management during and post construction (2007 ATM); and
- Continue to implement NOI items (ongoing through March 2008).

J. COMPACT DISC CONTENTS

A compact disc (CD) is provided that contains all of the files for the individual outfalls including the storm sewer system maps, storm sewer system connectivity, photographs, and the attribute data associated with each storm sewer system inspection. This CD is available in Appendix D of this status report. A list of all the files included on the CD is provided below.

AreasOfConcern.pdf: Map showing all mapped outfalls and culverts with respect to areas of environmental concern including 100-year floodplain, critical habitats, Zone II delineations, and other areas.

StormwaterInfrastructure.pdf: Map showing all mapped catch basins, dropped inlets and manholes.

Dry_Weather_Inspection_#.pdf: Individual dry weather inspection data, photo and map location for each outfall and culvert inspected.

Structure_#.pdf: Individual inspection data, photo and map location for each stormwater structure inspected.

LunenburgOutfall.dwg: AutoCAD drawing file of the stormwater structures.

StormwaterStructureConnectivity.dwg: AutoCAD drawing file of the stormwater structures showing mapped connectivity amongst stormwater structures.

Shapefiles: ArcGIS shapefile of outfall locations for use in GIS or Pictometry software.