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**Municipality/Organization:** City of Malden  
**EPA NPDES Permit Number:** MA041046  
**MADEP Transmittal Number:** 041088  
**Annual Report Number & Reporting Period:** No. 1: April 1, 2009-March 31, 2010

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## NPDES PII Small MS4 General Permit Annual Report

### Part I. General Information

**Contact Person:** John J. Russell, P.E.      **Title:** City Engineer  
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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:** John J. Russell  
**Title:** City Engineer  
**Date:** 04-30-10

## **Part II. Self-Assessment**

During the 2009 – 2010 permit year, the City of Malden implemented a formal program for the isolation of illicit discharges, identified key target areas for BMP implementation and maintenance, completed dry weather inspections within over 50% of the City's drainage infrastructure and contracted with outside services for the development and implementation of a City wide GIS program to complement the mapping of infrastructure components completed during this permit year. Stormwater Ordinances identified during the prior permit year for the regulation and enforcement of stormwater management practices were adopted in April 2010 and enforcement actions have been initiated pursuant to this regulatory mechanism. Through continued implementation of the Stormwater Compliance Team's Rapid Assessment Program, the City of Malden has identified and removed five (5) illicit discharges and identified major water line breaks that were addressed during this reporting period.

The City, through its commitment to the MS4 Program has greatly advanced the efficiency of its catch basin (CB) inspection, maintenance and inventory program, resulting in the cleaning of approximately 1,100 catch basins and manhole structures. This effort has also included extensive repairs to CB's and laterals, reducing the potential for sediment entrainment and improving the functionality of these primary BMPs. The aggressive approach demonstrated during this permit year has resulted in a significant reduction of numerous flooding issues that once existed, most noticeably evidenced by the performance of the drainage system during the excessive March 2010 rainfall events.

A summary of the key program tasks implemented and/or advanced during the 2009-2010 reporting period may be reference as Attachment 1 of this report. As evidenced from a review of this submission and supporting documentation, the City has through its commitment to the objectives of the NPDES Phase II program met a majority of the proposed provisions of the 2010 North Coastal Municipal Separate Sewer Stormwater (MS4) permit. More specifically, in those areas pertaining to the removal of illicit discharges, public education and outreach, ordinance implementation, CB inspection/cleanout and maintenance, mapping, outfall monitoring, electronic file management, and capital planning.

During this reporting period the City has demonstrated its capability to implement a successful IDDE Plan. This effort has involved the acquisition of necessary equipment, allocation and training of key personnel and the efficient implementation of field support activities. A summary of the results of this program may be referenced within Part III, Section 3 of this document. It is anticipated that the measures that have been adopted for the management and record keeping of stormwater compliance activities will effectively meet the anticipated revisions to the MS4 (North Coastal) Permit that are currently under review.

### Part III. Summary of Best Management Practices (BMPs) and Compliance Team Goals

#### 1. Public Education, Outreach and Community Involvement

<b>BMP 1-1</b>	<b>Place Educational Information on City's Web Site and Malden Access Television (MATV)</b>
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**Responsible Department/Person:**  
Engineering Dept, Mayor's Office & MATV

**Measurable Goal(s):**  
Continued maintenance of the City informational web site and participation with MATV.

**Progress on Goals- Year 7:**  
The City continues to maintain an informational website and work with representatives of MATV to update the community on stormwater management issues. During this past year a public notice informing the general public how to report sanitary sewer overflow incidents to the City was placed in the Boston Globe, the Malden Evening News, the Malden observer and the Malden Advocate newspapers, on the City's website and on MATV. A copy of the notice was also distributed with over 12,000 water bills.

**Goal Status:**  
Ongoing

<b>BMP 1-2</b>	<b>Conduct Recycling Opportunities &amp; Paint Waste Collection Days</b>
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**Responsible Department/Person:**  
DPW & Mayor's Office

**Measurable Goal(s):**  
Continuation and possible expansion of recycling collection days, distribution of related educational information.

**Progress on Goals- Year 7**  
MDPW sponsors four (4) paint waste collection and recycling days annually

**Goal Status:**  
Annual Program - Activity Ongoing

**BMP 1-3 Enforce Pet Waste Management Programs**

**Responsible Department/Person:**

Animal Control Dept & City Clerk

**Measurable Goal(s):**

Posting of signage, installation of waste collection containers, park maintenance, ordinance enforcement, Community involvement.

**Progress on Goals- Year 7:**

Two (2) pet waste stations were created within the Fellsmere Pond Park. Existing ordinances continue to be enforced and public outreach for community involvement remains a priority. The City is also converting natural surface fields to synthetic playing surfaces, which provide further structure/control for pet walking areas.

**Goal Status:**

Activity Ongoing

**BMP 1-4 Establish a partnership with local schools to educate Malden's students about stormwater**

**Responsible Department/Person:**

Stormwater Compliance Team

**Measurable Goal(s):**

Workshops, demonstration projects, student involvement

**Progress on Goals- Year 7:**

The Beebe School continues to work with the City of Malden to promote awareness of stormwater quality issues. Demonstration projects pertaining to the cleaning of catch basins and the efforts that may be undertaken by students to improve stormwater quality discharges (i.e. litter/debris removal) have been performed by representatives of the Stormwater Compliance Team.

**Goal Status:**

Through the use of website posting and reconnection to the class room, the City hopes to substantially advance the involvement of its students in meeting the goal. Further, the City wishes to expose students to potential career opportunities that exist in the field of Environmental Science.

**BMP 1-5 Hold formal school classroom programs supported by the Compliance Team**

**Responsible Department/Person:**

Stormwater Compliance Team

**Measurable Goal(s):**

Classroom involvement

**Progress on Goals- Year 7:**

See BMP 1-4. The City, through its stormwater compliance team is developing curriculum/information for posting on its website. No classroom presentations were held this year.

**Goal Status:**

Emphasis to be placed upon greater community interaction during Year 8. BMP 1-4 and 1-5 to be combined for this coordinated effort.

**BMP 1-6 Development of student involvement/internship for High School Seniors**

**Responsible Department/Person:**

Engineering Dept & DPW

**Measurable Goal(s):**

Number of participants

**Progress on Goals- Year 7:**

One (1) high school student worked for the MDPW during the 2009 summer break.

**Goal Status:**

Activity Ongoing

**BMP 1-7 Expand Cooperative Education programs for college level interns**

**Responsible Department/Person:**

Engineering Dept & DPW

**Measurable Goal(s):**

Number of participants

**Progress on Goals- Year 7:**

One (1) summer college intern was retained by the Engineering Department.

**Goal Status:**

The City is currently exploring ways to partner high school and college interns in areas of public outreach and curriculum development. BMPs 1-6 and 1-7 will be coordinated to meet this goal.

**BMP 1-8 Host or participate in Stormwater Management brainstorming sessions with citizen advisory groups and Mystic River Watershed representatives (MyRA)**

**Responsible Department/Person:**

Eng. Dept. & Mayor's Office

**Measurable Goal(s):**

Annual Participation. Dissemination of information to the general public

**Progress on Goals- Year 7:**

Stormwater quality data collected by the City has been shared with MyRA and a new community involvement group was formed this year.

**Goal Status:**

River walks and workshops with community members are proposed. Greater participation in regional planning and professional trade organizations is also a priority for Stormwater Compliance Team members.

## 2. Local Planning Processes and Community Involvement

<b>BMP 2-1</b>	<b>Development of incentives for redevelopment initiatives that address existing stormwater management concerns</b>
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**Responsible Department/Person:**

Local Planning Agencies and Compliance Team

**Measurable Goal(s):**

Mitigation of existing stormwater concerns.

**Progress on Goals- Year 7:**

The Stormwater compliance team has identified key areas where infrastructure improvements can be addressed during redevelopment activities. This information is reviewed during Department Head meetings to ensure their inclusion in the review of redevelopment activities.

**Goal Status:**

Output from the ongoing infrastructure mapping/CB inspection program together with CIP Planning is being evaluated to prioritize infrastructure needs that will be intergraded into redevelopment design and review processes.

<b>BMP 2-2</b>	<b>Development of a “Clean Malden” Program</b>
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**Responsible Department/Person:**

Stormwater Compliance Team

**Measurable Goal(s):**

Promote neighborhood stewardship programs designed to remove trash from sensitive watershed areas, catch basin inlets and report conditions of concern.

**Progress on Goals- Year 7:**

During this permit year, the citizen’s advisory group referred to as Clean Malden was disbanded; however, a new group of concerned residents have expressed an interest in assisting the City in meeting the goals of this BMP.

**Goal Status:**

During the next permit year, the Stormwater Compliance Team will actively promote neighborhood stewardship and communication efforts.

**BMP 2-3 Inter-departmental review and communication to address stormwater quality concerns**

**Responsible Department/Person:**

Local Planning and Inspectional Agencies

**Measurable Goal(s):**

Coordination of Planning and Inspectional services to further identify and address stormwater management issues.

**Progress on Goals- Year 7:**

During this reporting period and through the adoption of a City ordinance pertaining to the stormwater management requirements, the objectives of this BMP have been integrated into the formal Department Head meeting agenda. Representatives of Board of Health (BOH) have been instrumental in successful enforcement actions when necessary.

**Goal Status:**

While significant improvement in the communication of stormwater quality issues was achieved during Year 7, the development of a more formal mechanism for the inspection, evaluation and monitoring of stormwater is a primary goal for the next permit year.

**BMP 2-4 Development of an electronic database file management system**

**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Compilation of all stormwater infrastructure information, integration of all ongoing inspection, inventory and repair activities.

**Progress on Goals- Year 7:**

Expanding upon the planning and management capabilities realized from initial GIS mapping efforts, the City has completed an interdepartmental evaluation of needs and retained the services of Camp Dresser and McKee (CDM) to implement a comprehensive city wide GIS/electronic file management program. To address long term needs, CDM intends to complete the following tasks, which are currently ongoing:

Task 1 - Development of a GIS Strategic Plan (Completed)

Task 2 - Aerial Land Base Mapping (Completed)

Task 3 - Parcel GIS Development (Ongoing)

Task 4 - Web GIS Implementation

Task 5 - GIS Training

Task 6 - GIS implementation Assistance

To effectively implement the above, the City has hired a full time GIS manager to oversee the GIS mapping/file management program. As the foundation for the City's GIS mapping is the base map, based upon CDMs recommendation following a review of existing information, detailed base maps are being developed through the completion of an aerial flight that was performed in the



Spring of 2010 (Task 2). Using the information from the aerial mapping effort, CDM will provide the City with 4-inch pixel resolution color digital ortho-photography, 1"=40 planimetric base maps with photo identifiable features and 1"=40 scale topographic mapping with 2 foot contours. Data files will be integrated into this mapping effort.

**Goal Status:**

Activity Ongoing

<b>BMP 2-5      Development and implementation of local ordinances</b>
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**Responsible Department/Person:**

Local Planning Agencies and Compliance Team

**Measurable Goal(s):**

Adopt and enforce state and federal regulatory guidance. Perform community infrastructure needs analysis and conveyance of information to local permitting processes. Assign BMP guidance and requirements to private land use activities that are connected to the urban stormwater network.

**Progress on Goals- Year 7:**

As outlined in correspondence dated 26 March 2009, The Malden Engineering Department provided revisions to the City by-laws to the Malden City Council that was designed to meet the above stormwater management objectives. These regulations were adopted in April of 2009.

**Goal Status:**

Achieved

<b>BMP 2-6      Completion of an infrastructure needs analysis</b>
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**Responsible Department/Person:**

Eng. Dept, DPW, Compliance Team

**Measurable Goal(s):**

Development of a long term plan for infrastructure upgrade

**Progress on Goals- Year 7:**

Through the efforts summarized under BMP 2-4 and the GIS mapping program, infrastructure needs identified are being prioritized for inclusion CIP planning and redevelopment review efforts.

**Goal Status:**

Annual Ongoing Activity

<b>BMP 2-7</b>	<b>Identification of capital improvement projects necessary to improve stormwater quality</b>
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**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Conveyance of CIP requirements to Planning Board and local permitting processes.

**Progress on Goals- Year 7:**

See BMP 2-6. Based upon potential stormwater quality improvement benefits and functional needs, recommendations are provided for and included in the annual CIP.

**Goal Status:**

Annual Ongoing Activity

### 3. Stormwater Monitoring and Inspection Program

**BMP 3-1      Conduct a minimum of one annual inspection of all known outfalls during dry weather sampling events.**

**Responsible Department/Person:**  
Compliance Team

**Measurable Goal(s):**  
Documentation of inspection results.

**Progress on Goals- Year 7:**

The annual inspection of all known outfalls has been performed and the installation of signage identifying the appropriate sampling and contact information is underway. Specifically, during this reporting period, outfall signage was prepared for each of the stormwater outfalls that have been located within the City of Malden. These signs will be installed during the next wet/dry weather sampling event. A copy of the language developed for signage may be referenced as Attachment 2- Supporting Documentation for BMP 3-1.

**Goal Status:**  
Achieved and Ongoing Activity

**BMP 3-2      Perform targeted sampling and analyses during dry weather and wet weather sampling events to document seasonal and annual trends.**

**Responsible Department/Person:**  
Compliance Team

**Measurable Goal(s):**  
Collection of water quality data

**Progress on Goals- Year 7:**

A summary of the results obtained from dry weather sampling may be referenced from Attachment 3 - Supporting Documentation for BMP 3-2.

**Goal Status:**  
Achieved and Ongoing Activity

**BMP 3-3 Perform mass balance modeling within primary watersheds to isolate sub basin bacteria loading sources.**

**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Identification of source area contributions

**Progress on Goals- Year 7:**

During this reporting period, dry weather inspection of the infrastructure contributing to stormwater discharges to the Malden River and Little Creek within westerly portions of the City has been completed and has resulted in the isolation of discharges containing bacterial loading and potable water from water line breaks which have been addressed. A representative description of the mass balance approach utilized to identify these non-stormwater contributions may be referenced in Attachment 4 - Supporting Documentation for BMP 3-3.

**Goal Status:**

As the Malden River has been the target for priority area of concern, with respect to the results of wet weather sampling, in majority of the current permit year goal has been met. The mass balance evaluation of incremental/contributing discharges is continuing as a part of the IDDE Plan implementation.

**BMP 3-4 Target the evaluation of stormwater discharges from “green space” parklands, cemeteries and open space to assist in the segregation of human, animal and waterfowl bacteria contributions.**

**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Separation of non-human bacterial loading and implementation of mitigation measures.

**Progress on Goals- Year 7:**

The City has implemented several measures to reduce discharge of non-human bacterial loading at park lands, cemeteries and open space. These include control measures for the geese population, such as egg collection/treatment, the use of dogs and postings to prevent the feeding of waterfowl. The City has also completed the replacement of grass playing fields with synthetic surfaces, thus improving the quality of stormwater runoff.

**Goal Status:**

Ongoing Activity

**BMP 3-5 Development of mitigation strategy based upon sampling and inspection progress for consideration in annual capital planning.**

**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Preparation of annual report.

**Progress on Goals- Year 7:**

The development of an electronic file management system, together with an emphasis on CB cleanout/ inventory and dry weather inspections has contributed to the prioritization of infrastructure needs which are reflected in CIP recommendations for the 2009-2010 fiscal year.

**Goal Status:**

Significant advancement of this goal was achieved during the 2009-2010 permit year and through the efforts of both in-house and contracted services in mitigation strategy or procedure has been developed.

**BMP 3-6 Development and Implementation of an Illicit Discharge Detection and Elimination (IDDE) Plan**

**Responsible Department/Person:**

Eng Dept & Compliance Team

**Measurable Goal(s):**

Development and implementation of an IDDE Plan.

**Progress on Goals- Year 7:**

A draft IDDE Plan was submitted to US EPA and MDEP on 29 April 2009 and conditionally approved via correspondence from Mr. Todd Borci to the City of Malden dated 28 May 2009. This conditional approval required minor modifications which were incorporated into the revised final draft of the IDDE Plan provided to US EPA under cover of correspondence from NCA to Mr. Borci dated 29 June 2009. A copy of the introduction and key components of this IDDE Plan may be referenced as Attachment 5 - Supporting Documentation for BMP 3-6.

**Goal Status:**

Achieved

#### 4. Pre- and Post-Construction Stormwater Runoff Control Measures

<b>BMP 4-1</b>	<b>Development of inspection protocol/checklist local permitting agencies to monitor ongoing construction activities</b>
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**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Development of checklist

**Progress on Goals- Year 7:**

The City has reviewed guidance documentation and is in the process of developing a formal checklist to assist in the inspection of redevelopment activities. Current criteria under consideration for the impaction and management of stormwater discharges may be referenced as Attachment 6 – Supporting Documentation for BMP 4-1.

**Goal Status:**

It is anticipated that this goal will be addressed by Compliance Team members who participate in local design review and permitting process.

<b>BMP 4-2</b>	<b>Integration of Applicant Certification requirement for the monitoring and inspection of development activities into local planning processes.</b>
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**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Applicant Certification and submission of inspection and monitoring reports.

**Progress on Goals- Year 7:**

This goal is advanced through conceptual design stage for implementation.

**Goal Status:**

Proposed for formal adoption next permit year.

**BMP 4-3 Promote the use of new and innovative products/designs in new development initiatives. Condition of approval, monitoring**

**Responsible Department/Person:**  
Compliance Team

**Measurable Goal(s):**  
Conditions of Approval, monitoring of construction activities.

**Progress on Goals- Year 7:**  
Publicly sponsored projects have investigated the use of low impact development design measures and enhanced stormwater quality improvements, such as bioswales and synthetic playing field surfaces.

**Goal Status:**  
Design measures promulgated under the MDEP Stormwater program and identified through technology updates will be provided to local planning agencies.

**BMP 4-4 Enforcement of existing state and federal guidance.**

**Responsible Department/Person:**  
Planning Board and Inspectional Services, Eng. Dept.

**Measurable Goal(s):**  
Documentation of violations, implementation of corrective actions.

**Progress on Goals- Year 7:**  
See BMP 3-6 and 5-8. Following the adoption of local control measures in April 2009, the City has enforced the removal illicit discharges and required that investigations be undertaken to support the removal of improper stormwater discharges.

**Goal Status:**  
Ongoing

**BMP 4-5      Develop partnerships in planning with local Conservation Commission**

**Responsible Department/Person:**

Planning Board and Inspectional Services, Eng. Dept.

**Measurable Goal(s):**

Stormwater quality management practices as conditions of approval.

**Progress on Goals- Year 7:**

The activities of the Compliance Team are directly communicated to the local Conservation Commission by a participating member. Similarly, updates to stormwater quality management practices and enforcement activities/requirements are addressed.

**Goal Status:**

Achieved and ongoing

**BMP 4-6      Site design measures to improve stormwater quality**

**Responsible Department/Person:**

Planning Board

**Measurable Goal(s):**

Improved design features for new development.

**Progress on Goals- Year 7:**

The adoption of local controls has provided planning review processes with guidance for appropriate design practices.

**Goal Status:**

Ongoing



## 5.0 Pollution Prevention and Stormwater Management Strategies.

### **BMP 5-1 Develop a Formal Training Program for DPW Staff**

**Responsible Department/Person:**

DPW, Human Resources Dept.

**Measurable Goal(s):**

Staff Training

**Progress on Goals- Year 7:**

During this reporting period a key compliance team member voluntarily participated in a stormwater training program and achieved the designation as a Certified Compliance Inspection of Stormwater (CCIS) see Attachment 7. The City has recently hired additional staff for the Public Works Department to advance the objectives of the Stormwater Compliance Team. In addition, a vehicle has been retrofitted and is equipped with the necessary items to support IDDE implementation. A trained crew has also been established to aggressively maintain the catch basin cleaning, inspection and data collection program. This crew has been assigned to work with NCA and the Malden Engineering Department in meeting the objectives of the IDDE plan implementation and has been responsible for the identification of numerous water main leaks, resolution of illicit connections and repair of infrastructure components, all of which is directed towards the improvement in the quality of the City's stormwater discharges.

**Goal Status:**

Achieved and ongoing

### **BMP 5-2 Maintain Lawn Care Policy**

**Responsible Department/Person:**

DPW, School Dept., Cemetery Dept

**Measurable Goal(s):**

Proper utilization of pesticides, herbicides, fertilizers and appropriate disposal of lawn trimmings, yard waste

**Progress on Goals- Year 7:**

The City currently has no license for the application of pesticides. Lawn care for recreational areas maintained by the MDPW.

**Goal Status:**

Ongoing activity

**BMP 5-3      Development of a maintenance and monitoring plan for open channel component of  
Town Line Brook**

**Responsible Department/Person:**

Eng. Dept., DCR & Compliance Team

**Measurable Goal(s):**

Removal of excess sediment deposits, restoration of flow capacity, structural repair.

**Progress on Goals- Year 7:**

To date, no response or maintenance activities by DCR have been noted. The extent of damage to the concrete wall of this trapezoidal channel is of significant concern in that further delays are likely to result in costly damages that could be avoided through proper attention.

**Goal Status:**

No Action

**BMP 5-4      Implementation of recommended maintenance and monitoring plan developed for  
Spot Pond Brook at Oak Grove.**

**Responsible Department/Person:**

Eng. Dept., DPW & DCR

**Measurable Goal(s):**

Implementation of those recommendations contained within engineering study completed by Meridian Associates, Inc.

**Progress on Goals- Year 7:**

While no planned maintenance activities occurred during this reporting period, the spillage of dielectric fluids from a transformer resulted in the removal of vegetation and sediments from the Oak Grove control structure by responsible parties.

**Goal Status:**

Funding for necessary improvements and attention by DCR will be requested.

**BMP 5-5 Expansion of programs such as the Fellsmere Pond restoration initiative**

**Responsible Department/Person:**

Mayor's Office, Compliance Team DPW

**Measurable Goal(s):**

Water quality improvement

**Progress on Goals- Year 7:**

The restoration of bordering walkways and trimming of vegetation to reduce stormwater loading has been completed. Pet stations have also been added. The focus of current municipal projects is directed towards BMP repair i.e. CB inspection inventory program and the replacement of grass playing field surfaces, control of geese population and cemetery improvements.

**Goal Status:**

Ongoing

**BMP 5-6 Comprehensive catch basin inspection, inventory, maintenance program**

**Responsible Department/Person:**

Eng. Dept., DPW & Compliance Team

**Measurable Goal(s):**

Electronic logging of CB locations, documentation of CB construction and functional characteristics, recommendations for improved performance standard compliance at individual locations or tributary segments of the drainage system.

**Progress on Goals- Year 7:**

The City has recently hired additional staff for the Public Works Department to advance the objectives of the Stormwater Compliance Team. In addition, a vehicle has been retrofitted and is equipped with the necessary items to support IDDE implementation. A trained crew has also been established to aggressively maintain the catch basin cleaning, inspection and data collection program. This crew has been assigned to work with NCA and the Malden Engineering Department in meeting the objectives of the IDDE plan implementation and has been responsible for the identification of numerous water main leaks, resolution of illicit connections and repair of infrastructure components, all of which is directed towards the improvement in the quality of the City's stormwater discharges. Through the use of dedicated staffing to meet this goal, catch basin cleaning and repairs are now being performed as a daily work activity. Attributes for the drainage system have been recorded at over 65% CB and manholes.

**Goal Status:**

Ongoing activity

**BMP 5-7 Continue sewer re-lining and connection upgrade program****Responsible Department/Person:**

Eng. Dept. & DPW

**Measurable Goal(s):**

Reduction in I/I, identification of potential illicit connections, assist in infrastructure needs analysis

**Progress on Goals- Year 7:**

Flow Isolation (FI) work has been done on Malden's sewer collection system in three (3) phases. Phase 1 and 2 was completed in previous reporting periods. FI in Phase 3 is 99 % complete as of this reporting period and will be completed by May 15, 2010. This results in FI work being completed for the entire sewer collection system. Target areas within Phase 3 area have been established and they are currently being inspected with closed circuit television (CCTV) equipment. Also, temporary flow meters have been installed within the sewer system, this information will be used to compile a hydraulic model and capacity assessment of the wastewater collection system. The information gathered during these ongoing studies will result in recommendations for development of construction documents to complete sewer rehabilitation contracts with the emphasis on epoxy lining of sewer mains to control infiltration and to extend the life of the collection system. As outlined under additional BMP within this document, Malden has also contracted CDM to establish a GIS system, which will include mapping of the sewer collection system and the stormwater drainage system. The City of Malden has actively pursued funding for this sewer and drainage work through the MWRA community assistance program as well as CY2010 CWSRF Planning Assistance from the Massachusetts DEP.

**Goal Status:**

Ongoing activity

**BMP 5-8 Development and implementation of communication/notification plan for SSOs****Responsible Department/Person:**

Eng. Dept. & DPW

**Measurable Goal(s):**

Notification of U.S. EPA and MDEP within 24 hours of event occurrence

**Progress on Goals- Year 7:**

During the prior permit year, a 24 hour notification form was developed by the Stormwater Compliance Team to meet this goal. Over the April 1, 2009 - March 1, 2010 reporting period, no SSOs to surface waters were identified. However, excessive rain fall events of March 2010 resulted in surcharges to the MWRA regional system occurred which resulted in sewage backups within basements and numerous SSOs within the infrastructure. During the second rain fall event, stop blocks/plugs within former SSO connections were opened by the MWRA which resulted in the direct discharge of sewage to downstream receiving waters. These connections were resealed in April 2010, and copies of the 24 hour notification submittals pertaining to these events may be referenced as Attachment 8 - Supporting Documentation BMP -5-8.

**Goal Status:**

Ongoing activity

## 6. Pollution Prevention and Good Housekeeping in Municipal Operations

### **BMP 6-1 Regular meetings of Compliance Team to review plan implementation results**

**Responsible Department/Person:**

Compliance Team

**Measurable Goal(s):**

Data evaluation and review, implementation of corrective actions, and prioritization of mitigation measures.

**Progress on Goals- Year 7:**

Stormwater management requirements, compliance enforcement and ongoing working practices are now a regular agenda item at Department Head meetings. In addition, the Stormwater Compliance Team meets at least on a bi-monthly basis to review the progress of plan implementation. Further, there is daily interaction with key members of the Compliance Team.

**Goal Status:**

Ongoing

### **BMP 6-2 Liaisons to Departments and Boards**

**Responsible Department/Person:**

Compliance Team & Mayor's Office

**Measurable Goal(s):**

Communication of plan goals and objectives.

**Progress on Goals- Year 7:**

See BMP 6-1 above.

**Goal Status:**

Achieved and to be combined with BMP 1-6.

### **BMP 6-3 Annual Compliance review**

**Responsible Department/Person:**

Compliance Team & Mayor's Office

**Measurable Goal(s):**

Identification of capital plan improvements, modification of plan and objectives, documentation of plan activity for Annual Report.

**Progress on Goals- Year 7:**

During this permit year a CMOM Program document was developed to assist in the identification of sewer infrastructure needs as they relate to stormwater quality issues. This report is a compilation of guidance pertaining to those daily work practices and management protocols maintained by the City to insure the efficient conveyance of sewer flows to the regional infrastructure. In this regard, the City's CMOM Program document is intended to serve as an

evolving model that is built upon an existing framework, for the mitigation of system deficiencies and cost effective implementation of planned improvements. Building upon the organizational structure and management system presently in place, supporting information that is currently being maintained at the City of Malden Engineering Department has been compiled according to the outline presented below.

- Goals
- Engineering Administration & Organizational Chart
- Job Descriptions
- Staff Training
- Legal Authority
- Inter-Municipal & Regional Agency Agreements
- Wastewater Collection System
- Standard Construction Specifications & Details
- Monitoring & Maintenance Procedures
- Engineering Records and File Management Systems
- System Evaluation & Capacity Monitoring
- SSO Emergency Response Procedures
- Financing & Capital Improvement Plan
- Contracted Infrastructure Improvement Projects
- Public Education & Outreach

CMOM documentation was provided to US EPA under cover of a memorandum dated 30 June 2009 from the City of Malden. The guidance provided for the preparation of the CMOM documentation included two (2) examples of check lists which were incorrectly considered and following conversations with EPA a revised submittal was provided to the agency on 10 July 2009.

During the review of engineering sewer plans, the use of underdrains was identified as an early construction practice for older portions of the City's infrastructure. Field inspections together with camera surveys and inspections performed during sewer re-lining has revealed no underdrain manhole connections. The City is continuing in its review of engineering record information and the results obtained from this effort will be entered into the GIS mapping system to assist in the delineation of areas within the City where there is exfiltration from sewer lines that may be impacting underdrains. The current City protocol for underdrains that are encountered during construction/repairs involves breaking of the underdrain and use of slurry to prevent further dewatering. Construction specifications will be included during new projects to accommodate the investigation of any underdrains that may be present. Through the CB inventory/mapping program, IDDE Plan implementation and related planning efforts Needs were developed and recommended for the 2009-2010 CIP.

**Goal Status:**

Ongoing

**Part IV. Summary of Information Collected and Analyzed**

See Part II Attachment 1

## Part V. Program Outputs & Accomplishments (Optional)

### 5.1 Programmatic (See BMPs 1-4 and 5-1)

5.1.1	Stormwater management position created/staffed	Compliance Team Established
5.1.2	Annual program budget/expenditures	\$ 285,000

### 5.2 Education, Involvement, and Training (See BMPs 1-1, 1.2, 1-4, and 1-5)

5.2.1	Estimated number of residents reached by education program(s)	75%
5.2.2	Stormwater management committee established	Yes
5.2.3	Stream teams established or supported	Yes
5.2.4	Shoreline clean-up participation or quantity of shoreline miles cleaned	2 Miles
5.2.5	Household Paint Waste Collection Days	
	Days sponsored	4 Days
	Community participation	45%
	Material collected	\$16,250
5.2.6	School curricula implemented	Yes

### 5.3 Legal/Regulatory (See BMPs 2-5 and 3-6)

5.3.1	Regulatory Mechanism Status	
	Illicit Discharge Detection & Elimination	Adopted
	Erosion & Sediment Control	Adopted
	Post-Development Stormwater Management	Adopted

### 5.4 Mapping and Illicit Discharges (See BMPs 2-4)

5.4.1	Outfall mapping complete	All Known-100%
5.4.2	Estimated or actual number of outfalls	51
5.4.3	System-Wide mapping complete	
	Sewer-Paper/Mylar	100%
	Sewer-GIS	100%
	Drain-Paper/Mylar	100%
	Drain-GIS	
5.4.4	Outfalls inspected/screened	100%
5.4.5	Illicit discharges identified	7
5.4.6	Illicit connections removed	60 GPD (est.)
5.4.7	% of population on sewer	99.6%
5.4.8	% of population on septic systems	0.4%



## 5.5 Construction

- 5.5.1 Number of construction starts (>1-acre)
- 5.5.2 Estimated percentage of construction starts adequately regulated for erosion and sediment control
- 5.5.3 Site inspections completed
- 5.5.4 Tickets/Stop work orders issued
- 5.5.5 Fines collected
- 5.5.6 Complaints/concerns received from public

## 5.6 Post-Development Stormwater Management

- 5.6.1 Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control
- 5.6.2 Site inspections completed
- 5.6.3 Estimated volume of stormwater recharged

## 5.7 Operations and Maintenance (See BMPs 5-1)

5.7.1	Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	5 days a week
5.7.2	Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	5 days a week
5.7.3	Total number of structures cleaned	1100
5.7.4	Storm drain cleaned	1,000 LF
5.7.5	Qty. of screening/debris removed from storm sewer infrastructure	750 tons
5.7.6	Disposal or use of debris (landfill, POTW, compost, recycle for sand, beneficial use, etc.)	Stoughton LF
5.7.7	Cost of screening disposal	\$13,500
5.7.8	Average frequency of street sweeping (non-commercial/non-arterial streets)	6 days a week
5.7.9	Average frequency of street sweeping (commercial/arterial or other critical streets)	6 days a week
5.7.10	Qty. of sand/debris collected by sweeping	3900 tons
5.7.11	Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)	Stoughton LF
5.7.12	Cost of sweeping disposal	\$62,400
5.7.13	Street sweepers purchased/leased	1
5.7.14	Street sweepers specified in contracts	0
5.7.15	Reduction in application on public land of: ("N/A" = never used; "100%" = elimination)	
	Fertilizers (State regulations require applicators (license which City does not currently have)	100%
	Herbicides	None
	Pesticides	None

5.7.16 Anti/De-Icing precuts and rations

- 5000 gallon tank
- 5.7.17 Pre-wetting techniques utilized
- 5.7.18 Manual control spreaders used
- 5.7.19 Automatic or Zero-velocity spreaders used
- 5.7.20 Estimated net reduction in typical year salt application
- 5.7.21 Salt pile covered

Salt 98%  
Sand 2%  
CaCl<sub>2</sub> 100 gals/30 tons  
CaCl<sub>2</sub>-100%  
Yes  
No  
Yes  
15%  
Yes