

Project Narrative

Section A – Description, Objectives and Project Overview

The main objective of the Malden CWSRF construction project is to continue the progress made in the City of Malden's efforts to identify, assess, prioritize, and implement improvements to its waste water collection and stormwater management systems. Ultimately the program will serve to protect the water bodies of the Commonwealth, mainly water bodies in the Mystic River/Boston Harbor basins including the Rumney Marshes Area of Critical Environmental Concern (ACEC).

In December 5, 2005, the City received a request for information from the U.S. Environmental Protection Agency (EPA), under Section 308 (a) of the Clean Water Act, for submittal of information relative to the City's sewer and stormwater drainage systems. In 2009, the City of Malden received an Administrative Consent Order (ACO) from the EPA relative to violations of the Clean Water Act (a copy of the ACO is provided in Appendix A). The ACO included requirements for Geographic Information System (GIS) mapping, field investigations and planning associated with the City's sewer and storm drain systems. In addition, the ACO contained requirements for semi-annual reporting of Sanitary Sewer Overflows (SSOs), development of Illicit Discharge Detection and Elimination (IDDE) program along with a Capacity, Management, Operation and Maintenance ("CMOM") Program Self Assessment; and preparation of a CMOM Corrective Action Plan. These documents have been previously submitted to MassDEP and to EPA under separate cover, copies of report covers are included in Appendix B (full copies of each report can be provided upon request).

Since 2003, the City has utilized Massachusetts Water Resource Authority Local Financial Assistance Program funding to complete a three phased Sanitary Sewer Evaluation Study (SSES) that collectively helped characterize the City's wastewater collection system by identifying sources of infiltration, and to some degree, inflow sources. The 3 phased SSES program included citywide flow isolation along with cleaning and close circuit television inspection (CCTV) activities for portions of the system that exhibited higher flows during flow isolation program. Recommended sewer system improvements outlined in the Phase 1 and Phase 2 SSES reports have largely been constructed. Recommendations from the Phase 3 SSES have not yet been completed. It is anticipated that a combination of local funding and MWRA Community Assistance funding will be utilized to complete a portion of the recommendations in the Phase 3 SSES investigations in 2013/2014.

In addition to the SSES investigation and construction program, the City has also utilized planning funds from the CWSRF program in CY-2010 to complete development of sewerage and drainage layers in the City's GIS system and to develop a hydraulic model and complete a capacity assessment of the City's wastewater collection system. The capacity assessment report included extensive flow metering effort for the entire City as well development of a citywide computer hydraulic model for the City's wastewater collection system.

Project Background

As illustrated by the map included in Appendix C, Malden is a highly developed urban environment which contributes significant stormwater to both Boston Harbor and the North Coastal watershed, including several major tributaries. The City of Malden is primarily included within the Mystic River watershed, part of the larger Boston Harbor basin. However, portions of Malden are within the Saugus River watershed, part of the larger North Coastal basin. A significant portion of the Rumney Marshes Area of Critical Environmental Concern (ACEC) is within the North Coastal River basin. Information regarding the Rumney Marshes ACEC along with completed, planned and ongoing restoration efforts is included in Appendix D. The Pines River is located within the Rumney Marshes area and is tributary to the Saugus River, which is part of the North Coastal basin.

Malden is part of the Massachusetts Water Resources Authority's (MWRA's) sewer system, with the City's Water Utilities Department and Engineering Department responsible for wastewater collection system and storm water management system operation and maintenance. The City has known issues with its storm drain and sewer systems including Sanitary sewer overflows (SSOs), Inflow/Infiltration (I/I) and Illicit Discharges. Manhole surcharges in the sewer system occur during extreme wet weather events due to surcharging in the system. Inflow due to illicit sump pumps and roof leaders connected to the sewer system also contribute to problems. Details regarding the past Clean Water Act violations are included in the reports provided in Appendices to this PEF.

The Department of Conservation and Recreation (DCR), the Massachusetts Bay Transportation Authority (MBTA) and the Massachusetts Department of Transportation (MassDOT) maintain extensive utilities and transportation infrastructure within the City of Malden. The City has worked with these agencies to help develop comprehensive solutions to the infrastructure needs in Malden.

The City has taken a proactive approach to correct many of the problems in the sewer and drainage systems, including an aggressive television inspection and cleaning program, pipe lining and rehabilitation, among other improvements. As previously stated, the City has more recently completed a three phased SSES investigation program that collectively helped characterize the City's wastewater collection system by identifying sources of infiltration, and to some degree, inflow sources. In completing the field investigations associated with the SSES program, the City identified structural deficiencies and removed significant sediment and debris resulting in increased system capacity. The SSES reports identified manhole to manhole reaches of sewers that have demonstrated excessive infiltration rates. As a result, the City constructed recommended improvements included in the Phase 1 and 2 SSES reports, primarily through pipeline cured-in-place pipe lining. The City is planning for construction of a portion of the Phase 3 SSES recommendations in 2013/2014. The intent of this PEF and the request for construction funding under the CWSRF Program, is to provide the City with the financial resources necessary to implement construction of additional capital improvements as identified by the previously performed SSES reports (beyond what has been previously completed). In addition, conditions identified as a result of the recently completed capacity assessment of the

wastewater collection system will be addressed in part utilizing SRF funding to complement the local and MWRA resources already invested. It is the City's intention to complete construction improvements identified in this PEF by December 2014. The specific activities and benefits for the construction project are described in greater detail below.

Construction Project Description

As stated above, the City of Malden is currently under Administrative Consent Order (ACO) to comply with Federal Clean Water Act regulations. Over the last several years, the City has completed three SSES investigation programs that identified deficiencies within the wastewater collection system. Some of the recommended improvements made in the SSES reports have been constructed however, there are numerous other sewer segments that have demonstrated excessive infiltration that have not or will not be addressed in the SSES construction projects. Therefore, the City would like to mitigate additional I/I and pipe deficiencies as identified in the previous SSES reports. Further, the City intends to implement recommendations made in the Wastewater Collection System Hydraulic Model and Capacity Assessment report to address capacity limitations to help mitigate SSO occurrences.

The proposed work will further reduce the volume of infiltration and inflow (I/I) within the sewer system. The work also intends to reduce the amount of stormwater entering the City's wastewater collection system and unnecessarily being treated at the Deer Island Sewage Treatment Plant. In addition, the proposed construction project will also serve to improve the performance of the City's collection system and reduce SSO's during wet weather events.

Rehabilitation of pipelines, manholes, service laterals, and the removal of public and private inflow sources is necessary to reduce (I/I) from the system and reduce the chances of SSO's from occurring. This project includes cured-in-place pipe liner (CIPPL) for approximately 28,000 feet of 8-inch to 10-inch pipe. Approximately 80 manholes have also been identified as being in need of monolithic cementitious liner. Further, approximately 1,200 service lateral liners are proposed to mitigate infiltration from entering the sewer mains at service lateral connections. It is also anticipated that some new sewer pipe and sewer manholes will be necessary to replace existing pipes and manholes that are irreparable.

Project Construction Cost Summary

The following tables present a summary of the total conceptual level engineer's estimate of probable construction costs based on quantities developed using the preliminary results of the Phase I, II and III SSES. Estimated quantities are provided in the summary tables with unit costs based on recent bid prices for similar projects and inflated to reflect a construction start of fall 2013.

Construction PEF

Conceptual Level Engineers Estimate of Probable Construction Cost

Item	Construction SubTotal	Contingency	Engineering Services During Construction	Police Details	Total
WW-001	\$3,950,000	\$300,000	\$450,000	\$300,000	\$5,000,000

**Calendar Year 2013 Construction PEF
Cost Basis Table**

Item	Unit	Quantity	Unit Cost	Total
F&I Precast concrete diameter manholes	VF	15	\$275	\$4,125
F&I 8-in PVC Sewer	LF	1,500	\$60	\$90,000
Manhole Rehabilitation – Monolithic Cementitious Liner	VF	800	\$250	\$200,000
Cured In Place Pipe Lining - 8-inch Sewer Pipe	LF	25,000	\$55	\$1,375,000
Cured In Place Pipe Lining - 10-inch Sewer Pipe	LF	3,200	\$60	\$192,000
Service Lateral Liners	EA	1,200	\$1,700	\$2,040,000
Paving	SY	2,000	\$25	\$50,000
Construction Subtotal				\$3,951,125
Construction Contingency	LS	10%	\$395,113	\$300,000
Subtotal				\$4,251,125
Engineering Services During Construction	LS	15%	\$637,669	\$450,000
Subtotal				\$4,701,125
Police Details	LS	10%	\$470,113	<u>\$300,000</u>
Total				\$5,001,125

Planning Project Description

The planning project focuses on the assessment of the stormwater system along with support for the City's ongoing development of a GIS system. Further technical support for implementation and use of the GIS system will be available through the anticipated scope of work for this planning study to allow Malden to continue to identify, assess, prioritize, and complete improvements to the City's wastewater collection and stormwater management systems. The planning project will further support the City's ongoing efforts to comply with the requirements of the Administrative Consent Order (ACO).

The following field investigations and technical activities are planned: drainage system flow monitoring/metering, television inspection, dye testing, Illicit Discharge Detection and Elimination (IDDE), and smoke testing (as required) to complete the evaluation of the stormwater collection system. This work will be completed in addition to other ongoing assessment of the wastewater system and routine maintenance programs currently underway in the City.

The following tasks are expected to be performed under this planning project.

Field Investigations

Field investigations will be completed to ascertain the condition and operation of the stormwater system. Field investigations will include the following primary activities:

- Close Circuit Television Inspection (CCTV) - The execution and supervision of CCTV will be completed as necessary in various diameter drains to help determine drain existing condition, connectivity, and possible illicit connections. The television inspection work shall include initial cleaning of the drain pipe prior to inspection. It is assumed that up to 70 percent of the drains will require light to moderate cleaning and 30 percent will require heavy cleaning. These quantities may vary once field work begins. CCTV inspection data will be integrated into the GIS system.
- Dyed Water Flooding - Dyed water flooding will be completed as necessary in various diameter drains based to help determine connectivity and identify illicit connections into the drain system.
- Outfall Sampling and Testing - Limited outfall sampling at key locations will be performed to determine the existence of sanitary flow. Sampling and testing may be performed during wet and dry weather periods and be used in conjunction with previously collected outfall sampling data.
- IDDE Upstream Monitoring - Upstream flow isolation will be used in conjunction with dye water flooding/testing to assist in identifying illicit connections.

Hydraulic Model Further Development

The City intends to build upon the recently completed wastewater collection system hydraulic model. The software used to develop that model is InfoWorks CS version 10.5.2 (by Innovyze, Inc.). The existing model will be further developed to include stormwater infrastructure and used in conjunction with the wastewater model to perform integrated planning. Several design storms (1-year, 5-year, 10-year, and 25-year storms) will be modeled to assess the hydraulics throughout the modeled collection system. The updated information will help the City to further characterize the performance of both the sanitary sewer system and stormwater collection system in response to the ongoing ACO.

Stormwater Facilities Mapping and GIS Implementation

To assist in prioritizing storm water improvements and assessing impacts, a detailed update to the stormwater asset inventory will be performed. This process will be completed by building upon and supplementing information compiled during a previous stormwater asset inventory task.

The items to be undertaken as part of this task include:

- Review of current stormwater mapping to identify incomplete mapping areas or areas that require additional research or field investigation.
- Review of historical stormwater system mapping including plans owned by the City that contain any stormwater information that is not currently in the GIS.
- Field locate missing stormwater structures including manholes, catch basins, and outfalls using GPS and other field location technologies.
- Perform field inspections on drainage structures to confirm pipe sizes, pipe flow direction, materials and condition. Confirm structures that are dry wells.
- Perform additional testing required to determine flow of any structures where flow cannot be determined.
- Develop asset inventory and system mapping that incorporates information gathered as part of this process. This will result in a detailed system inventory including piping networks, open channel, and culvert and overland flow.
- Integrate the completed stormwater inventory into the City's GIS environment and provide the tools necessary to allow staff to easily access, query, and manipulate information.

This task will result in an even more accurate stormwater inventory that will allow the City to plan and construct system improvements, improve water quality, and better maintain and protect city infrastructure and environment. Areas for future inspection can be delineated on an ongoing basis utilizing this GIS data and through the calibration and use of the sanitary sewer system hydraulic model now under development.

Stormwater Master Plan Development

The Stormwater Master Plan (SWMP) will include a list and schedule of all remedial measures and capital improvements.

The SWMP document will include the following information:

- a background on the project;
- results of historic and current field investigation programs;
- a review of prior planning efforts;
- a review of recent improvements completed a result of prior planning efforts;
- an assessment of current conditions;
- an assessment of future conditions;
- a needs analysis/problem identification;
- development and evaluation of alternatives;
- presentation of a recommended plan;
- public participation; and
- project schedule/costs.

The completion of the SWMP will provide the City of Malden with a recommended plan for stormwater collection system improvements.

Section B – Public Health Criteria

Section B.I

Completion of the proposed project will address many public health concerns in Malden. The project will significantly streamline the City's ongoing efforts to improve the City's sewer and storm drain systems and reduce negative impacts associated with the systems deficiencies.

Contaminated Stormwater (Item 1)

This study will be the basis for future water quality projections in Malden. By assessing the current stormwater system and analyzing its interactions with sanitary sewers the City will have a better defined hydrology and hydraulics for future MS4 water quality studies. Providing new and enhanced drainage systems within the targeted areas of the City as part of this construction program, the City will serve to reduce contaminated stormwater discharges. In addition, elimination of I/I issues within the sewer system will serve to reduce SSO events that can cause contaminants to enter the City's stormwater system and ultimately discharge to sensitive receiving waters.

Appendix A shows various accounts of contamination in the City resulting from non-stormwater contaminants combining with the stormwater and impacting water quality in receiving waters. Samples taken from the City's MS4 and analyzed at the EPA's New England Regional Laboratory have shown quantities of E. coli and enterococcus bacteria, as well as surfactants and ammonia which are notable factors in favor of human caused bacterial contamination. These stormwater outfall analyses reflect the need for the City and MWRA to collaborate to improve water quality because this will significantly improve instream water conditions.

Illicit Connections to Sewer System (Item 4)

Existing connections between the City's water systems will be examined to identify the sources of non-stormwater contamination in the stormwater system. Appendix A states various occurrences of suspected illicit connections. These include visual and olfactory indicators of human related bacterial and chemical contaminations leading into the storm drain systems. Specific sites of suspected illicit discharges occur at the storm system on Logden Court and Hanover Street. Ultimately, these projects will lead to accomplishing more SSES and IDDE work in Malden to identify where contamination occurs. The completion of the proposed stormwater and sewer improvements will provide the mechanism to remove illicit connections within the target area, therefore improving water quality in the Mystic and Malden River.

Raw Sewage Backup from the Municipal System (Item 5)

Despite regular cleaning and maintenance of the City's wastewater infrastructure sewage backups are common problems in low-lying areas or areas of relatively flat sewers. These areas are also susceptible to heavy grease build-up which hinders flow and results in wastewater system back-ups and/or potential SSO events. Refer to Appendix A for details regarding visual and olfactory observations of raw sewage on Hanover St and Logden Court. IDDE testing will be conducted to further assess the conditions of the sanitary sewers in the City.

Sanitary Sewer Overflow (Item 6)

As a result of the hydraulic modeling efforts completed to date, the City of Malden has identified areas where the capacity of the wastewater collection and conveyance system may not be sufficient to handle the sewage flow. The intent of the construction funding will be to implement corrective actions that will provide additional capacity by removing I/I sources and/or provide capacity by installing new wastewater collection system piping. Appendix A sites two instances where SSOs occurred. Further analyses of the storm drain and sewage system will help determine areas most susceptible to SSOs in order to take preventive actions to stop future SSOs from occurring.

Water Pollution Related Odor Problem (Item 7)

Problems related to the offensive smell associated with raw sewage are prevalent in areas where SSOs occur.

Section B.II

The contamination described previously, by polluted sewer and sewage backups, affects several resources including private homes, public streets and parklands, as well as swimming beaches and boating areas.

Private Homes (Item 13)

Sanitary sewers in the City of Malden periodically backup into private homes and basements. Contamination occurring on nearby streets causes olfactory and visual disturbances at residential homes. Hanover Street and Logden Court are noted in Appendix A as areas where sewage contamination has been observed and private homes are impacted by these occurrences.

Public Streets or Parklands (Item 14)

Areas with relatively flat sewers are susceptible to heavy grease build-up which hinders flow and results in sewer back-ups. Hanover Street and Logden Court are noted in Appendix A as areas where sewage contamination occurs.

Swimming Beaches (Item 15)

The Mystic River subwatershed includes many lakes and ponds which make up the receiving waters of the Mystic River. The Lower Mystic Lake in Medford is downstream from Malden and is an area for many recreational activities, such as swimming. Appendix E states that there is a possibility of current and future contamination, below the bathing beach standard, due to the findings of high fecal coliform bacteria from a sample taken from Mill Brook, a tributary leading to the Lower Mystic Lake.

Boating Areas (Item 16)

The recreational uses of the Lower Mystic Lake in Medford include recreational boating. Appendix E shows the possibility of current and future contamination in the Lower Mystic Lake due to the high fecal coliform bacteria contamination found in the Mill Brook, and this negatively affects recreational activities including boating.

Sensitive Population and Overall Population Affected (Items 17 & 18)

The wastewater and stormwater problems are city-wide and impact the entire community, including sensitive populations. Populations that are at higher risks of being adversely affected by the various sewage and storm water system deficiencies include young children, the elderly, pregnant women, and those with sicknesses that result in weakened immune responses. Therefore areas such as schools, nursing homes, and hospitals are especially vulnerable.

Section C – Environmental Criteria

Section C.I

The project will address environmental concerns by streamlining the process by which the City identifies, assesses, and prioritizes issues and improvements to the sewer and storm drain system. Furthermore, the project will lay the basis for further water quality studies in the City's storm drain system which impacts the Malden and Mystic River watershed and subwatershed.

NPDES Limits Exceeded (Item 20)

The NPDES limits are exceeded on Malden's MS4 discharges. As stated in the ACO the EPA issued a general permit for MS4 discharges. However, in order to continue to comply with the Consent Decree the City must improve the water quality of its discharges to receiving waters. (Appendix A)

Nutrients (Item 22)

Water chemistry analyses of the Malden/Mystic River include nutrient concentrations, some which were found to be below the standard water quality criteria. Variations in chlorophyll a, ammonia-nitrogen, and phosphorus concentrations were detected in samples from the receiving waters. The Mystic River segment was found to contain above average concentrations of phosphorus and chlorophyll a. More in-depth studies are required to better assess the nutrient levels in these receiving waters. However based on past findings of elevated nutrient levels and variations in concentration there is probable concern that pollution from upstream sources is negatively affecting nutrients of receiving waters. Nutrient analyses of the Lower Mystic Lake also showed high concentrations of phosphorus, which is a factor in the degradation of aquatic health. (Appendix E)

Dissolved Oxygen (Item 23)

Water chemistry analyses of the Malden/Mystic River include dissolved oxygen concentrations, which is a crucial component of the health of aquatic life. A wide range of dissolved oxygen concentrations were found in the Malden and Mystic River segments downstream from the City. A low percentage of the analyses showed concentrations below the standard 5.0 mg/L, but in the Mystic River segment low dissolved oxygen concentrations were detected in lower water levels during summer months. Furthermore, dissolved oxygen in bottom waters of the Lower Mystic Lake was found to be nonexistent and this depletion and low concentrations of dissolved oxygen results in poor functioning of the aquatic habitat. However, the data is not completely accurate because it does not reflect conditions at times when dissolved oxygen concentrations are likely to be at their worst. Therefore there is probable concern that pollution from upstream sources is negatively impacting dissolved oxygen concentrations in receiving waters more than is known, which poses a threat to the ecology of the area. (Appendix E)

Temperature (Item 24)

All temperature measurements taken in the Malden and Mystic River segments downstream from the City were below the standard for a Class B water body. (Appendix E)

Bacteria (Item 25)

Dry and wet weather fecal coliform bacteria samples were taken from the Malden and Mystic River segments. A wide range of bacteria counts were detected in samples and higher counts of bacteria found in receiving waters are likely caused by pollution from upstream sources due to sewage and non-stormwater contaminants. (Appendix E)

Turbidity (Item 26)

The Mystic River segment downstream from Malden had turbidity measurements that differed from standard measurements. Shoreline surveys from the Malden River segment also stated that water appeared visibly cloudy and opaque, a notable sign of pollution (Appendix E).

Noxious Aquatic Plants (Item 27)

The banks of the Malden River and surrounding wetlands are currently dominated by a tropical species of grass, known as *Phragmites australis*. This invasive species is greatly responsible for the limited diversity in plants and native species found in wetlands surrounding the river bank of the Malden River. (Appendix F)

Aesthetics (Item 28)

The Malden River and Mystic River segments were noted as being in poor condition with observable trash, cloudy water, oil sheens, and low water levels. These observations were made further downstream by the banks of the river where recreational use is common. These conditions are associated with degradation of the health of aquatic systems and can be the result of poor water flowing from the City. (Appendix E)

Section C.II

Outstanding Resource Water (ORW) (Item 32)

Many different water bodies, including tributaries, ponds, lakes, and rivers, downstream from Malden in the Mystic and Malden River are classified as ORW. These receiving waters are a significant concern for pollution and contaminants flowing from the City's storm drain system. (Appendix G)

Area of Critical Environmental Concern (ACEC) (Item 33)

The Rumney Marsh, located downstream from Malden, is specified as an area of critical environmental concern. Based on this classification, it is an area that requires greater protection and must be thoroughly monitored for pollution. Therefore, any contamination flowing from the City into the Rumney Marsh is of significant concern. (Appendix D)

Endangered Species Habitat (Item 37)

There is at least one known endangered species which carries out spawning on the Mystic and Malden River. The Blue-black Herring and other rare spawning species are of critical concern and therefore protection of their habitat is of great significance to their survival. (Appendix F)

Recreational Fishery (Item 40)

The different water bodies, including tributaries, ponds, lakes, and rivers, downstream from Malden in the Mystic and Malden River are classified as shellfish areas (Appendix G). Furthermore, as stated in Appendix E there are many recreational uses for the Lower Mystic Lake, including fishing.

Section D – Project Effectiveness

The construction and planning projects presented in this PEF will aid in identification and removal of potential illicit connections to the storm drain system and provide the City with the financial resources necessary to identify, assess, and prioritize significant problems within the City's stormwater drainage system. The project is a significant step aimed at eliminating and/or mitigating impacts for the existing wastewater and stormwater systems. These corrective actions will have a significant positive impact on the performance of the City's wastewater and stormwater infrastructure and will serve to improve water quality in sensitive receiving waters prevalent downstream from Malden (Appendix G). Also the construction and planning projects intend to enable the City to comply with EPA regarding the current ACO, and will mitigate the need for future regulatory action (Appendix A).

The projects main goal, to create a highly integrated sewage and storm drain system, will be achieved as a result of the assessments and proposed work. Furthermore, implementation of this project will enable the City to effectively mitigate several future and current concerns such as SSOs, flooding, illicit connections, and raw sewage backup. These problems, caused by deficiencies in the sewage and storm drain systems, pose threats to the overall population and especially sensitive populations. Various other communities located downstream from Malden are also impacted by these problems, so this project will effectively improve conditions in neighboring regions and waters.

Another goal of the project is to better understand the hydraulics of the City, which will be achieved as a result of the implementation of the proposed analyses and studies. This project will be the basis for future IDDE work in the City. While field investigations are ongoing, the existence and extent of other pollution sources will be noted, facilitating future action by the City as necessary. Therefore the project sets the foundation for this continuous effort that aims to improve the conditions and maintain the overall integrity of the sewage and storm drain systems.

Section E

Section E.I (Item 44)

Consistency with EOE/DEP Watershed Management Plans or Priorities

This project implements recommendations from within local planning studies. The Construction project implements recommendations from the three phased SSES reports (Appendix B), as well as the Capacity Assessment (Appendix C). Both reports were written in accordance with the ACO. The planning project implements recommendations to address the TMDL Category 5 status of the major water bodies draining from Malden (Appendix H). The proposed project will implement procedures to meet the requirements on these water bodies and improve the health of these receiving waters.

Section E

Section E.II (Item 45)

Compliance and Enforcement

The City has been working diligently to respond to the EPA requirements outlined in the Administrative Consent Order and in the draft Consent Decree (EPA, July 2010) for their sewer and storm drain systems. The ACO states that it is unlawful for pollutants to be discharged from any persons to waters of the United States (Appendix A). Therefore, Malden is responsible for the conveyance of water from its Wastewater Collection System and Small Municipal Separate Storm Sewer System and must ensure that sewage and stormwater discharges do not carry pollutants to the MWRA and receiving waters. Malden's Collection System and Small MS4 must be continually analyzed and assessed to guarantee the systems maintain separate flows of storm and sewer water. The planning project presented herein will significantly increase the City's ability to meet these current and anticipated future regulatory requirements.

Compliance and Enforcement Table

Type of Action	Subject	Reference Number	Section & Page	Compliance Deadline(s)
Fed. Adm. Order	Order for action pursuant to Sec 301 of Clean Water Act	#09-002	Sec 1, pg 2	N/A
NPDES Permit	NPDES permit requirements for discharges from MS4s	#09-002	Sec 3.07, pg 4	4/18/2003
IDDE Plan	Identify and eliminate non-storm discharges	#09-002	Sec 4.01, pg 9-10	4/30/2009
CMOM Program Self-Assessment	Collection system operation and maintenance	#09-002	Sec 4.04 pg 11	6/30/2009
General Requirement	IDDE ordinance	#09-002	Sec 4.08, pg 14	9/1/2009
CMOM Program Self Assessment	Submittal of plan	#09-002	Sec 4.05, pg 12	10/30/2009

Compliance with the above actions will help the City better assess and prioritize current deficiencies in the sewer and storm drain systems. The requirements for MS4 discharges are necessary so the City does not exceed its standards and removes any contamination that may exist and flow to the MWRA. Removal of stormwater contamination is one of the primary components of the project and the project will set the basis for future IDDE work to eliminate non-stormwater contaminants in the storm drain system leading to receiving waters.

Section E.III (Item 46)

Multi-community, regional, or basin solution

The construction project includes cleaning and lining of sewer mains and sewer laterals. This will result in I/I reduction.

This planning project will address regional problems by managing wet weather flows. Also, by analyzing the storm and sewer systems the City will increase its understanding of the hydrology of the region. The integrated approach to improving both sewer and storm drain systems is fundamental to improving water quality in receiving waters while at the same time managing flood control and minimizing negative impacts caused by prevalent deficiencies in the systems.

Many rivers, lakes, and tributaries located downstream from Malden that also connect to the Mystic River are impacted by contaminants flowing from the City. Contaminated stormwater that leaves the City negatively impacts the ecology and health of the receiving waters which it travels to. There are concerns of nutrients, temperature, and dissolved oxygen levels being affected by pollution entering from upstream sources and causing increases in bacteria to be found in receiving waters. Many areas downstream from Malden are areas for recreational activities such as fishing, boating, and swimming; pollution poses a public health risk for multiple communities (Appendix E). Also there is at least one known endangered species that spawns in the waters downstream from Malden, so impacts to the habitat caused by pollution could be devastating to the species survival (Appendix F).

Section H – Qualifying EPA Green Projects

By installing cured in place pipe lining, rehabilitating manholes and replacing irreparable sewer pipes, infiltration and inflow will be greatly reduced. By conducting a comprehensive field program, the project will detect sources of contamination in stormwater drains and illicit connections, greatly improving water quality of flows leading to receiving waters. Furthermore, due to the potential volume of extraneous flow that will be identified and ultimately removed from the wastewater collection system as a result of the proposed planning scope of work, the amount of energy required to convey and treat the extraneous wastewater at the MWRA's Deer Island facility will be significantly reduced. The development of a Stormwater Master Plan will further provide the City with recommendations for further improvements to their drainage system, increasing the environmental well being of the area.