

City of Newton



David B. Cohen
Mayor

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
OFFICE OF THE CITY ENGINEER
1000 Commonwealth Avenue
Newton Centre, MA 02459-1449

Received
12/27/06

December 21, 2006

Ann Herrick-CIP
U.S. Environmental Protection Agency, Region 1
1 Congress Street, Suite 1100
Boston, MA 02114

Subject: CITY OF NEWTON, MA
NPDES Phase II Small MS4 General Permit Annual Report, May 2006
EPA NPDES Permit No: MAR 041080
MaDEP Transmittal No: W-039247

Enclosed please find the NPDES Phase II Small MS4 General Permit Annual Report, May 2006, for the City of Newton, MA. The City has implemented a stormwater management program designed to reduce discharge of pollutants from the municipal separate storm sewer system to the "maximum extent practicable" to protect water quality.

The City's stormwater management plan consists of the six minimum control measures. Each control measure has associated Best Management Practices (BMPs) and measurable goals that have been implemented during the course of the permit term. It is through the implementation and evaluation of these BMPs that the City will ensure that all the objectives of the Phase II NPDES program will be met.

Newton has implemented a Stormwater User Fee for FY07 following the enactment in 2004 of the Massachusetts Stormwater Management Amendments to Chapter 83 of the Massachusetts General Laws. This program will be pivotal to moving our stormwater management plan forward. In addition, Mayor Cohen's current budget includes funding for an Environmental Engineer, whose job duties focus on implementation of the requirements of the NPDES permit and attain the goals set forth.

Sincerely,

A handwritten signature in cursive script that reads "Louis M. Taverna".

Louis M. Taverna, P.E.
City Engineer

Attachments:

NPDES Phase II Small MS4 General Permit Annual Report, May 2006

Municipality/Organization: City of Newton, MA

EPA NPDES Permit Number: MAR 041080

MaDEP Transmittal Number: W- W-039247

Annual Report Number

& Reporting Period: No. 3: March 2005-March 2006

NPDES PII Small MS4 General Permit Annual Report May 2006

Part I. General Information

Contact Person: Louis M. Taverna, P.E

Title: City Engineer

Telephone #: 617-796-1020

Email: ltaverna@newtonma.gov

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: David B. Cohen

Title: Mayor

Date:

12/22/06

Part II. Self-Assessment

The City of Newton, Massachusetts has completed the required self-assessment and has determined that our municipality is in compliance with all permit conditions, except for Minimum Control Measure #3 Illicit Discharge Detection and Elimination (IDDE). The City has found bacterial contamination in some of its storm drains. Newton is proactively finding and eliminating illicit connections to the storm drainage system. In addition, we feel that our Comprehensive Stormwater Plan (submitted April 15, 2005) presents an effective program to address IDDE in more detail than this permit.

The following is provided to highlight key accomplishments made in Permit Year 3 and the first half of Permit Year 4 with respect to MS4 General Permit goals and objectives.

Administrative

- Proposed and implemented a Stormwater User Fee, effective July 1, 2006. This program provides the City with a reliable, dedicated source of funding for maintenance and improvements to our drainage system. Establishing and implementing this fee required extensive research and time from our staff.
- Annual budget for stormwater management and capital projects is projected to be \$700,000 by the close of the first fiscal year (i.e., June 30, 2007) of implementation.
- Added staff: Environmental Engineer position, whose job duties will focus on implementation of these permit requirements; and the Director of Utilities position was filled after a 2-year vacancy.

Programmatic & Drainage System

- The City has completed an extensive update to our Drain Atlas that includes locating and assigning a unique tracking number to every drain manhole, catch basin, outfall, culvert or spillway that comprises our drainage system.
- This comprehensive atlas interfaces with the City's GIS as well as Hansen database management system, which streamlines work order requests internally and from citizens.
- Stormwater management policy written establishing recharge to groundwater criteria for new construction projects (see Attachment A).

Pollution Prevention

- Inspecting outfalls and mapping our infrastructure has resulted in the City identifying more than 50 "new" outfall locations. Some of these "new" locations are from State roads or commercial property. Newton is currently monitoring 155 stormwater discharge points to the Charles River, including the many brooks that feed into the Charles.
- Two direct illicit connections were found and eliminated in fall 2005 and winter 2006.
- Sections of storm drains are routinely taped (CCTV) and cleaned for maintenance (i.e., sediment) and water quality issues (from sampling data).

Public Education and Involvement

- Stormwater web page developed; further enhancements planned in 2007.
- Numerous activities and events listed in the following table.

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
1.1	Develop Stormwater Press Release	Engineering, L. Taverna	Submit annual press release to newspaper, CATV.	Several stormwater articles printed in the Newton Tab pertaining to the establishment of new stormwater utility.	Action Alert co-written with CRWA to support the establishment of stormwater drain fee. Submit press release to Newton TAB and NewTV.
Revised		M. Rose			
1.2	Develop Stormwater Web Site	Engineering, L. Taverna	Prepare web site on stormwater issues.	City's Public Works web site developed, with a link to DEP stormwater web site.	Develop a Stormwater web page on City's web site. Include e-mail address for comments and responses from public.
Revised		M. Rose			
1.3	Develop Stormwater Brochures	Engineering, L. Taverna	Distribute brochures with water/sewer bills	Urban runoff/stormwater pollution prevention flyer prepared as draft to be mailed in plan year 4.	Distributed storm drain fee explanation with water/sewer bills starting July 2006. Order pre-made EPA brochures, customize and mass mail in Spring 2007.
Revised		M. Rose			
1.4	Develop Stormwater Newsletter/Report	Engineering, L. Taverna	Prepare/distribute annual newsletter/report.	Newsletter discussed with stormwater committee; better media outlet determined to be web site.	Incorporate stormwater news and project updates onto the DPW Stormwater web page. First project news to be added in Fall 2006.
Revised	<i>Provide Stormwater News on City's web site</i>	M. Rose			
1.5	Explore Volunteer Task Force	Environmental, E. Gentile	Solicit volunteer educators to promote awareness of water quality.	No further action to date.	Solicit volunteers from Friends of Crystal Lake and/or Hemlock Gorge to distribute stormwater literature. Once established this task will roll into Task 2.4.
Revised	<i>Establish Volunteer Database</i>	M. Rose			
1.6	Explore Partnering with Schools	Environmental, E. Gentile	Explore education programs.	Established contact with former school teacher, who is interested in becoming a liaison to Newton Teacher's Association for DPW.	Using existing resources (video, books, etc.) develop an educational program for local elementary and middle schools.
Revised	<i>Partner with Schools</i>	M. Rose	Obtain and distribute educational resources to schools.		

1.7	Explore Education Program	Environmental, E. Gentile	Explore programs with high school students.	Green Decade Coalition / Newton host an annual workshop, generally in March, on "Alternatives to Pesticides". Every spring DPW sells rain barrels to residents at a discount (made possible by a state grant).	Continue promoting water conservation and organic fertilizer efforts. Continue with annual sale of rain barrels including smart irrigation tips.
Revised	Develop Education Program	M. Rose	Implement stormwater pollution prevention seminar		
1.8	Partnering with Watershed Associations	Engineering, L. Taverna Utilities, T. Jerdee	Promote meetings with Charles River Watershed Association (CRWA).	Attended Public Hearing on NOI submittals of Lower Charles River basin communities. Reviewed comments on NOI. Prepared Comprehensive Stormwater Management Plan for EPA.	Participant / Speaker at CRWA stormwater seminar in June 2006. Attend CRWA annual meeting and support annual river clean-up day.
Revised		Engineering, L. Taverna, M. Rose			

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
2.1	Establish Stormwater Citizen Advisory Committee	Engineering, L. Taverna	Committee to meet once per year, publish results	Stormwater/wastewater citizen advisory committee has been established. Committee meets annually.	Committee to meet quarterly. Discussions to include stormwater issues, sewer Infiltration/Inflow issues, and impact of I/I removal on storm drain system.
Revised					
2.2	Implement Public Meetings for Citizen Input	Environmental, E. Gentile	Hold meetings once per year, publish results.	Several presentations were made to Newton committees regarding the stormwater user fee implementation; these meetings were open to the public.	Upcoming public meeting to be held fall 2006 regarding future use at Crystal Lake.
Revised		R. Rooney M. Rose			
2.3	Encourage Citizen Communication and Reporting	Engineering, L. Taverna	Establish stormwater hotline for illicit discharges.	Customer service center and phone number established at City Hall. All stormwater questions and comments directed to Engineering or Utilities. Customer service calls logged on Hansen database.	Continue with current citizen communication and tracking program.
Revised		M. Rose			
2.4	Explore Volunteer Organizations	Engineering, L. Taverna	Observe outfalls, find illicit discharges, stream clean-up.	Friends of Crystal Lake recently formed. Friends of Hemlock Gorge currently work independently to protect this natural resource area.	Provide support to both of these groups and foster communication and a partnership approach with the City. Attend a meeting for both groups.
Revised	<i>Network with Local Community Groups</i>	M. Rose	change “find” to “report”		
2.5	Implement Storm Drain Marking Program	Utilities, T. Jerdee	Volunteers mark catch basins with decals.	Summer help in the Utilities Division stenciled catch basins throughout the City and taught importance of stormwater pollution prevention.	Continue with decals, and storm drain stenciling.
Revised					
2.6	Promote Community Clean-Up day	Engineering, L. Taverna	Promote annual community clean-up day	Newton community clean-up day held April 29, 2006. Volunteer groups target specific areas of the City for clean-up, including Charles River and Hemlock Gorge.	Continue with annual community clean-up day and participation in Charles River Annual Clean-up Day.
Revised		M. Rose			

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
3.1	Establish Stormwater System Map	Engineering, J. Daghljan	Update GIS information, locate all outfalls.	System map established of all drainage infrastructure on GIS. Verification of consultant work completed by DPW in July 2006.	BMP Complete.
Revised		T. Jerdee			
3.2	Establish Stormwater Database Management System	Utilities, T. Jerdee	Add stormwater information to Hansen database.	Hansen database management system established. Stormwater system attributes added into database, by Weston & Sampson Engineers, 100% complete.	Complete input of stormwater system attributes into existing database.
Revised					
3.3	Locate and Inspect all Outfalls	Utilities, T. Jerdee	Collect outfall data for Hansen database.	Comprehensive field surveys and system mapping revealed more than 50 new outfall locations. These locations are being cataloged and added to our monitoring locations.	The City's stormwater outfalls have been identified and inspected. The recently discovered outfalls and remaining 25% of original list will be posted with a sign (i.e., NEW-01).
Revised		& Engineering M. Rose			
3.4	Explore Prohibiting Non-Stormwater Discharges	Engineering, L. Taverna	Explore adaptation of stormwater ordinance/regulations	Draft revisions to existing City ordinances have been submitted to the Law Dept for discussion, as well as with the Sewer / Stormwater Advisory Committee.	Draft ordinance to be presented to Board of Aldermen in Spring 2007.
Revised	<i>Review existing Ordinances and determine whether they adequately prevent Illicit Discharges</i>		<i>Propose to BOA revisions to stormwater ordinance/policies, as appropriate</i>		
3.5	Identify Illicit Discharge Sources	Utilities, T. Jerdee	Explore dry and wet weather screening, CCTV inspections, public input.	Eliminated 2 illicit discharge sources found by City workers or calls to DPW. Cause was incorrect sewer service connection to storm drain system.	Continue with CCTV inspections for stormwater system, per agreement with EPA. Continue sewer infiltration/inflow removal program. Continue to encourage citizen reporting of illicit discharges.
Revised			<i>Based on BMP 3.9 results, identify bacteria sources via visual and CCTV inspections, dye and/or pressure tests</i>		

3.6	Establish Illicit Discharge Hotline	Engineering, L. Taverna	Receive and track citizen reports of illicit discharges.	Hotline established (customer service center). All calls received by customer service are logged and tracked in Hansen database system.	BMP Complete.
Revised		M. Rose			
3.7	Train Employees	Utilities, T. Jerdee	Employees to help identify illicit discharges.	3 Utilities Division employees trained for outfall inspections.	Employee training continues winter 2006/2007.
Revised					
3.9	Explore Detection and Elimination Efforts	Utilities, T. Jerdee	Observe major outfall discharges.	Each outfall location in the City has been inspected at least once. A field screening form is completed during inspection (see example attached). See Attachment B for sampling data and dry weather inspection dates.	Continue with dry and wet weather inspection / sample events for all pipes and outlet points leaving the City.
Revised	<i>Monitor City's infrastructure for illicit discharges and non-point source pollution</i>	Utilities, T. Jerdee Engineering M. Rose			

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
4.1	Explore Regulations for Construction Site Stormwater Runoff	Engineering, L. Taverna	Explore adaptation of construction site runoff ordinance/regulation.	Draft revisions to existing City ordinances have been submitted to the Law Dept for discussion, as well as with the Sewer / Stormwater Advisory Committee.	Draft ordinance to be presented to Board of Aldermen spring 2007.
Revised	<i>Review existing Ordinances and determine whether they adequately regulate construction site stormwater runoff</i>		<i>Obtain Law Dept's opinion regarding existing practice and appropriateness of regulating construction site stormwater runoff.</i>		
4.2	Implement Review of Construction Documents	Engineering, J. Daghlia	Explore policy for submittal of erosion control plans.	Policy established for which types /sizes of construction projects shall be subject to DPW/Engineering review. Engineering now requires erosion control measures for construction projects ≥ 1 acre.	BMP Complete. Continue with plan reviews for building permits.
Revised			<i>change "Explore" to "Establish"</i>		
4.3	Implement Construction Inspection Program	Engineering, J. Daghlia	Develop guidelines, training, inspection of construction sites > 1 acre.	All construction sites inspected by Engineering. BMP guidelines followed. Engineering requires the use of stormwater BMPs for all construction sites.	Continue with inspection of all construction sites. Develop training for construction inspectors.
Revised					
4.4	Educate Developers on Proper Erosion Control Techniques	Engineering, J. Daghlia	Distribute erosion control procedures to all applicants.	Engineering requires erosion control BMPs for all construction. Wall poster of proper erosion control techniques posted at permit application counter.	Develop "Tips to prevent soil erosion...and why you should care" card and distribute with building and street opening permits.
Revised		M. Rose			
4.5	Encourage Citizen Input on Construction Projects	Engineering, J. Daghlia	Ensure citizen review procedures for construction projects > 1 acre.	Citizen input of construction projects occurs during Conservation Commission, Land Use, and Board of Survey public hearings. Citizen review also occurs when Environmental Impact Reports are required.	Develop citizen review procedures, to be discussed at Stormwater Advisory Committee.
Revised	<i>Provide opportunity for citizen review and input on construction projects</i>				

4.6	Establish Information Management System	Engineering, J. Daghlia	Track construction reviews and construction inspections.	An inspector is assigned to all construction projects over 1 acre (as well as many <1acre). This person maintains a personal field log book of key events.	BMP complete.
Revised					
4.7	Explore Standards for Erosion and Sedimentation Controls	Engineering, J. Daghlia	Explore adaptation of MADEP SWMP Standard 8	Engineering requires implementation of MADEP SWMP Standard 8 for all construction projects > 1 acre.	BMP Complete. Continue with implementation.
Revised	change "Explore" to "Establish"		change "Explore" to "Establish"		

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

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
5.1	Explore Regulations for Post Construction Runoff	Engineering, L. Taverna	Explore adaptation of post construction runoff procedures or ordinance.	Draft revisions to existing City ordinances have been submitted to the Law Dept for discussion, as well as with the Sewer / Stormwater Advisory Committee.	Draft ordinance to be presented to Board of Aldermen spring 2007.
Revised	<i>Review existing Ordinances and determine whether they adequately regulate post construction stormwater runoff</i>		<i>Obtain Law Dept's opinion regarding existing practice and appropriateness of regulating post construction stormwater runoff</i>		
5.2	Develop Stormwater Management Policy	Engineering, J. Daghlia	Explore policy to establish minimum BMPs for developers.	Stormwater management policy prepared and implemented (see Attachment A). Engineering requires the use of stormwater BMPs for applicable construction projects.	BMP Complete. Continue with implementation.
Revised		M. Rose	<i>change "Explore" to "Establish"</i>		
5.3	Develop Stormwater Operations and Maintenance Policy	Engineering, J. Daghlia	Explore policy to establish minimum operations and maintenance plans.	Engineering requires the submittal of stormwater operations and maintenance plans for all construction > 1 acre. About 5 per year received for review.	BMP Complete. Continue with implementation.
Revised			<i>change "Explore" to "Establish"</i>		
5.4	Explore Controls to Minimize Impacts to Water Quality	Engineering, J. Daghlia	Explore use of structural and non-structural BMPs.	DPW/Eng. requires developers to implement MADEP Stormwater Standards (1- 8) for applicable projects. Separate and supplemental requirements are outlined for smaller construction projects in the City's Stormwater Management Policy.	BMP Complete. Continue with implementation and stormwater recharge requirements.
Revised	<i>Change "Explore" to "Implement"</i>	M. Rose	<i>change "Explore" to "Implement"</i>		
5.5	Explore Reducing Directly Connected Impervious Surfaces	Engineering, J. Daghlia	Explore the use of grass swales and filter strips.	Discussed at Stormwater Advisory Committee. Recommended to developers during development review team meetings.	Continue to recommend for all construction > 1 acre. Provide information to contractors and owners on alternatives to asphalt pavement.
Revised	<i>Change "Explore" to "Encourage"</i>		<i>Change "Explore" to "Encourage"</i>		

5.6	Determine Capacity of Stormwater System Elements	Engineering, J. Daghlia	Perform capacity analysis for wet weather events.	Capacity analysis performed for certain hot spots where flooding occurs.	Continue to perform capacity analysis for wet weather events, at certain "hot spots" where flooding is known to occur.
Revised					
5.7	Explore use of Regulations for Recharge to Groundwater	Engineering, J. Daghlia	Propose adaptation of ordinance/regulation for recharge to groundwater	Engineering Division requires recharge to groundwater or retention prior to discharge into our drain system for most construction projects; and strictly limits the amount of new impervious area that is waived of this requirement.	Draft ordinance to be presented to Board of Aldermen spring 2007.
Revised	<i>Review existing Ordinances and determine whether they adequately regulate recharges to groundwater</i>		<i>Obtain Law Dept's opinion regarding existing practice and appropriateness of regulating recharges to groundwater</i>		
5.8	Explore Use of Groundwater Recharge Rates	Engineering, J. Daghlia	Explore adaptation of MADEP SWMP Standard 3	Engineering requires implementation of MADEP SWMP Standard 3 for all construction projects > 1 acre.	Continue to require implementation of MADEP SWMP Standard 3 for all construction projects > 1 acre.
Revised	<i>Change "Explore" to "Implement"</i>				
5.9	Explore Post Development Peak Discharge Rates	Engineering, J. Daghlia	Explore adaptation of MADEP SWMP Standard 2	Engineering requires implementation of MADEP SWMP Standard 2 for all construction projects > 1 acre.	Continue to require implementation of MADEP SWMP Standard 2 for all construction projects > 1 acre.
Revised	<i>Change "Explore" to "Implement"</i>				
5.10	Explore Requirements for Removal of 80% TSS	Engineering, J. Daghlia	Explore adaptation of MADEP SWMP Standard 4 & 7	Engineering requires implementation of MADEP SWMP Standard 4 & 7 for all construction projects > 1 acre.	Continue to require implementation of MADEP SWMP Standard 4 & 7 for all construction projects > 1 acre.
Revised	<i>Change "Explore" to "Implement"</i>				

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
6.1	Develop Staff Training Program	Environmental, E. Gentile	Train staff on spill prevention control, vehicle maintenance, and lawn care.	Fire Department has staff trained in spill prevention control and response. Vehicle maintenance staff trained in handling waste fluids. Parks and Recreation staff trained in lawn care.	Train Public Works staff on spill prevention and control.
Revised					
6.2	Develop Stormwater Pollution Prevention Plan	Environmental, E. Gentile	Develop spill prevention control procedures, pollution reduction plan.	Fire Department has a stormwater pollution prevention plan and a hazardous material spill response plan.	Environmental Affairs to develop pollution reduction plan.
Revised					
6.3	Develop Flood Mitigation Plan	Utilities, T. Jerdee	Develop plan, perform exercises.	DPW has developed a Flood Mitigation Plan (see Attachment C).	Continue field exercises and update the flood mitigation plan, as needed.
Revised					
6.4	Establish Inspection Procedures	Utilities, T. Jerdee	Inspect storm drain system using visual inspection and CCTV.	Inspected and cleaned 10,000 linear feet of storm drain system with City's CCTV truck.	Continue to inspect and clean 10,000 linear feet of storm drain system per year.
Revised					
6.5	Incorporate BMPs into Standard Procedures	Utilities, T. Jerdee	Establish BMPs for municipal operations and maintenance.	Erosion control procedures used for municipal construction.	Implement during winter and Post "Low Salt Area: Environmentally Sensitive" for area around Crystal Lake (similar practice in place around the reservoir).
Revised		Highway, S. Tocci			
6.6	Establish Maintenance Procedures	Utilities, T. Jerdee	Vector/flush storm drains to remove sedimentation	Vector/flush 10,000 linear feet of storm drains to remove sedimentation.	Continue vector/flush 10,000 linear feet of storm drains to remove sedimentation.

Revised					
---------	--	--	--	--	--

6.7	Establish Maintenance Procedures	Utilities, T. Jerdee	Clean drainage brooks to remove sedimentation.	Cleaned 5,000 linear feet of drainage brooks.	Continue to clean 5,000 linear feet of drainage brooks per year.
Revised					
6.8	Establish Maintenance Procedures	Utilities, T. Jerdee	Clean catch basins every 2 years.	6500 catch basins cleaned in 2005.	6500 catch basins to be cleaned in 2006.
Revised					
6.9	Establish Maintenance Procedures	Highway, S. Tocci	Sweep streets 2 times per year.	Streets were swept 5 times in 2005.	Continue to sweep streets 5 times per year.
Revised					

6.10	Establish Maintenance Procedures	Highway, S. Tocci	Calibrate salt spreaders annually.	Salt spreaders calibrated fall 2005.	Calibrate salt spreaders fall 2006.
Revised					
6.11	Implement Household Hazardous Waste Program	Environmental, E. Gentile	Collect waste oil, antifreeze, paint, pesticides.	Household Hazardous Waste (HHW) collection facility has been implemented, and is now open two days per week from May through October. See attached info.	City continues to operate HHW collection facility, explore continuous operation from May through October.
Revised					

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

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 3 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Permit Year 4
7.1 Revised	Check Criteria for Meeting TMDL	Engineering L. Taverna M. Rose	EPA criteria for TMDLs checked.	No action to date. Attended informational meeting on phosphorus TMDL requirements for Charles River with DEP on June 26, 2006.	Evaluate use of high efficiency street sweepers.
Revised					
Revised					
Revised					
Revised					
Revised					
Revised					

7a. Additions –N/A

7b. WLA Assessment – N/A

Part IV. Summary of Information Collected and Analyzed

Please refer to Part IIA – Self Assessment for the City summary of information collected and analyzed.

We are hopeful that the information provided is adequate to demonstrate our commitment to improving our SWMP and ultimately ensuring the quality of our stormwater discharges meets or exceeds standards.

Part V. Program Outputs & Accomplishments (OPTIONAL)

Programmatic: Stormwater User Fee created, effective July 1, 2006.

Stormwater management position created/staffed – Environmental Engineer	(y/n)	Yes
Annual program budget/expenditures (catch basin cleaning, material, 1 Environmental Engineer, 4 drainage labor positions, capital improvements) for FY07	(\$)	\$575,000

Education, Involvement, and Training

Estimated number of residents reached by education program(s)	(# or %)	1,000
Stormwater management committee established	(y/n)	Y
Stream teams established or supported	(# or y/n)	Y
Shoreline clean-up participation or quantity of shoreline miles cleaned	(y/n or mi.)	Y, 1 mile
Household Hazardous Waste Collection Days		
▪ days sponsored	(#)	15
▪ community participation	(%)	2.5%
▪ material collected	(tons or gal)	8 tons
School curricula implemented	(y/n)	N

Legal/Regulatory

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

Mapping and Illicit Discharges

Outfall mapping complete	(%)	100%
Estimated or actual number of outfalls	(#)	155
System-Wide mapping complete	(%)	100%
Mapping method(s)		
▪ Paper/Mylar	(%)	100%
▪ CADD	(%)	100%
▪ GIS	(%)	100%
Outfalls inspected/screened	(# or %)	90
Illicit discharges identified	(#)	2
Illicit connections removed	(#) (est. gpd)	2 Unknown
% of population on sewer	(%)	98.5
% of population on septic systems	(%)	1.5

Construction

Number of construction starts (>1-acre)	(#)	5
Estimated percentage of construction starts adequately regulated for erosion and sediment control	(%)	100%
Site inspections completed	(# or %)	100%
Tickets/Stop work orders issued	(# or %)	0
Fines collected	(# and \$)	0
Complaints/concerns received from public	(#)	Unknown

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	100%
Site inspections completed	(# or %)	100%
Estimated volume of stormwater recharged	(gpy)	Unknown

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	(times/yr)	Once per 2 years
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(times/yr)	Once per 2 years
Total number of structures cleaned	(#)	6,500/yr
Storm drain cleaned	(LF or mi.)	10,000 lf
Qty. of screenings/debris removed from storm sewer infrastructure	(lbs. or tons)	1,500 cy
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)		Offsite
Cost of screenings disposal	(\$)	\$71,000

Average frequency of street sweeping (non-commercial/non-arterial streets)	(times/yr)	5
Average frequency of street sweeping (commercial/arterial or other critical streets)	(times/yr)	5
Qty. of sand/debris collected by sweeping	(lbs. or tons)	Unknown
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	(location)	Offsite
Cost of sweepings disposal	(\$)	0
Vacuum street sweepers purchased/leased	(#)	6
Vacuum street sweepers specified in contracts	(y/n)	0

Reduction in application on public land of: ("N/A" = never used; "100%" = elimination)		
▪ Fertilizers	(lbs. or %)	*
▪ Herbicides	(lbs. or %)	*
▪ Pesticides	(lbs. or %)	*
* see attached table of application rates		

Anti-/De-Icing products and ratios	% NaCl	97%
	% CaCl ₂	1%
	% MgCl ₂	0
	% CMA	0
	% Kac	0
	% KCl	0
	% Sand	2%
Pre-wetting techniques utilized	(y/n)	N
Manual control spreaders used	(y/n)	N
Automatic or Zero-velocity spreaders used	(y/n)	Y
Estimated net reduction in typical year salt application	(lbs. or %)	Unknown
Salt pile(s) covered in storage shed(s)	(y/n)	Y
Storage shed(s) in design or under construction	(y/n)	N



David B. Cohen
Mayor

Department of Public Works Engineering Division

Louis M. Taverna, P.E., City Engineer

Newton, MA 02459

Telephone (617) 796-1020 • Fax (617) 796-1051

Attachment A

Requirements for On-Site Drainage (Stormwater Management)

Subsurface on-site drainage must be provided for all proposed structures (e.g., additions, garages, retaining walls, etc.) and other impervious surfaces (e.g., driveways, patios) per schedule below. The purpose of this policy is to mitigate the effects of increased stormwater runoff onto our public streets and adjacent private property due to development. For any project that meets this criterion, a Site Plan and drainage analysis must be prepared by a Mass. Registered Professional Engineer and submitted with your Building Permit Application.

Criteria for any new structure(s) or impervious surfaces for site-drainage as follows:

- | | | | | |
|--|---|---|---|------------------|
| 1. Lot size equal to 10,000 S.F. or less | " | " | " | 400 S.F. or more |
| 2. Lot size between 10,001 S.F. and 19,999 S.F." | " | " | " | 600 S.F. or more |
| 3. Lot size 20,000 S.F. or greater | " | " | " | 800 S.F. or more |
| 4. All Non-Conforming Lots | " | " | " | review required |

1. Site grading and drainage plans shall include the following:
 - a. Topographic contours (existing and proposed) and/or adequate number of spot elevations to indicate area to be drained to each inlet.
 - b. Rim elevation and flow line elevation at each inlet and drainage structure.
 - c. Sufficient contours or spot elevations (original and final) around perimeter of building(s) and other site features to indicate extent of any filling or excavation.
 - d. The results of an on-site soil evaluation in accordance with Title V. Depict test hole/pit location on the plan (test hole should be within 25 feet of proposed infiltration structures). MADEP Form 11 – Soil Suitability Assessment for On-Site Sewage Disposal may be used as a guide for pertinent data to obtain.
 - e. Plans and Calculations shall be signed and sealed by a Registered P.E.
2. Computation to support drainage structures* (i.e., dry wells, infiltrator systems):
 - a. Based upon a design storm of 6.6 inches of precipitation in 24 hours (i.e., a Type III Rainfall, as defined by the U.S. Soil Conservation Service).
 - b. Based upon the standard methodologies set forth in U.S. Soil Conservation Service Technical Release No. 55 *Urban Hydrology for Small Watersheds* and Section 4 of U.S. Soil Conservation Service, *National Engineering Hydrology Handbook*.
 - c. Existing and proposed building sizes, driveways and natural/grassed areas.
 - d. Total area (and sub areas as applicable) proposed to drain to each drywell or approved inlet.
3. The minimum size of drain pipes shall be 4" diameter PVC.
4. The runoff from driveways and parking lots shall be captured on-site via catch basin(s) or trench drain(s) both of which will require a 4' sump and Neenah R-3705 gas trap outlet, then be connected to the on-site infiltration system. Note: gas traps are optional for single-family residential projects unless the project is located near wetlands or waterways.
5. The runoff from roofs is considered "clean" and may be collected via gutters and connected directly to the on-site infiltration system or recycled for irrigation purposes.
6. Erosion control (e.g., siltation fence or hay bales) shall be shown on plan.
7. If project is located within a wetlands/conservation and/or floodplain, then a filing must also be submitted to the Conservation Commission for their approval.

*Subsurface soil conditions may necessitate alternative approaches to infiltration.

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-01	Saw Mill Brook Parkway @ #801 100' WEST OF THE END OF THE ROAD	RCP	60	5/18/2005	Dry	20
					Wet	
					Dry	
NEW-02	Wells Ave - south; across from #120 (approx. 30 ft from Rd)	Concrete	36	5/18/2006	Dry	NS
					Wet	
					Dry	
NEW-03	Wells Ave - north (Country Club Brook) Across from #60	Culvert	48x72	5/18/2005	Dry	20
					Wet	
					Dry	
NEW-03A	#1 Wells Ave - south Parking lot; 150' Southwest of Rd)	Concrete	12	5/18/2005	Dry	NS
					Wet	
					Dry	
NEW-03B	#1 Wells Ave - South Parking Lot 100' West of NEW-3A	Concrete	20		Dry	
					Wet	
					Dry	
NEW-03C	#1 Wells Ave - Behind Building across from loading area	HPDE	8		Dry	
					Wet	
					Dry	
NEW-03D	#1 Wells Ave - north parking lot; approx. 40' from end of lot	Concrete	12		Dry	
					Wet	
					Dry	
NEW-04	Nahanton St Bridge; North side of bridge	Concrete	12	5/18/2005	Dry	NS
					Wet	
					Dry	
NEW-04A	Winchester St. 250' left of entrance to Nahanton Park	Concrete	15	5/26/2005	Wet	520
					Dry	
					Wet	
NEW-04B	Off Nahanton St @ the access road to the park; near NEW-04	Concrete	12	5/18/2005	Dry	NS
				5/26/2005	Wet	NS
					Dry	
NEW-04C	Winchester St. Across access rd from NEW-4A	CMP	12	5/18/2005	Dry	NS
					Wet	
					Dry	
NEW-04D	Small spillway on golf course to river at Wallace Ave. East of Pump house	Spillway	-		Dry	
					Wet	
					Dry	
NEW-05	Wallace Ave @ Rivers Edge	Concrete	15	5/26/2005	Wet	60
					Dry	
					Wet	
NEW-06	Charles River Terrace @ Rivers Edge	Concrete	15	5/18/2005	Dry	20
					Wet	
					Dry	
NEW-07	Bank St. @ Rivers Edge	Concrete	24	5/26/2005	Wet	NS
					Wet	
					Dry	

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-08	Christina St. between #85 and Old RR Bridge	Concrete	12	5/26/2005	Wet	NS
				10/12/2005	Wet	33,000
				11/8/2006	Wet	1,600
					Dry	
NEW-09	Parking Lot at #25 Christina St. Rear lot Upstream of building	PVC	10-1/2"	5/26/2005	Wet	9,200
				10/14/2005	Wet	2,900
				11/8/2006	Wet	170
					Dry	
NEW-09A	Parking Lot at #25 Christina St. Rear lot Upstream of building	PVC	10	7/27/2005	Dry	NS
				10/12/2005	Wet	7,400
				11/8/2006	Wet	230
					Dry	
NEW-09B	Parking Lot at #25 Christina St. Rear lot, Behind building	PVC	10	7/27/2005	Dry	NS
				10/12/2005	Wet	3,900
				11/8/2006	Wet	<10
					Dry	
NEW-09C	Parking Lot at #25 Christina St; 4' Downstream of NEW-09	RCP	12	7/27/2005	Dry	<10
				10/12/2005	Wet	<10
NEW-09D	Parking Lot at #25 Christina St, just downstream of bldg	PVC	10	7/27/2005	Dry	NS
				10/12/2005	Wet	<10
					Dry	
					Wet	
NEW-09E	320 Needham St. Parking Lot, Near Suite 150	Concrete	12	7/27/2005	Dry	<10
				10/12/2005	Wet	<10
					Dry	
NEW-09F	320 Needham St. Parking Lot; 125' Upstream of bridge	PVC	10	5/26/2005	Wet	NS
				10/12/2005	Wet	300
					Dry	
NEW-10	Needham St. in wall @ Bridge West Bound	Concrete	12	5/26/2005	Wet	<10
					Dry	
					Wet	
NEW-11	Needham St Culvert, under Oak St, just north of Needham St.	Culvert	60 x72	5/26/2005	Wet	<10
					Dry	
					Wet	
NEW-11A	Oak St Village Condos @ fitness room	Concrete	12		Dry	
					Wet	
					Dry	
NEW-11B	Oak St Village Condos 25 ft Upstream of NEW-11A	Concrete	18		Dry	
					Wet	
					Dry	
NEW-11C	Oak St Village Condos 10 ft upstream of NEW-11B	VCP	5		Dry	
					Wet	
					Dry	
NEW-12	Abbott St. @ end of road	PVC	10	6/3/2005	Dry	NS
					Wet	
					Dry	
NEW-13	Williams Ct @ End of Rd	RCP	12	6/3/2005	Dry	NS
					Wet	
					Dry	
NEW-13A	Williams Ct @ 50' Downstream from NEW-13	VCP	8	6/3/2005	Dry	NS
					Wet	
					Dry	

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-13B	Saco St. Apt on right @ the end of the Complex and the edge of River	Concrete	15		Dry	
					Wet	
					Dry	
NEW-13C	TV Tower off Chestnut St.- 30 ft SE of last utility pole	CMP	8		Dry	
					Wet	
					Dry	
NEW-14	River Ave. @ End of Rd	Concrete	12	6/3/2005	Dry	NS
					Wet	
					Dry	
NEW-15	Elliot St. Eastbound next to bridge	RCP	36	6/3/2005	Dry	1100
					Wet	
					Dry	
NEW-15B	Elliot St. Westbound next to bridge	Concrete	15	6/3/2005	Dry	NS
					Wet	
					Dry	
NEW-16	Ellis @ Rt 9E exist east side of small spillway. (Hemlock Gorge)	Concrete	12	6/8/2005	Dry	NS
					Wet	
					Dry	
NEW-16A	Ellis @ Rt 9E OFF RAMP 5' upstream of NEW-16 (same side of spillway - Hemlock Gorge)	VCP	12	6/8/2005	Dry	NS
					Wet	
					Dry	
NEW-16B*	Ellis @ Rt 9E Exit West side os small spillway, 30' Upstream (Hemlock Gorge)	Concrete	12	6/8/2005	Dry	NS
					Wet	
					Dry	
NEW-17	Quinobequin Rd. @ RT. 9 West on ramp 50' from on-ramp	Concrete	30	6/16/2005	Wet	600
					Dry	
					Wet	
NEW-17A*	Quinobequin Rd. @ RT. 9 West on ramp close to City line	Concrete	12	6/8/2005	Dry	NS
					Wet	
					Dry	
NEW-18	Quinobequin Rd. 100' downstream of Rt. 9 on-ramp	Concrete	12	6/8/2005	Dry	NS
					Wet	
					Dry	
NEW-18A*	Quinobequin Rd. across driveway of House # 744	Concrete	18	6/8/2005	Wet	NS
					Dry	
					Wet	
NEW-19	Quinobequin Rd. across from house #696 and near utility pole #369-79 (Dresser Brook)	Concrete	72	6/16/2005	Wet	420
					Dry	
					Wet	
NEW-19A	Quinobequin Rd; 75' downstream of NEW-19	DI	4		Dry	
					Wet	
					Dry	
NEW-20	Quinobequin Rd. NW side of Dresser Brook Pond	Concrete	24	6/22/2005	Dry	NS
					Wet	
					Dry	
NEW-21	Quinobequin Rd. @ Radcliff Rd	VCP	8	6/22/2005	Dry	NS

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-22	Quinobequin Rd. 200' Downstream of Radcliff Rd	Concrete	12	6/22/2005	Dry	NS
NEW-23A*	Across From #584 Quinobequin Rd. (350' east/southeast of Larkspur)	HPDE	24	6/29/2005	Dry	<10
					Dry	
					Wet	
NEW-23	Quinobequin Rd. @ Larkspur (New outfall installed summer 2005)	Concrete	24	7/27/2006	Dry	NS
					Dry	
					Wet	
NEW-24	Quinobequin @ York Rd.	Concrete	12	6/29/2005	Dry	NS
				7/6/2005	Wet	>100,000
				8/3/2005	Dry	NS
				10/14/2005	Wet	38,000
					Wet	
NEW-25	Quinobequin @ Gould Rd	VCP	30	6/29/2005	Dry	NS
				8/3/2005	Wet	<10
					Dry	
NEW-25A	Quinobequin Rd Between House #486 & #494 (across the Road)	Concrete	12	6/29/2005	Dry	NS
				7/6/2005	Wet	2,900
				8/3/2005	Dry	NS
NEW-26*	Quinobequin Rd Between House #478 & # 470 (across the Rd)	Concrete	18	8/3/2006	Dry	NS
					Wet	
					Dry	
NEW-27	Quinobequin @ Annawan	PVC	12	6/29/2005	Dry	<10
					Wet	
					Dry	
NEW-27A	Quinobequin Rd. 150' Downstream of Annawan Rd	Concrete	12	6/29/2005	Dry	NS
				7/13/2005	Dry	40
					Wet	
NEW-27B	Quin Rd. 75 ft downstream of Irwin Rd	Concrete	12	7/13/2005	Dry	NS
					Wet	
					Dry	
NEW-28	Quinn Rd. between house #350 & #360 across the Rd	VCP	12	7/13/2005	Dry	
					Wet	
					Dry	
NEW-28A*	Quinn Rd. across from house #328 [State owned]	DI and VCP	10"/10"		Dry	
					Wet	
					Dry	
NEW-29	Quinobequin & Carlton Rd	Concrete	18	7/6/2005	Wet	71,000
				7/13/2005	Dry	NS
				1/31/2006	Wet	8,400
NEW-29A*	Quinobequin Rd across from #286 [State Owned]	Concrete	15		Dry	
					Wet	
					Dry	
NEW-30	Quinobequin Rd & Dhwindia	VCP	10	7/13/2005	Dry	NS
					Wet	
					Dry	
NEW-30A*	Quinobequin Rd Across from #242 [State Owned]	Concrete	10		Dry	
					Wet	
					Dry	

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-30B*	Quinobequin Rd Across from #216 [State Owned]	Concrete	10		Dry	
					Wet	
					Dry	
NEW-30C*	Quinobequin Rd Across from #196 [State Owned]	Concrete	10		Dry	
					Wet	
					Dry	
NEW-30D*	Quinobequin Rd Across from #188 [State Owned]	Concrete	10		Dry	
					Wet	
					Dry	
NEW-31	Quinobequin & Varick Rd [50' downstream of NEW- 31a]	VCP	20	7/13/2005	Dry	NS
					Wet	
					Dry	
NEW-31a*	Quinobequin Rd Across from #164 [State Owned]	Concrete	10		Dry	
					Wet	
					Dry	
NEW-31B*	Rt. 128 South Near natural gas pump station close to Rd [State Owned]	HDPE	10		Dry	
					Wet	
					Dry	
NEW-31C*	Rt. 128 South Near natural gas pump station at Rivers Edge [State Owned]	CMP	12		Dry	
					Wet	
					Dry	
NEW-32	Quinobequin Rd. 100' downstream to access Rd for NEW-31B /31C	Concrete	36	7/27/2005	Dry	NS - no flow
					Wet	
					Dry	
NEW-32A	Quinobequin Rd. 3 ft from NEW-32	Concrete	24	7/13/2005	Dry	NS
					Wet	
					Dry	
NEW-33	Wales St. between Washington St	VCP	24	7/27/2005	Dry	NS
					Wet	
					Dry	
NEW-34	Washington St. near Executive Park Drive	VCP	12	7/27/2005	Dry	640
					Wet	
					Dry	
NEW-35	Washington St. #2300 Next to Elderly Housing	Concrete	15	8/3/2005	Wet	NS
				7/xx/2006	Dry	
					Wet	
NEW-35A	Washington St. #2300 Next to Elderly Housing; 2 ft from NEW-35	Concrete	12	7/xx/2006	Dry	NS
					Wet	
					Dry	
NEW-36	2310 Washington St. Parking lot [Close to Post office]	Concrete	24	8/3/2005	Wet	20
					Dry	
					Wet	
NEW-36A	Washington St.- behind Post office	Concrete	12	8/3/2005	Wet	NS
				9/16/2005	Wet	18,000
					Dry	

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-37	Washington St.- between liquor store and post office	Concrete	12	8/30/2005	Dry	NS
				7/xx/2006	Dry	
					Wet	
					Wet	
NEW-37A	Washington St. - drain/weep holes at bridge	VCP	4" x 3	8/30/2005	Dry	NS
				9/16/2005	Wet	NS
					Wet	
					Dry	
NEW-38	Washington St.- Lower Falls under bridge West-bound side	VCP	12"	8/30/2005	Dry	NS
				9/16/2005	Wet	3,000
					Dry	
					Wet	
NEW-39	Concord St.- across from cemetery	Concrete	10	9/16/2005	Wet	10,000
					Dry	
					Wet	
NEW-40	Concord St.@ Hagar Path, just over fence in wall	Concrete	10	9/16/2005	Wet	17,000
					Dry	
					Wet	
NEW-41	Concord St. just Upstream of old RR Bridge	Concrete	15	9/16/2005	Wet	24,000
					Dry	
					Wet	
NEW-42	Grayson Lane at end; Straight out from pump to River	Concrete	12	9/16/2005	Wet	67,000
					Dry	
					Wet	
NEW-43	Concord St.at the Charles River(next to Leo J. Martin Golf Course)	Concrete	15	9/21/2005	Wet	NS
					Dry	
					Wet	
NEW-44	Clearwater Rd (bet #74 -#78 at the River)	Concrete	36	9/21/2005	Wet	NS
					Dry	
					Wet	
NEW-44A*	Deforest Rd @ River near Rt. 128 South [30 ft from Rt. 128: State Owned]	Concrete	30	9/21/2005	Wet	1,300
					Dry	
					Wet	
NEW-44B*	Rt. 128N to Exit 25 (Rt. 90) between Ramp & 128 North; approx. 225 ft from River [State Owned]	Concrete	30		Dry	
					Wet	
					Dry	
NEW-44C*	Rt. 128 North after exit 23-25; approx. 430 ft past old RR bridge	Concrete	12		Dry	
					Wet	
					Dry	
NEW-45*	Rt. 128; 300 Ft East of Deforest Rd			Removed by MassHighway by F		
NEW-46	Rt. 128N @ Rt. 90 exit 23 Recreation Rd; 450 ft past old RR bridge	Concrete	12	9/21/2005	Wet	
					Dry	
					Wet	
NEW-46A	Rt. 128N to Exit 25 (Rt. 90); Approx. 125 downstream from NEW-44B	Concrete	12		Dry	
					Wet	
					Dry	

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-47	Grove St.-behind Riverside MBTA; approx. 360 ft downstream from Recreation Rd	Concrete	60	9/21/2005	Wet	2,500
					Dry	
					Wet	
NEW-48	Grove St.-behind Riverside MBTA; approx. 500 ft downstream from NEW-47	Concrete Culvert	36 x48	9/21/2005	Wet	4,200
					Dry	
					Wet	
NEW-49	Riverside Rd behind DCR building 75 ft from bridge	CMP	18	10/7/2005	Wet	
				10/12/2005	Wet	6,700
					Dry	
NEW-49A	Central St between 387 & 399 @ River; approx. 30 ft U/S from Foot bridge	PVC	12	11/8/2006	Wet	No Flow
					Dry	
					Wet	
NEW-49B	Riverside Rd near Antiques mall 100' upstream of RR Bridge	VCP	5		Dry	
					Wet	
					Dry	
NEW-50	Evergreen behind fences next to Rt. 90E	Concrete	12	10/7/2005	Wet	
					Dry	
					Wet	
NEW-51	Oakland Ave. between #69 & Rt. 90 on-ramp	Concrete	18	10/7/2005	Wet	
					Dry	
					Wet	
NEW-51A	So. Side of Bridge @ Commonwealth Ave. (20' upstream from bridge)	Concrete	12	10/7/2005	Wet	
NEW-51B	North Side of Bridge @ Commonwealth Ave. (20' downstream of bridge)	CMP	12	10/7/2005	Wet	
NEW-52A	Marriott Front Parking Lot - (Approx. 30' from south corner of bldg)	Concrete	18	10/7/2005	Wet	
				10/12/2005	Wet	770
NEW-53	Marriott Parking Rear Lot (NE corner, approx. 65' from catch basin)	Concrete	18	10/7/2005	Wet	
NEW-54	Malvern Terrace between #17 and #9 @ Rivers Edge	Concrete	12	12/29/2005	Wet	
NEW-55	Between #264 Islington Rd and #1 Malvern Terrace @ Rivers edge	Concrete	12	12/29/2005	Wet	
NEW-56	Islington Rd East of #296 under wood dock at rivers edge	Concrete	12	12/29/2005	Wet	29,000
				1/31/2006	Wet	480
NEW-57	Duffield Rd. #37 northeast corner, approx. 60' from house	Concrete	12	12/29/2005	Wet	2,500

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-58	Comm Ave Lyons Field, approx. 140' from minor league home plate	Concrete	36 (twin)	12/29/2005	Wet	830
NEW-58A	Comm Ave Lyons Field, approx. 100' from minor league home plate	Concrete	12	12/29/2005	Wet	880
NEW-59	Chaske Ave @ Kaposia, 50' north of pump house pipe	VCP	15	12/29/2005 7/20/2006	Wet Dry	Not Found No Flow
NEW-60	West Pine St. at Auburndale Playground	PVC	14	12/29/2005	Wet	4,600
NEW-60 A	83 Staniford Ave Back lot of Condos behind Pine Trees	Concrete	12		Dry Wet Dry	
NEW-61	Staniford St behind Shed of #79 Back side of hill in woods	Concrete	12	12/29/2005	Wet Dry Wet	
NEW-62	Staniford St 285' away from #19 back side of landfill behind fence	Concrete	60	This is more of a retention pond area than a pipe and access is restricted.		
NEW-63	Riverview Ave. #209; Southeast corner in Parking lot	concrete	12	11/8/2006	Wet	<10
NEW-64	Forest Grove Dewatering Pump	DI	15	11/8/2006	Wet	<10
NEW-65	Rumford Ave.	CMP	60			
NEW-65A	Rumford Ave.	DI	18	11/8/2006	Wet	30
NEW-66	DMH: Decatur St. in Cemetery at Waltham line	Culvert	48 x60			
NEW-67	DMH @ 200 North St	Concrete	14			
NEW-68	Albemarle Rd. (Cheesecake Brk)	Fieldstone	4ft x 8ft	4/15/2005	Dry	70
NEW-69	Bemis St. End of the road; 75' out from the road	Concrete	12	5/11/2005	Dry	45

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-70	Wyoming Rd. @ Parkway 100 ft from the road	Concrete	12	5/5/2005	Dry	
NEW-71	Thaxter St. at Parkway			5/5/2005	Dry	
NEW-72	California St.&Colonial Ave (under walk way bridge)	VCP	15	5/5/2005	Dry	
NEW-73	Bridge St. (Upstream side of bridge)	CMP	24	5/11/2005	Dry	<10
NEW-74	California St. behind house #315	VCP	20	5/5/2005	Dry	
NEW-74A	California St. West of #440 Post (225' W of the bldg)	Concrete	15	5/5/2005	Dry	
NEW-74B	California St. behind #440, 20' west of path sitting area @ river	Concrete	12	5/5/2005	Dry	
NEW-75	Rustic St. at the end of the Rd	DI	12	5/11/2005	Dry	
NEW-76	California St - Derby Brook	Culvert	48 x 36	4/15/2005	Dry	210
NEW-77	Jackson Rd in Left Field 100'from Home Plate	Culvert	72 x 144			
NEW-78	Boyd St. @ South Park St on South Park	Concrete	20			
NEW-79	Centre St @ Carleton, 30' North of Hydrant	Concrete	12			
NEW-80	Nonantum Rd. @ Island for Maple Street @ Rivers Edge	VCP	10			
NEW-80A*	Nonantum Rd. behind #62 Maple St @ Rivers Edge	VCP	10			
NEW-81	Nonantum Rd Behind the end of Maple St - Hyde Brook	Culvert	60 x 66	4/15/2005	Dry	5800

Attachment B
City of Newton
Stormwater Outfall Sampling Data

Outfall ID	Location	Type	Size (inches)	Inspection Date	Wet/Dry Conditions	Fecal Coliform (Cfu/100 mL)
NEW-81A*	Nonantum Rd. 20' Downstream from Hyde Brk	VCP	15			
NEW-82*	Nonantum Rd. Approx. 170' downstream from NEW-81	Concrete	10			
NEW-83*	Nonantum Rd. behind #23/#25 St. James Ter.	Concrete	10			
NEW-84*	Nonantum Rd. behind #57/59 Charlesbank Rd	Concrete	10			
NEW-85*	Nonantum Rd. behind #49 Charlesbank Rd	Concrete	10			Unable to locate
NEW-86	Nonantum Rd. 250' Upstream from Yacht club (2 lines)	RCP/ CMP	12			
Yacht UND	Yacht UND			4/15/2005	Dry	5000
76 Hyde A	Behind residence @ 76 Hyde Ave.			5/11/2005	Dry	960
76 Hyde B	Behind residence @ 76 Hyde Ave.			5/11/2005	Dry	30
Charlesbank UND	at the traffic island			5/18/2005	Dry	8,600
Mason Rice #1	Infiltration from bank (no pipe)			7/27/2005	Dry	640
Mason Rice #2	Sudbury Aquaduct			7/27/2005	Dry	<10
DMH Jasset St	Near house #			8/3/2005	Wet	7,100
UD2	Brookside at Watertown St			10/12/2005	Wet	120,000
UD2	Brookside at Watertown St			1/31/2006	Wet	15,000
UD2	Brookside at Watertown St			11/8/2006	Wet	33,000

Notes:

NS - No sample collected; no water discharging from pipe

BWL - Invert Below Water Level

UD - Underdrain

* - State owned outfalls: 16B, 17A, 18A, 23A, 24A, 25A, 30A-30C, 31A -31C, 44A-44C, 46A, 80A, 81A, 82, 83, 84, 85

Shaded cell (yellow) indicates data result > 5,000 Cfu/100 mL.

Shaded cell (orange) indicates data result above EPA/DEP reference criterion of 200 CFU/100mL.

New Outfall Location Identified in the Field

PUBLIC WORK DEPARTMENT

City of Newton

FLOOD MITIGATION PLAN - ^{Year}(2002)

DEPARTMENTAL RESPONSIBILITIES

The Department of Public works is responsible conveyance of storm water Within the City of Newton storm water collection system. This would Include the following:

- Removing obstructions from street drains, ie; catchbasins
- Removal of debris from 22 trash grates
- Eliminate obstructions within streams and brooks
- Placement of signage and barricades when needed
- Eliminating extraneous flows into the wastewater collection system
- Assisting Recreation Department in the removal of fallen trees
- Notifying public utilities of down wires
- Bypass pumping where required
- Assist Fire Department when necessary with pumping activities
- Prevent loss/damage to private property

DESCRIPTION OF DUTIES

The ***Commissioner of Public Works*** is responsible for the overall supervision of wet weather events. He will coordinate with Police, Fire, School, and Recreation Department regarding Public Safety as it relates to the progress of the weather event. He will be responsible for updating the Mayor as to the pending conditions.

The ***Deputy Commissioner of Public Works*** is responsible for the overall implementation of the wet weather operation. He will make recommendations to the Commissioner of Public Works and the Police Commanding Officer regarding Public Safety. He will organize the Divisions regarding the operation surrounding the weather conditions. He will assume responsibility in the absence of the Commissioner of Public Works.

The ***Director of Utilities*** is responsible for the implementation of the Utilities Division's operation regarding the wet weather event. He will keep the Deputy Commissioner of Public Works and the Commissioner of Public Works apprised of any significant changes in conditions. Regularly check weather conditions and notify the Superintendent of Utilities.

The ***Superintendent of Utilities*** is responsible for monitoring the weather conditions and staffing sufficient personnel in order to maintain the free conveyance of storm water into the collection system. He will keep the Director of Utilities apprised of changing conditions in the weather or personnel. Assigns equipment necessary for wet weather conditions.

The ***Control Center Staff*** is responsible for the overall communication between City Departments, and the residents. Communicates through Public Works radio to notify department staff of pending issues. They will notify Public Utility Companies requesting service as needed.

Staffing of Personnel (Normal Business Hours)

The Superintendent of Utilities will assign personnel for wet weather related activities during the course of normal business hours and in accordance with NMEA Local 544 during non-business hours. Should additional personnel be needed the Superintendent will coordinate with the Elliot Street and Craft Street Highway Superintendents to assure that sufficient personnel be available during the course of the wet weather event. The Superintendent of Utilities will consult and advise the Commissioner of Public Works and the Deputy Commissioner of Public Works during the course of operations.

Staffing of Personnel (Non-Business Hours)

It is the responsibility of the Superintendent of Utilities or his designee to monitor the weather conditions and consult with the Commissioner of Public Works to determine the staffing levels needed. Once the number of personnel are determined the Superintendent of Utilities will notify the Utilities Division shop steward in accordance with NMEA Local 544, which in turn will report back to the Superintendent the names of personnel available. If additional personnel are needed the Superintendent of Utilities will utilize personnel from the Elliot Street and Crafts Street Highway Division in accordance with NMEA Local 544.

TYPES OF STAFFING

Level 1: Showers with isolated Thunderstorms

12 personnel from the Utilities Division consisting of two (2) Foreman, two (2) Operators, and 8 Truck Drivers will be stationed throughout the City of Newton. These 12 personnel will be under the direction of the Assistant Utilities Superintendent. Personnel will be responsible for the following:

- Removal of debris on Trash Grates
- Responding to Police Control Center
- Monitoring areas prone to street flooding

Level 2: Severe weather warnings with intense Thunderstorms, high winds

16 personnel from the Utilities Division consisting of two (2) Foreman, four (4) Operators, and 10 Truck Drivers will monitor the trash grates ONLY. Personnel will be under the direction of the Utilities Superintendent or Assistant Utilities Superintendent.

Four personnel each from the Elliot and Crafts Street Highway Divisions (8 total) will be stationed on a 4/4 Snow route pattern and will be responsible for monitoring the low areas prone to flooding. These areas will be highlighted on the existing snow plow route maps.

A person will man the control center located at the Elliot Street Yard and be responsible for communications between the Police Dispatch, City Hall, and the residents. Will monitor public works radio throughout the storm.

Recreation Department will be notified and placed on alert as to the possibility of down tree limbs. They will also be responsible for all traffic control needed in the course of their work.

Traffic Division will make available additional barricades as needed.

Level 3: Nor Easter with prolong precipitation, high winds

Conditions throughout the weather event will be under the direction of the Commissioner of Public Works, Deputy Commissioner of Public Works, and the Director of Utilities.

16 personnel from the Utilities Division consisting of two (2) Foreman, four (4) Operators, and 10 Truck Drivers will monitor the trash grates ONLY. Personnel will be under the direction of the Utilities Superintendent or Assistant Utilities Superintendent.

6 personnel from the Utilities Division will operate three (3) crew trucks equipped with barricades, pumps, and associated equipment needed for emergency pumping conditions. These personnel will work in conjunction with the Fire Department to assist homeowners in need of bypass pumping.

6 personnel each from the Elliot and Crafts Street yard will be stationed on a 6/6 snow plow route to monitor low lying areas prone to flooding. These areas will be highlighted on the snow plow route maps.

The Elliot Street Control Center will be manned 24 hours around the clock for the duration of the weather event.

Recreation Department will make available the staffing plan and means of communication available should the need arise for response to downed trees.

The Fire Department will be notified of the staffing and availability of pumps for emergency pumping when needed.

The 10 wastewater and 3 water booster stations will be manned by the contractor responsible for the Operation and Maintenance of those stations.

The water level within Bulloughs Pond will be reduced by 3-4 feet prior to the weather event.

The Health Department will be alerted to the possibility of sewer surcharging throughout the system. All documentation will be submitted to the Utilities Division for investigation.

A notification will be posted on the City of Newton's web page with information pertaining to the forecast conditions, possible problems within the system, and contact numbers should problems arise.

TRASH GRATE LOCATIONS

The following is a list of Trash Grates that must be checked and cleaned before, during, and after wet weather events. The trash is from these grates is loaded and hauled to the Rumford Avenue Recycling Center after each wet weather event.

<i>Buswell Park</i>	Rear of Buswell Park, Newton Corner (Hyde Brook)
<i>Salettes</i>	Rear of 180 Needham Street (South Meadow Brook)
<i>Marshall's</i>	Rear Marshalls Pk. Lot @ Needham Street (SMB)
<i>Mason Rice</i>	149 Pleasant Street, Mason Rice School (Hammond Brook)
<i>Hull Street</i>	Opposite of Tennis Courts @ Newton NHS (Laundry Brook)
<i>Bananas</i>	Rear of 281 Newtonville Avenue (Laundry Brook)
<i>Westchester Rd.</i>	Rear of 41/47 Westchester Rd. (Edmunds Brook)
<i>Kempton Place</i>	End of Kempton Pl. off Washington St. (Cheesecake Brook)
<i>Warren JHS</i>	Rear of 1650 Washington Street (Cheesecake Brook)
<i>Fuller Street</i>	Rear of 406 Fuller Street (Cheesecake Brook)
<i>Cragmore Road</i>	Rear of 66 Cragmore Rd. under the Sudbury Aqueduct
<i>Old Farm Road</i>	Rear of 108 Old Farm Rd. (Kings Brook)
<i>Sumner Street</i>	Adjacent to 170 Sumner St. (Hammond Brook)
<i>Center Street</i>	Opposite Boston Collage Law. (Edmunds Brook)
<i>Larkin Road</i>	Dead end of Larkin Rd. (Dolan's Brook)
<i>Homer Street</i>	Adjacent to 46 Homer St. (Laundry Brook)
<i>Grove Street</i>	Rear of MBTA Garage (Runaway Brook)
<i>Beethoven Ave.</i>	Rear of Beethoven School (Cold Spring Brook)
<i>Pine Street</i>	Adjacent to 96 Pine St. (Brunner Brook)
<i>Quinobequin Rd.</i>	Adjacent to 606 Quinobequin Rd. (Dresser Brook)

Suffolk Road Opposite 207 Suffolk Rd., Webster Estate (Hammond Brook)

Tubes Hagen Rd., Haynes Rd., Great Meadow Rd., Mildred Rd.

The Utility Division will monitor these trash grates during wet weather events. Depending on the intensity of rainfall and the time of the season, the amount of personnel needed will vary from 6 and 16.

Equipment need to remove, and haul the debris is as follows:

Backhoe	Hull Street Grate
Excavator	Salettes Grate
Clamshell	Tubes, Marshall's, Bananas, Sumner St.
4-2 ton Trucks	Remaining Trash Grates
3-1 Ton Trucks	Remaining Trash Grates
2-Pick up Trucks	Remaining Trash Grates

STREET FLOODING-CATCHBASINS

The following locations are prone to flooding due to the accumulation of debris on the catchbasins. During wet weather events there is the need to periodically check these locations so as not to cause property damage.

SOUTH SIDE:

99 Evelyn Road-catchbasins located at the low point of roadway
64 Greenlawn Ave.-catchbasins located at the low point of roadway
54 Manchester Road-catchbasins located at the low point of roadway
Old Farm Road @ Peregrine Road-catchbasins in low area
7 Sevlard Rd.-catchbasins in low area
Redwood Rd. @ Clifton Rd.-catchbasins at intersection
Newton Library (Homer St.)-outfall into City Hall Pond
109/119 Oxford Rd.-catchbasins in rear of yard (Weeks Field)
50 Wetherall St.-catchbasins located at the low point of roadway

NORTH SIDE:

41 Risley Rd.-catchbasins @ corner of Comm. Av. Carriage Rd.
Harvard St. @ Newtonville Ave.-catchbasins at low point of roadway
Albermarle Rd.-when brook overflows road, close roadway
Hillside Av.-intense rainfall, manhole covers dislodge.
Walnut St. north of Commonwealth Ave.-low point of roadway
Comm. Ave. @ Exeter St.-CB's at low point in roadway
Lowell Ave. @ Otis St. CB's at low point in roadway.
Lowell Ave. @ Otis St. CB's at low point in roadway
Cherry St. between Webster and Washington St. CB's in low area
Ruane Rd.-North of Comm. Ave. CB's in low area
Walnut Street @ Commonwealth Ave., CB's in area
Garrison Rd. @ Comm. Ave., CB's in low area

BYPASS PUMPING

During extreme wet weather events there are area's in Newton prone to flooding, such that damage to personal property will occur. In these area's it will be necessary to have emergency pumping capabilities. Listed below are the location of the area, type of pumping (sewer/storm), and the size of the pumps needed.

- **Old Farm Road @ Peregrine Road:** Sewer surcharging will cause backups into several residents at this intersection. Install 8" pump in sewer manhole located at this intersection and discharge into Sawmill Brook and notify Department of Environmental Protection at 978-661-7677.
- **62 Woodcliff Road:** Elevation of rear yard below storm drain. During heavy rains the rear yard floods causing storm water to enter the ground floor of residence. Two 3" trash pumps are normally used by the Utility Division to maintain storm water elevation.
- **Quinobequin Road Pump Station:** During heavy prolong wet weather events it may be necessary to install a 8" pump at the chamber outside the pump station in order to prohibit sewerage flow from by-passing the Quinobequin Road Pump Station and surcharging sewer manholes at Lyons Field Playground.

DRAINAGE OUTLETS TO CHARLES RIVER
(Intercept Sediment Collection System)

<u>Name</u>	<u>Location</u>	<u>Size</u>	<u>Remarks</u>
1. Veterans' Project	Saw Mill Brook Pkwy. to River	60"	Open ditch
2. Wells Avenue	Wells Ave. to River	30"	Southerly end open dit
3. Wells Avenue	Wells Ave. to River	72"	Northerly end open dit
4. Nahanton Street	At Kenrick St. Bridge	15"	Takes unnamed streams
5. Wallace Street	At end of Wallace Street	15"	
6. Charles River Terrace	At end	18"	
7. Bank Street	At end	24"	
8. Christina Street	West of Bernard Street	12"	
9. Christina Street	East of Dedham Street	12"	
10. South Meadow Brook	Westerly side of Needham St. 5' x 16' Culvert		South Meadow Brook take Dickerman Brook, Paul Brook, Stearns Brook & Hahn Brook Takes 2 catch-basins
Needham Street	At Bridge	12"	
12. Abbott Street	At end	12"	
13. Williams Street	At end	12"	
14. River Avenue	At end	12"	
15. Elliot Street	At Bridge	3' x 3' Culvert	
16. Boylston Street	Hemlock Gorge	10", 12", 18", 20", 24"	5 Outlets
17. Quinobequin Road	North of Boylston Street	30"	
18. Quinobequin Road	North of Boylston Street	12" 12"	2-12" Outlets
19. Dresser Brook	Quinobequin Road to River	30"	Proposed 72"
20. Dresser Pond	At Quinobequin Road	12"	Pond Outlet
21. Quinobequin Road	At Radcliff Road	8"	
22. Quinobequin Road	At Kewadin Road	12"	
23. Quinobequin Road	350' East of Larkspur Road	12"	Open ditch
24. Quinobequin Road	At York Road	12"	
25. Quinobequin Road	At Gould Road	30"	

<u>Name</u>	<u>Location</u>	<u>Size</u>	<u>Remarks</u>
26. Quinobequin Road	At Annawan Road	15"	
27. Quinobequin Road	150' West of Annawan Road	12"	
28. Quinobequin Road	550' East of Carlton Road	12"	
29. Quinobequin Road	Intersection of Carlton Road & Pontiac Road	18"	
30. Quinobequin Road	At Dwhinda Road	12"	
31. Quinobequin Road	At Varick Road	20"	
32. Quinobequin Road	600' East of Washington St.	24"	
33. Wales Street	At Bridge	12"	
34. Washington Street	West of Route 128	12"	
35. Washington Street	120' West of Atherton Place	10"	
36. Washington Street	100' East of Grove Street	24"	
Washington Street	At Bridge	12" 12"	2-12" Outlets
38. Washington Street	West of Concord Street	12"	
39. Concord Street	200' South of Hagar Street	10"	
40. Concord Street	At Hagar Street	10"	
41. Concord Street	East of R. R.	15"	
42. Grayson Lane	At end	12"	
43. Concord Street	At Bridge	15"	
44. Clearwater Road	Opp. Pierrepont Road	36"	
45. Route 128	300' East of Deforest Road	20"	
46. Route 128	Access Road	12"	
47. Runaway Brook	200' North of Access Road	60"	Open ditch
48. Former Runaway Brook	300' North of Present Runaway Brook	36"	Stone Culvert
Riverside Road	At M. T. A.	24" 12"	2 Outlets
50. Oakland Avenue	At M. T. A.	18"	

<u>Name</u>	<u>Location</u>	<u>Size</u>	<u>Remarks</u>
51. Commonwealth Avenue	Opp. Oakland Avenue	20"	
52. Commonwealth Avenue	At Marriott Motel Parking Area	18"	Near Commonwealth Avenue
53. Commonwealth Avenue	At Marriott Motel Parking Area	15"	Rear Area
54. Malvern Terrace	At end	12"	
55. Islington Road	From Malvern Terrace to River	12"	
56. Islington Road	At end	12"	
57. Duffield Road	At Causeway	12"	
58. Forest Grove Road	End of Ware's Cove	2-36" 2-20"	4 Outlets
59. Chaske Avenue	At end	15"	
60. West Pine Street	Through Auburndale Park Playground	15"	
61. Staniford Street	Low Point at Bend	12"	
Brunnen Brook	At Purgatory Cove	60"	
63. Wabasso Street	Rear Rumford Avenue Disposal Area	12"	
64. Forest Grove Road	Auburndale Park	12"	Mosquito Control Pump Station - Force Main
65. Rumford Avenue	At Incinerator	27" x 54"	ACCM Pipe
66. Cranberry Brook	Fuller Avenue & Chase Avenue	22"x44"ACCM 42"	Through Waltham
67. North Street	At Farwell Street	24"	Through Waltham
68. Cheese Cake Brook	At Albemarle Road	Open channel	Takes Cole Brook & Dolan Brook
69. Bemis Street	At end	12"	
70. Wyoming Road	At Parkway Road	12"	
71. Thaxter Road	At end	10"	
72. California Street	Opp. Colonial Avenue	15"	
California Street	At Bemis Bridge	15"	
74. California Street	700' East of Bridge	20"	
75. Rustic Street	At end	12"	

<u>Name</u>	<u>Location</u>	<u>Size</u>	<u>Remarks</u>
76. Derby Brook	At California Street	2-42"	Through Watertown
77. Laundry Brook	At Boyd Park	6' x 12' Brick arch	Takes Newtonville Drainage Edmand's Brook, Cold Spring Brook, Hammond Brook, through Watertown
78. Boyd Street	At South Park Street, Watertown	22"	Through Watertown
79. Centre Street	At Watertown Line	15"	Through Watertown
80. Maple Street	At Nonantum Road	12"	
81. Hyde Brook	At Nonantum Road	5' x 5'6" Culvert	
82. Charlesbank Road	At Nonantum Road	8" 12"	2 Outlets
83. Lawrence Brook	Boston College at Chestnut Hill Reservoir	36"	
84. Saw Mill Brook	At Old Farm Road	Open Brook	At West Roxbury Line